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Outline Construction Environmental Management Plan (CEMP)

Celbridge Pedestrian & Cycle Bridge



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CONSULTING ENGINEERS





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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 Clifton Scannell Emerson Associates (CSEA) have prepared this Outline Construction Environmental Management Plan (OCEMP) to support to Part 8 planning application for the Celbridge Pedestrian and Cycle Bridge.

1.1.2 The OCEMP applies to all works associated with the construction of the proposed civil and structural works including the pre-construction site clearance works. As a contractor has not yet been appointed, this OCEMP has not been formally adopted and further development and commitment to the OCEMP will be undertaken following selection of Contractors and before commencement of site works.

1.1.3 This Outline Construction Environmental Management Plan (OCEMP) sets out the procedures, standards, work practices and management responsibilities to address potential environmental effects that may arise from construction of the Proposed Development.

1.1.4 The OCEMP provides the environmental management framework for the appointed Contractors and Sub Contractors as they incorporate the mitigating principles to ensure that the work is carried out with minimal impact on the environment. The construction management staff as well as Contractors and Sub Contractors staff must comply with the requirements and constraints set forth in this OCEMP in developing their CEMP. The key environmental aspects associated with the construction of the Celbridge Pedestrian and Cycle Bridge, and the appropriate mitigation and monitoring controls, are identified in the OCEMP.

1.1.5 The implementation of the requirements of the OCEMP will ensure that the construction phase of the Proposed Development is carried out in accordance with the commitments made by Kildare County Council in the planning application process for the Proposed Development, and as required under the planning approval. Once adopted, the CEMP is considered a living document that will be updated according to changing circumstances on the Proposed Development and to reflect current construction activities. The CEMP will be reviewed on an ongoing basis during the construction process and will include information on the review procedures.

1.1.6 This document should be read in conjunction with the following documents prepared for the proposed development:

- Ecological Impact Assessment (RPS, 2022);
- Archaeological and Built Heritage Assessment Report (John Cronin and Associates, 2022);
and
- Landscape and Visual Assessment Report (RPS, 2022).

1.2 SITE LOCATION

1.2.1 The Proposed Development is a pedestrian and cycle bridge on the downstream side of the existing road bridge in Celbridge town. The Site Location can be seen on Figure 1.1 and Figure 1.2.

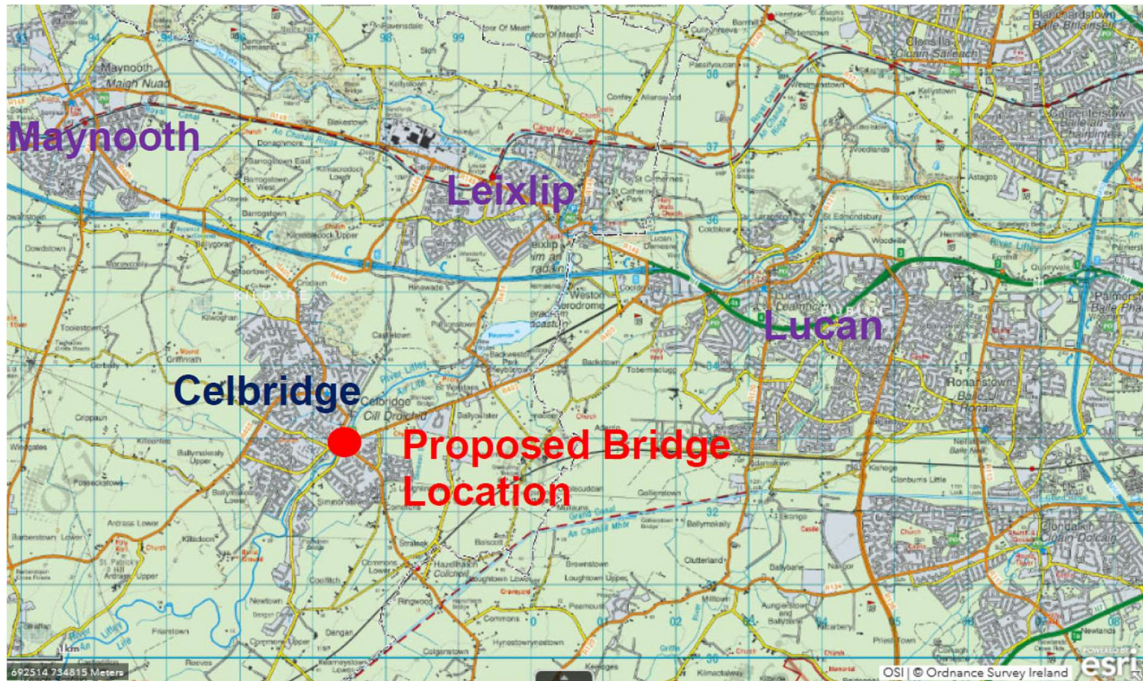


Figure 1.1: Site Location in Wider Context



Figure 1.2: Site Location in Local Context

1.3 SCOPE OF WORKS

1.3.1 The Proposed Development is a pedestrian and cycle bridge from the footpath adjacent the Bank of Ireland car park in Celbridge to the footpath outside the Abbey Lodge public house. It spans over the River Liffey for approximately 50m.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 PROJECT DESCRIPTION

The proposed development comprises a pedestrian and cycle bridge from the footpath adjacent to the Bank of Ireland car park in Celbridge to the footpath outside the Abbey Lodge public house. The bridge will span over the River Liffey for approximately 50m. It will be constructed directly adjacent to the existing road bridge.

The design and construction comprise a single-span, inclined, open-web truss bridge structure with a modular deck and glass guarding, for pedestrian and cycle crossings only. The deck will be a minimum of 3.5m in width and will also function as a viewing platform and public space. The structure will bear on landings on each bank and will have no structural incidence on the existing road bridge (i.e. there is no requirement for structures or construction works in the River Liffey). The supports at the ends of the proposed pedestrian and cycle bridge, located at Bank of Ireland (north bank of River Liffey) and Abbey Lodge (south bank of River Liffey), will require piled abutments (again, these structures are not located in the River Liffey).

The bridge structure will consist of hollow-section steel inclined open-web trusses supporting purlins and a modular deck structure. The deck will consist of prefabricated planks in a non-slip, low-maintenance material.

The guarding on the river side will consist of inclined panels of security glass 1.4m high with a handrail. On the existing bridge side, the stone parapet will provide the guarding. A 75mm gap between the edge of the deck and the existing bridge will be maintained.

Benches will be provided for public amenity at the widest point of the new structure.

Lighting will consist of LED strip lighting incorporated into the new handrail and illuminating the deck. This system will meet the design requirements for respecting wildlife, especially bat habitats and will be energy efficient.

The depth of the structure (from top chord to bottom cord) will be as shallow as possible, with the depth of structure below the deck level being approximately 1.65m, to avoid obstructing the arches of the stone bridge in the event of a flood.

The river bed will not be impacted by the foundations. The works to the riverbank will be the modification of the top of the retaining walls to tie both ends of the bridge in and the construction of the abutments.

There is no proposed landscaping due to site constraints in this confined urban setting.

No excavation within the riverbed or instream works are required as the bridge will be a clear span structure over the river channel.

Approximately 20m² of permanent land take is required from the Bank of Ireland car park on the north western bank of the River Liffey – including removal of the stub wall and railing, an existing large London Plane tree and an area of planting. There are a number of willow trees on the left bank over which the pedestrian and cycle bridge will span that will need to be trimmed to a reduced height to allow for the installation of the bridge. Car parking spaces may need to be reconfigured; however, the current number of spaces can be maintained. The 20m² required for these works is made up of approximately 17m² of flowerbed and 3m² from car parking spaces. The car park can continue to operate during the works. It is likely that a larger area of the car park would be used temporarily in order to facilitate construction of the bridge. Since October 2021 the Bank of Ireland premises is no longer operational as a bank and its future use is unknown.

Approximately 19m² of permanent land take will be required from Abbey Lodge on the south eastern bank of the River Liffey, 3.5m² of building and 15.5m² of yard – including 2.5m² of stone wall, gate,

gate piers, foul manholes, an outfall from the building and gas connections to the building. These works will require the foul and gas connections to the building to be reconfigured prior to the proposed development works to disable the existing connections. The grease trap for the building will also need to be relocated in advance of the bridge works. This will both facilitate the Abbey Lodge operationally and is also likely to be required in order to install the bridge foundations. These works will take in the order of six weeks to complete.

The 3.5m² required from the building forms part of a 24m² extension to the original building. This extension currently houses customer toilets for the Abbey Lodge. However, there are alternative better quality facilities within the building and the toilets are not required for the operation of this business. In January 2020, the owners of the Abbey Lodge received planning permission from Kildare County Council (KCC) to provide a new customer entrance into the premises from this location. The existing toilets in the extension would become an entrance hallway into the building. The amendments required in order to facilitate the bridge structure would result in the front wall and new entrance doors being rebuilt along a setback line to those shown on their planning drawings.

Once constructed, the bridge deck will drain directly to the river using a crossfall across the bridge deck. All other surface water drainage will drain to the existing road drainage network.

2.1.1 Works to Existing Road Bridge

The proposed development will also require the removal of the narrow footpath on the existing road bridge, the rerouting of telecoms services and the addition of a rubbing strip kerb in lieu of the footpath at the base of the existing rubble-stone parapet wall. The existing road bridge is a protected structure.

There will be the removal of approx. 6m length x 1.1 – 1.5m high of bridge parapet wall and 2.2m return in rubble stonework (outside the Abbey Lodge) in order to allow access to the proposed pedestrian and cycle bridge on the southern side. Additionally, the 4.2m wide front wall and a 1m return of a side extension to the Abbey Lodge will be removed to facilitate access to the bridge.

On the downstream façade of the existing bridge, a Protected Structure, localised maintenance works will consist of the removal of vegetation, repointing of stonework where vegetation has been removed, and repointing of the parapet wall as required by the introduction of two new openings in the parapet wall.

No instream works or land take from within the river is required.

2.1.2 Road and Footpath Upgrades

There will be a requirement to pave and widen existing pathways along the R405 in the site boundary. These widened paths will be surfaced in silver granite flags.

Associated minor road works will include the realignment of kerbs at the bridge ends and the installation of a zebra crossing with belisha beacons and flashing amber signals to Main Street (outside the former Bank of Ireland building).

2.1.3 Other Associated Works

Site Investigations

As part of an advance contract, site investigations will be undertaken at the proposed locations of the two foundations for the proposed pedestrian and cycle bridge either side of the River Liffey. This will involve drilling two boreholes to inform the structural design.

Bridge Maintenance

As part of an advance contract, the existing road bridge will require localised advance maintenance works. These works will include the clearance of growth from the bridge piers and arches on the downstream façade and repointing of the stonework where required by the removal of vegetation.

Such works, which are expected to take two to three weeks, will be carried out from a floating pontoon. Scaffolding may be required on the floating pontoon and there may be a requirement for scaffolding poles to extend to the river bed.

Demolition

There is a 24m² single storey extension to the Abbey Lodge with a flat roof and a door to the side yard. A section of wall (approximately 4.2m wide front wall and approximately 1m of the side wall return) of the Abbey Lodge will need to be demolished and rebuilt in a new location 1m set back from the current wall line. Due to the confined space and proximity to the adjoining building and parapet wall the demolition will be undertaken using hand operated power tools. The demolition will result in the production of masonry rubble, broken glass, waste timber and debris from the flat roof, none of which will be hazardous. The resulting demolition waste will be disposed of offsite at an appropriate licensed facility.

In addition to the modification works to the Abbey Lodge building, there will be a requirement to remove 11m of wall along the road edge (comprising 5m of bridge parapet wall and 6m of wall within the Abbey Lodge yard) and 2.2m of return from the wall on the road edge to the building line. The wall to Abbey Lodge side yard is 1.43m high and 0.51m deep and the main pier is 1.47m high and 0.63 x 0.62m. There are also two smaller piers and a pedestrian gate which will be demolished. The demolition will result in the production of masonry rubble which will not be hazardous. The resulting demolition waste will be disposed of offsite at an appropriate licensed facility.

Accommodation Works to Abbey Lodge

Accommodation works to Abbey Lodge will be required to have taken place in advance of the main construction works. These would take in the order of six weeks to complete. A new grease trap, gas and foul connection would be completed prior to the existing ones being removed so the disruption to the business operations would be minimal and final accommodation works to the former Bank of Ireland car park will be required upon completion of the main bridge works.

2.2 CONSTRUCTION METHODOLOGY AND PROGRAMME

The construction methodology is preliminary and subject to change following the detailed design and preparation of the CEMP by the appointed contractor.

2.2.1 Advance Contract Works

Advance contract works will include site investigations, some localised bridge maintenance works and accommodation works to Abbey Lodge.

2.2.2 Main Contract Works

It is expected that the main construction works to the proposed pedestrian and cycle bridge structure will be carried out in one construction phase over an expected four month construction period commencing in 2022.

The proposed pedestrian and cycle bridge will require piled foundations for the abutments at either end, requiring excavation of approximately 2.0m x 3.0m wide and 1.5m deep on each side of the river. These will be vertical piles and will be installed from road level with no disturbance to the existing bank except for low levels of vibration. Reinforced concrete abutments will then be constructed on top of the piles prior to the installation of the bridge.

The primary truss structure will be assembled remote from the river (e.g. in the Abbey Lodge car park) and be lifted into place in one piece. The individual sections will arrive to the carpark on articulated trucks in lengths of approximately 16.0m (approximately eight loads). The pieces will be assembled into the full span in the eastern side of the car park using a large mobile crane and temporary supports (approximately 10 people would be required on site to complete the assembly). On completion of the assembly of the individual segments a large mobile crane will be set up in the north of the car park. The structure will be slewed out in a counter clockwise direction over the river and positioned into its final location adjacent to the existing road bridge. As the crane will generate large point loads, it is

likely that 4 sections of the existing asphalt surface will need to be removed and backfilled to an approximate depth of 1.0m with stone. This will be reinstated on completion of the works.

The piling and concrete works for the abutments of the pedestrian and cycle bridge will likely take place over the course of approximately four-six weeks. The assembly of the bridge remote from the river will likely take approximately two weeks. The lifting in of the bridge will require one day with at least one day in advance for setting up the crane. The road will likely be subject to a full closure for health and safety reasons during the crane lift due to the scale of the lift which could take up to 6 hours.

The total construction time accounting for site clearance, demolition, piling, concreting, bridge assemble, bridge installation and finishing and tying in will take in the order of four months not including the fabrication of the individual segments of the bridge itself which will be done off site. Prior to commencement of works, the compounds will be set up and traffic management measures will be put in place.

The main phases applicable to the main construction phase of this Proposed Development will include:

- Establishment of site office and compounds at the former Bank of Ireland car park and the Abbey Lodge car park;
- Mobilisation of construction plant;
- Implementation of bio security measures;
- Site clearance and preparation;
- Establishment of appropriate traffic control measures to provide adequate separation and protection of work areas from live traffic on the R405;
- Excavation to formation level for foundations and footpath tie-ins;
- Establishment of the crane on site, lifting in of the bridge structure, securing of the bridge structure in place;
- Placing of secondary steel, decking and other surface features of the bridge;
- Construction of footpaths to tie-in to the bridge structure; and
- Hard landscaping works following the completion of principal bridge related works.

2.2.3 Temporary Construction Compounds

Two temporary construction compounds will be located within the former Bank of Ireland car park and the Abbey Lodge car park.

- Bank of Ireland car park – The former Bank of Ireland car park will be required in order to complete the foundations of the bridge on one side of the river. It could also be used as a small compound by the contractor while works are on site. Depending on the works methodology of the contractor, this is a possible location for siting a crane during the secondary structure bridge lift. It is bounded by buildings on two sides, wall and railing on one side and railing, outside of which is the River Liffey on one side.
- Abbey Lodge car park – A pay and display car park for the Abbey Lodge public house. Depending on the works methodology of the contractor, this is a possible location for siting the crane during the superstructure bridge lift. The area is bounded on one side by trees and shrubs, on one side by the R403 road, on one side by the River Liffey and on one side by the Abbey Lodge Public House.

Materials and plant required for the works are anticipated to be stored in the compounds at a minimum setback distance of 10m from the river bank. All storage areas will be appropriately bunded where required. Fuelling of plant is anticipated to be in a designated fuelling area within the compound. The compound will provide for the following:

- Welfare/office facilities for site staff;
- Plant/machinery parking/storage area;
- Fuel storage/refuelling area;
- Segregated waste area; and
- Construction staff parking.

2.2.4 Surface Water Management

During construction, where surface water drainage arises, it will be contained and managed to ensure no run-off from works enters either the river or the existing road network. Once constructed, the surface water drainage will drain to the existing road drainage network.

2.2.5 Construction – Access to Properties

Access to properties will be maintained throughout the construction phase. However, there will be restrictions to some properties, including the former Bank of Ireland and Abbey Lodge, and/or disruption to utilities during certain periods but these will be minimised to avoid significant impacts and communicated to affected parties in advance. The utilities that will be temporarily disrupted will be the private gas and foul connections to Abbey Lodge during transfer to a new connection, and the Eir that crosses the existing road bridge, which will require some diversion works although it may be possible to do this without disruption to the service.

2.2.6 Environmental Management Measures

A Construction Environmental Management Plan (CEMP) has been prepared for the proposed development, which will be adopted by the appointed Contractor prior to commencement.

The CEMP will form part of the proposed development Works Contract. The methods and principles contained within the CEMP, as well as within referenced legislative instruments and published guidance documents, will be adhered to by the Contractor in developing construction method statements and other plans relating to environmental management as required by the Contract.

This CEMP will be updated following receipt of planning consent to incorporate relevant planning conditions and further details on environmental management measures to be applied during the construction phase. The CEMP will be a key construction contract document, which will ensure that all mitigation measures, which are considered necessary to protect the environment, are implemented.

2.2.7 Completion of Works

Once works are completed traffic management measures shall then be removed and the pedestrian bridge shall be opened.

The site compounds will be removed.

The lands within the site boundaries will be reinstated through top soiling and grass seeding as required.

Materials arising from excavation/demolition will be segregated on site/ stored temporarily/ removed from site and disposed in an approved licenced facility.

The area will be snagged, tidied up and handed over to KCC.

Temporary land take will be returned back to its original use.

3 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

3.1 CEMP Contents

3.1.1 This OCEMP will be used to develop the CEMP by the contractor to meet the requirements of ISO 14001 and all site works will be undertaken in compliance with the CEMP. The CEMP will include details of the topics listed below:

- Environmental Policy
- Environmental Register
- Project Organization and Responsibilities
- Project Communication and Co-ordination
- Training
- Operational Control
- Checking and Corrective Action
- Environmental Protection Measures
- Complaints Procedure
- Environmental Emergency Response Plan
- Concrete Control Procedure
- Fuel and Oil Management Plan
- Protection of Water Resources
- Construction Traffic Management Plan
- Management of Excavation, Spoil, Demolition
- Waste Management Plan
- Construction Noise Management Plan
- Construction Dust Management Plan
- Materials Handling and Storage Plan
- Monitoring and Auditing Procedure
- Environmental Accidents, Incidents and Corrective Actions Procedure
- Invasive Alien Species (IAS) Management

The CEMP sets out the principles to be adhered to and outlines measures that will be implemented during the construction of the proposed development to ensure that potential environmental impacts and disturbance will be minimised or eliminated.

It will be the contractor's responsibility to update and add (where required) specific control measures relevant to the environmental management plan and procedures. The control measures will be amended by improvement with regards to environmental protection and will take cognisance of additional environmental commitments arising from planning conditions or technical investigations carried out as part of the preconstruction stage.

Kildare County Council will oversee the process through appointment of the contractor, resident engineer staff and oversight from the planning and strategic infrastructure project team.

3.1.2 The CEMP will detail all the environmental aspects and impacts associated with this contract such as waste management, pollution prevention, protection of flora and fauna and water quality in watercourses. The Environmental Register provides the framework for identifying the potential environmental impacts generated by construction and the associated works. The environmental procedures and activity specific method statements will detail the working methods necessary for managing and mitigating these impacts, whether it is by prevention or mitigation. Prior to the commencement of construction activities, the environmental procedures and activity-specific method statements will be completed to provide site specific requirements at the location of the proposed pedestrian and cycle bridge.

3.2 ENVIRONMENTAL POLICY

3.2.1 If the contractor does not already have an environmental policy, they will be required to develop an Environmental Policy with consideration for impacts on the natural and built environment. All

project personnel will be accountable for the environmental performance of the Proposed Development and will be made aware of the Environmental Policy at induction. The environmental policy will consider and make commitments with regard to the protection of biodiversity, emissions to the atmosphere, maintenance of water quality, resource usage, energy consumption and waste management.

3.3 ENVIRONMENTAL REGISTER

3.3.1 Once appointed, the Contractor will prepare a register of all sensitive environmental features which have the potential to be affected by the construction works, together with details of commitments and agreements made during the planning process and the Contract Documentation, with regards mitigation of potential environmental impacts.

3.3.2 The Environmental Register provides the relevant information for the preparation of construction method statements and will be regularly updated during the works.

3.3.3 The Environmental Register will consider sensitive environmental features as listed below (please note this list is not exhaustive and will be amended and expanded upon as required by the contractor).

- Identification off all waterways for the protection against ingress of suspended solids or any pollutant;
- Air emissions;
- Noise and Vibration emissions;
- Light emissions;
- Sanitary and domestic sewage discharge;
- Waste generation;
- Treatment of contaminated materials’;
- Treatment of Asbestos Containing Materials;
- Treatment of invasive species;
- Use of hazardous materials;
- Energy usage;
- Water usage;
- Discharge of wastewater;
- Traffic generation;
- Biodiversity;
- Landscape and Visual impacts;
- Soils, Geology and Hydrogeology;
- Archaeology, Architectural and Cultural Heritage

3.4 PROJECT ORGANISATION AND RESPONSIBILITY

3.4.1 The Contractor appointed by Kildare County Council to undertake the construction works shall be responsible for developing, and managing, the project specific Construction Environmental Management Plan (CEMP) incorporating the methodologies described in this preliminary plan. The plan will be developed in consultation with Kildare County Council.

3.4.2 The contractor shall be responsible in ensuring that all members of the Project Team, including sub-contractors comply with the procedures set out in the CEMP. The Contractor will ensure that all persons working on site are provided with sufficient training, supervision and instruction to fulfil this requirement.

3.4.3 The Contractor will ensure that all persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

3.4.4 The adopted CEMP will define the roles and responsibilities of the project team. The overall responsibility lies with the Site Manager whose responsibility it will be to approve key personnel

required for employment on the Proposed Development. They will liaise with the Site Environmental Manager (SEM).

3.4.5 The Project Manager

The Project Manager will lead the works on site. They will be responsible for the management and control of the activities and will have overall responsibility for the implementation of the CEMP. They will be assisted in this by the Site Environmental Manager.

3.4.6 Site Manager

A site manager will be appointed by the contractor to over-see the day-to-day management of working areas within the site. The Site Manager's environmental management responsibilities include, but are not limited to:

- Close liaison with the Site Environmental Manager (SEM) to ensure adequate resources are made available for implementation of the CEMP;
- Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor's project staff;
- Ensure that all personnel undergo suitable and sufficient environmental induction prior to starting work;
- Undertake a programme of regular environmental inspections in liaison with the SEM and site staff;
- Ensuring that the risk assessments for control of noise and environmental risk are prepared and effectively monitored, reviewed and communicated on site;
- Managing the preparation and implementation of method statements; and
- Ensuring that the SEM reviews all method statements and that relevant environmental protocols are incorporated and appended.

3.4.7 Site Environmental Manager

A Site Environmental Manager will be appointed by the contractor to ensure that the CEMP is effectively implemented. The main duties and responsibilities of the SEM include and are not limited to the following:

- Liaise with the Site Manager during the finalisation of the CEMP to assign individual duties and responsibilities bearing in mind the overall organisational structure, the nature of the Environmental Commitments and Requirements and the Project specific characteristics;
- Ensuring that the CEMP is finalised, implemented and maintained;
- Liaising with Kildare County Council's Environmental Manager on all Method Statements, any alterations to live documents and any other works;
- Being familiar with the information in the pre-construction surveys, construction requirements, the competent authority's decision, and all relevant Method Statements;
- Being familiar with the baseline data collated during the compilation of the planning documentation;
- Assisting management in liaising with the Kildare County Council and the provision of information on environmental management during the construction of the Proposed Development;
- Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP, to individual members of the main contractor's project staff;
- Overseeing, ensuring coordination and playing a lead role in third party consultations required statutorily, contractually and in order to fulfil best practice requirements;
- Liaising with management in agreeing site specific Method Statements with Third Parties;
- Ensuring that all relevant works are undertaken in accordance with the relevant legislation;
- Bring any legal constraints that may occur during certain tasks to the attention of management;
- Keeping up to date with changes in environmental practices and legislation and advising staff of such changes and incorporating them into the CEMP;
- Hold copies of all permits and licenses provided by waste contractors;

- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc have appropriate authorization;
- Gathering and holding documentation with respect to waste disposal;
- Liaising with contactors and consultants prior to works;
- Procuring the services of specialist environmental contactors when required;
- Ensuring that all specialist environmental contactors are legally accredited and proven to be competent;
- Ensuring that environmental induction training is carried out on all personnel on site and ensuring that toolbox talks include aspects of environmental awareness and training;
- Respond to all environmental incidents in accordance with legislation, the CEMP and company policy/procedures;
- The SEM is responsible for notifying the relevant statutory authority when environmental incidents occur and producing the relevant reports as required;
- Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licenses, certificates and planning permissions;
- Carrying out regular documented inspections of the site to ensure that work is being carried out in accordance with the CEMP and relevant site-specific Method Statements;
- Responsible for reviewing all environmental monitoring data and ensuring that they all comply with stated guidelines and requirements; and
- Liaising with management in preparing and inspection of site-specific method statements for activities where there is a risk of pollution or adverse effects on the environment.

3.4.8 Project Ecologist / Ecological Clerk of Works (EcCoW)

A suitably qualified Ecological Clerk of Works (EcCoW) / Project Ecologist will be appointed to oversee the implementation of the mitigation measures and pre-construction surveys as outlined in Section 4.1.3 on biodiversity. In particular, the EcCoW will have responsibility for the implementation and overseeing of ecological mitigation measures and ensuring that activities on site are conducted in accordance with the agreed method statements and planning conditions as they pertain to ecological matters and specifically any works which have potential to impact on the River Liffey such as the bridge maintenance requirements for clearing of vegetation. Should the ECoW identify any failure to comply with the requirements of this document or the Contractor's own method statements the EcCoW will have the power to stop the associated works.

3.4.9 Project Archaeologist

The archaeologist will be appointed by Kildare County Council to undertake a programme of archaeologist testing/surveys as required in advance of construction (see Section 4.1.10) and provide advice throughout the construction phase as appropriate.

3.4.10 Design Manager

The main duties and responsibilities of the Design Manger having regard to the implementation of the CEMP:

- Be familiar with the CEMP and relevant documentation referred to within; and
- Participate in Third Party Consultations and liaising with third Parties through the SEM;

3.4.11 Supervisors

The supervisors' environmental management responsibilities include, but are not limited to:

- Ensuring all personnel affected by a method statement are briefed and fully understand it's content;
- Monitoring operatives for compliance, including sub-contract operatives;
- Implementing environmental management activities required by the CEMP and works method statements;
- Ensuring that all inspections are carried out as prescribed in the CEMP;
- Ensuring that the procedures agreed during third party consultations are followed;
- Reporting immediately to the SEM any incidents where there has been a breach of agreed environmental management procedures, where there has been a spillage of a potentially

environmentally harmful substance, where there has been an unauthorised discharge to ground, water or air, damage to habitat, etc.

- Attending environmental review meetings and preparing any relevant documentation as required by management.

3.4.12 All Project Personnel

All project personnel have the following responsibilities:

- Attend environmental training as required;
- Reporting immediately to their supervisor or SEM any spillage incidents or observations regarding adverse effects to the environment.

3.5 PROJECT COMMUNICATION AND CO-ORDINATION

3.5.1 Environmental issues and performance aspects will be communicated to the workforce on a regular basis. Weekly project meetings, which follow a set agenda incorporating the environment, will be held alongside overall management meetings.

3.5.2 All staff and sub-contractors involved in all phases of the Proposed Development will be encouraged to report environmental issues.

3.6 TRAINING

3.6.1 All employees and subcontractors involved with the Proposed Development will be given a comprehensive induction prior to commencement of the works on site which will include environmental awareness training. Ongoing training will be provided to communicate the main provisions of this environmental plan to all site personnel. Two-way communication will be encouraged to promote a culture of environmental protection.

3.6.2 Training will include:

- Overview of the Environmental Manager and their role;
- Overview of the goals and objectives of the Environmental Policy and Construction Environmental Management Plan;
- The contents of the CEMP, the environmental procedures therein, and the consequences of departure from the procedures therein;
- Environmental buffers and exclusion zones;
- Housekeeping of materials and waste storage areas;
- Environmental emergency response plan;
- Awareness in relation to risk, consequence and methods of avoiding environmental risks as identified within the Environmental Register and with the planning conditions;
- The requirements of due diligence and duty of care;
- Requirements associated with community engagement and stakeholder consultation;
- Identification of environmental constraints and notable features related to the site; and
- Procedures associated with incident notification and reporting.

3.6.3 A record will be kept of a signed register on the project files of all attendees of the environmental induction and other training.

3.6.4 Toolbox talks based on specific activities being carried out will be given to personnel by the nominated project representative. These will be based on specific activities being carried out and will include environmental issues, particularly in relation to the Proposed Development, including the impact on water quality namely:

- Oil/Diesel spill prevention and safe refuelling practice;
- Storage of materials including oil/diesels and cement;
- Emergency response processes used to deal with spills;
- Minimising disturbance to wildlife;

- Consideration of importance of containment of vehicle washing, containments of concrete /cement / grout washout etc, bank protection using hessian to prevent excessive scour and mobilisation of suspended solids, maintenance of vegetation corridors etc.

3.7 OPERATIONAL CONTROL

3.7.1 Site works will be checked against the CEMP requirements. Any mitigation measures that have been agreed with the statutory authorities, or are part of planning conditions, will be put into place prior to the undertaking of the works for which they are required, and all relevant staff will be briefed accordingly.

3.7.2 Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager and where necessary the relevant environmental specialists. All method statements for works in, near or liable to impact on a waterway must have prior agreement with Inland Fisheries Ireland (IFI) and the National Parks and Wildlife Service (NPWS).

3.7.3 A Quality Management System (QMS) will also be put into operation for the Proposed Development. Document control will be in accordance with this QMS and copies of all audits, consents, licences, etc will be maintained by the SEM and their team and kept on site for review at any time.

3.8 CHECKING AND CORRECTIVE ACTION

3.8.1 Daily inspections of the site and the works will be undertaken to minimise the risk of environmental damage and to ensure compliance with the CEMP. Any environmental incidents are to be reported immediately to the Site Supervisor. The SEM will undertake periodic inspections and complete an assessment of the Proposed Development's environmental performance with regard to the relevant

standards/legislation and the contents of the CEMP. Following these inspections, the SEM will produce a report detailing the findings which will be provided to the Client Project Manager and reviewed at the following project meeting.

3.9 ENVIRONMENTAL CONTROL MEASURES

3.9.1 Licensing requirements will be in place and specific procedures to manage the key environmental aspects of the Proposed Development (as detailed in the environmental register) will be developed by the contractor prior to work commencing. Environmental control and mitigation measures are covered in Section 4.1.

3.10 COMPLAINTS PROCEDURE

3.10.1 The SEM or a nominated liaison officer will be available for members of the public or interested parties to make complaints or inquiries about the construction works. The CEMP will contain details of the complaints procedures and a monitoring system will be implemented to ensure that any complaints are addressed and comments are documented, so that a satisfactory outcome is achieved for all parties.

3.11 Environmental Emergency Response Plan

In the event of an environmental emergency, all personnel will react quickly and adhere to this procedure (to be adopted by contractor). The following outlines the information, on the types of emergency, which must be communicated to site staff:

- Release of hazardous substance – fuel or oil spill.
- Concrete spill or release of concrete.
- Flood event – extreme rainfall or river level event.
- Environmental buffers and exclusion zones breach.
- Housekeeping of materials and waste storage areas breach.
- Stop work orders due to environmental issue or concern (e.g. threat to ecological feature).
- Fire on site (cross reference site safety emergency plan as appropriate).

3.12 Concrete Control Procedure

Concrete will be used for the bridge abutments and foundations. The following measures will be implemented to prevent concrete entering watercourses:

- Batch loads of concrete will be delivered on an as needed basis.
- Small batch concrete loads will be delivered to the specific construction locations by mini dumper.
- Trucks that deliver concrete to site will be washed out at the supplier's facilities and not on site.
- A designated trained operator experienced in working with concrete will be employed during concrete pouring from storage silos.
- Concrete pours adjacent to the River Liffey will only be conducted in dry weather.

See also measures listed under 'Avoid concrete loss to water' in Table 4.1.

3.13 Fuel and Oil Management Plan

The appointed contractor will implement a fuel management plan which will incorporate the following elements:

- Mobile bowsers, tanks and drums stored in a secure, impermeable storage area, away from the river, drains and open water in the construction compounds.
- Fuel containers stored within a secondary containment system, e.g. bund for static tanks or a drip tray for mobile stores in the construction compounds.
- Ancillary equipment such as hoses, pipes contained within the bund.
- Taps, nozzles or valves fitted with a lock system.
- Fuel and oil stores including tanks and drums regularly inspected for leaks and signs of damage.
- Designated trained operators authorised to refuel plant on site, and emergency spill kits present at equipment for all refuelling events.
- Procedures and contingency plans set up to deal with emergency accidents or spills.
- Emergency spill kit with oil boom, absorbers, etc kept on site in the event of an accidental spill.

3.14 Protection of Water Resources

(A) SILT

- Excavations: Excavations for the Proposed Development will be minimal in size, and it is not expected that there will be any significant accumulation of water within the excavations. Where water does enter excavations, it shall be pumped to a silt buster or settlement tank and then discharged to the surface water network. Personnel and/or plant will not disturb water in a local excavation. No excavations will be required within the river channel itself.
- Spoil heaps: Spoil heaps will be located, protected and stabilised in a way that will avoid the risk of contamination of drainage systems and local watercourses.
- Site roads will be kept free from dust and mud deposits. In dry weather dust suppression measures will be utilised.
- Dealing with silty water: Water will not be pumped directly into the Liffey or surface water drains. Adequate provision for dealing with very silty water will be put in place (see "Excavations" above).

See also measures listed under 'Control of sediment loss' in Table 4.1.

(B) CONCRETE

In the event of a spillage on site, the material will be contained (using an absorbent material such as sand or soil or commercially available booms). All spillages will be reported to the project manager who will inform the relevant authorities in the event of a significant occurrence. No concrete works will take place over the river channel itself.

See also measures listed under 'Avoid concrete loss to water' in Table 4.1.

(C) DELIVERIES

- Special care will be taken during deliveries, especially when fuels and hazardous materials are being handled.
- All liquid deliveries will be supervised by a responsible person to ensure that (1) storage tank levels are checked before delivery to prevent overfilling and (2) the product is delivered to the correct tank.
- Contingency plans will be agreed and suitable materials available to deal with any incident.
- All employees will be briefed on the actions required in the event of a spillage.
- Spillages will be recorded and advised to the project manager who will inform local authorities if they deem it significant.

(D) REFUELLING

- Mobile plant will be refuelled in the construction compounds, on an impermeable surface away from any drains or watercourses. A spill kit will be available at this location.
- Hoses and valves will be checked regularly for signs of wear and turned off and securely locked when not in use.
- Generators, diesel pumps and similar equipment will be placed on drip trays to collect minor spillages. These will be checked regularly, and any accumulated oil removed for disposal.

See also measures listed under 'Avoid hydrocarbon loss to water' in Table 4.1.

(E) STORAGE

- All fuel, oil and chemical storage will be sited on an impervious base within a bund and secured within the construction compounds.
- The base and bund walls will be impermeable to the material stored and of an adequate capacity.
- Leaking or empty oil drums will be removed from the site immediately and disposed of via a licensed waste disposal contractor.
- The contents of any tank will be clearly marked on the tank, and a notice displayed requiring that valves and hoses be locked when not in use.
- All valves and hoses will be protected from vandalism and unauthorised interference and turned off and securely locked when not in use.
- Any tanks or drums will be stored in a secure container or compound, which is to be kept locked when not in use.
- Bowsers will be stored within site security compounds when not in use.

3.15 Construction Traffic Management Plan

The appointed contractor will prepare a detailed traffic management plan in response to the requirements set out in this plan and prior to the works commencing.

- The plan will include provision for liaison with the community, the local authority and the Gardaí where required.
- A specific plan will be produced for the day of the bridge installation to include provision for liaison with the community, the local authority and the Gardaí where required.
- Details of site access and any site traffic rules will be identified, including security, parking, loading, unloading, and required speed.
- Details of equipment delivery will be provided.
- Site operating hours (including delivery) to be outlined.

3.16 Management of Excavation and Spoil

For the management of excavation and spoil, the contractor will:

- Erect all protective fencing.

- Implement the surface water management plan (including the installation of drainage infrastructure) prior to excavation and include areas dedicated to spoil storage with the drainage infrastructure.
- Ensure all spoil and excavated materials will be stored in the construction compounds.
- Ensure stockpiles and adjacent features of drainage infrastructure will be monitored and maintained appropriately.

3.17 Waste Management Plan

The following wastes may be generated during the construction of the Proposed Development:

- Construction waste (materials, concrete, stonework, blockwork, timber, steel, asphalt etc.)
- Waste fuels; oil/diesel.
- Paper/cardboard.
- Non-hazardous office and canteen waste.
- Wastewater from office and welfare facilities.

Wastes will be segregated and stored in allocated tanks, bins, skips or areas within the construction compounds. The appointed contractor will finalise all storage areas and employ licensed contractors for the appropriate waste collections. The appointed contractor will ensure all permits and licences are in place and maintain relevant copies in the site office. Wastewater from holding tanks will be collected by an appropriate licensed contractor. Construction materials will be stored and managed in a way which promotes waste minimisation, including segregating materials for re-use.

3.18 Construction Noise Management Plan

The appointed contractor will ensure that impacts from noise are minimised. The following measures will be communicated to all staff on site:

- All plant and machinery will be maintained to ensure noise emissions are negated and in line with relevant standards.
- Construction personnel will not leave plant and machinery running unnecessarily or operating outside of agreed operational hours.
- Piling works will be monitored to ensure acceptable noise and vibration limits are adhered to.

3.19 Construction Dust Management Plan

The appointed contractor will ensure that impact from dust is minimised. The following measures will be communicated to all staff on site:

- All plant and machinery will be maintained to ensure that dust and air emissions are negated and in line with relevant standards.
- Construction personnel will not leave any plant and machinery running unnecessarily or operating outside of agreed operational hours.
- Aggregate of not less than 5mm grade will be used in construction materials for the on-site road network.
- Dust suppression measures will be implemented in prolonged, dry and windy periods.

3.20 Materials Handling and Storage Plan

The appointed contractor will ensure that the handling of materials and their storage meets regulatory and site requirements.

The plan will include:

- Layout proposal for the construction compounds including the location of contractor cabins, site offices, storage containers and open-air laydown areas.
- Adherence to safety and storage of equipment and materials.

- Safe transfer and placement of equipment in accordance with approved handling methods, and will be subject to a method statement.

3.21 Monitoring and Auditing Procedure

Checklists for daily environmental monitoring will include (but are not limited to) confirmation that fuel is stored appropriately, that management rules are adhered to, all environmental buffers are maintained, sediment and erosion control measures of the surface water management plan are in place and functioning.

All environmental records, including completed checklists, will be retained at the site office.

3.22 Environmental Accidents, Incidents and Corrective Actions Procedure

Environmental accidents and incidents occurring on site during the works will be reported, recorded and investigated. Corrective actions will be put in place and expeditiously closed out.

This procedure will be updated (by the appointed contractor) to include the relevant personnel responsibilities and reporting structure and the finalised procedure will be communicated to all personnel.

Environmental accidents and incidents may include but are not limited to:

- Accidents involving a spill of fuel or concrete from delivery truck (emergency response required).
- Spills of fuel and oil (minor).
- Waste or rubbish not in dedicated waste areas.
- Breach of any buffers (archaeological, ecological, watercourse).
- Failure of any control measures (e.g. silt fences collapsed in a storm).
- Unplanned vehicle movement off the access tracks.
- Unplanned vehicle movement within a buffer zone.

4 ENVIRONMENTAL COMMITMENTS

Project Environmental mitigation will be detailed in the final Construction Environmental Management Plan (CEMP) in accordance with this outline CEMP. The final CEMP will provide a framework for compliance auditing and inspection to ensure that these construction practices and mitigation measures are adhered to.

4.1 MITIGATION MEASURES

4.1.1 Traffic and Transportation

The following mitigation measures relating to traffic and transportation will apply during the construction phase of the Proposed Development:

- The contractor will implement health and safety measures in relation to the safety of the workforce and the public. Additionally, measures will be applied to minimise traffic delays, disruption and maintain access to residences and businesses, and must meet the approval of Kildare County Council's Roads Department.
- In the event that other infrastructure projects are taking place concurrently within the vicinity of this Project, traffic management and phasing of works and transport/haulage routes will be co-ordinated by all stakeholders through the various construction stages. The appointed contractor's Construction Traffic Management Plan (CTMP) will be required to be agreed and approved by Kildare County Council prior to construction.

4.1.2 Population and Human Health

The following mitigation measures relating to population and human health will apply during the construction phase of the Proposed Development:

- A Construction Environmental Management Plan (CEMP) and the Construction Traffic Management Plan (CTMP) will be implemented as part of the construction stages to account for all works associated with the construction of the Project, including pre-construction site clearance works. These documents will address likely human health risks and ensure construction practices and measures are put in place to minimise any effects on road users. The overall aim is to minimise risk to population and human health during construction works;
- A CTMP will be submitted for approval to Kildare County Council by the appointed contractor prior to the commencement of any construction works as part of the Environmental Management Plan. This plan will ensure that temporary traffic works and road safety measures will be put in place during the construction of the Proposed Development and in particular during which the superstructure of the bridge is being lifted into position by a crane. The plan will ensure that the required diversions and traffic management measures are put in place to minimise the impact on local road users. The CTMP will also inform the Contractor of the relevant guidance documentation which will need to be followed during the construction phase;
- A Construction Waste Management Plan will also be prepared by the contractor and approved by Kildare County Council prior to the works. This will address all types of material to be disposed of and will ensure that the removal of waste from site is carried out in line with the relevant waste and environmental management legislation;
- All construction areas, including the proposed temporary construction compounds, will be suitably fenced and screened, and access to the site will be limited to authorised personnel in the interest of public health and safety; and
- Safe working practices, in accordance with the relevant legislation, will be in place during the Construction Phase to protect the workers and visitors to the construction sites.

4.1.3 Biodiversity

The following mitigation measures relating to the protection of biodiversity will apply during the construction phase of the Proposed Development:

A comprehensive construction method statement must be prepared by the contractor and reviewed and approved by the relevant statutory authorities e.g. Kildare County Council, as necessary before any works take place. This will be informed by the specific mitigation measures detailed in Table 4.1 and the guidance documents and best practice measures listed below:

- H. Masters-Williams et al (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532). CIRIA.
- Murnane et al (2002) Control of Water Pollution from Construction Sites - Guide to Good Practice. SP156.
- IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Inland Fisheries Ireland, Dublin.

Table 4.1: Table of Construction Phase Mitigation Measures

Objective(s)	Measure	Details of Mitigation
Riparian Woodland	Timing of works	Where practicable, no clearance of trees on site will occur during the bird breeding season from 1 st March to 31 st August. Pre-construction bird surveys will take place prior to works commencing where works during the breeding season are unavoidable. If any active nests are discovered then work in the immediate vicinity of the nest will cease and an appropriate buffer zone will be established which will be left in place until it has been confirmed that the young have fledged.
Avifauna	Timing of works	Where practicable, no clearance of trees on site will occur during the bird breeding season from 1 st March to 31 st August. Pre-construction bird surveys will take place prior to works commencing where works during the breeding season are unavoidable. If any active nests are discovered then work in the immediate vicinity of the nest will cease and an appropriate buffer zone shall be established which will be left in place until it has been confirmed that the young have fledged.
Bats	Appropriate use of lighting	Where construction lighting is required, lighting will be directed away from the existing dry arch in the road bridge and all woodland and aquatic habitats to be retained. Directional lighting (i.e. lighting which only shines on the proposed project and not nearby countryside) will be used to prevent overspill. This will be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only.
Otter	Pre-construction survey	Pre-construction otter surveys will be undertaken prior to the commencement of any works in order to identify any changes in otter activity and holt locations since surveys for this report were completed to address possible impacts on otters. It is also important to ensure that no new holts have been created in the intervening period. The removal of otters from affected holts, and the subsequent destruction of these holts, can only be conducted under a Section 25 derogation under the 1997 Habitats Regulations. Derogations are also required for any works likely to cause disturbance to active breeding holts (when present within c.150m of a project /scheme). In the event of otter holts being identified within proximity to the proposed works area, the following mitigation measures are proposed to ensure no disturbance of the local otter population during the construction phase of the proposed works (NRA 2008):

Objective(s)	Measure	Details of Mitigation
		<ul style="list-style-type: none"> No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place – provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site. No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence. The prohibited working area associated with otter holts should, where appropriate, be fenced with temporary fencing prior to any possibly invasive works. Appropriate awareness of the purpose of the enclosure should be conveyed through notification to site staff and sufficient signage should be placed on each exclusion fence. All contractors or operators on site should be made fully aware of the procedures pertaining to each affected holt. Where holts are present in close proximity to invasive construction works but are determined not to require destruction, construction works may commence once recommended alternative mitigation measures to address otters have been complied with.
Aquatic Ecology	<p>Good practice during construction; Appointment of an EcCoW. Agree method statements with IFI in advance of works.</p>	<ul style="list-style-type: none"> Implementation of the measures outlined in the “<i>Guidelines on protection of fisheries during construction works in and adjacent to waters</i>” (IFI, 2016). All method statements for the works will be developed to adhere to the measures outlined in these guidelines. An Ecological Clerk of Works (EcCoW) will be appointed to supervise advance bridge maintenance works and as required during the construction phase. The EcCoW will be given the power to monitor and stop works if necessary (see Section Error! Reference source not found..9). In advance of all works, IFI will be consulted on the proposed construction method statements and any further requirements stipulated will be adhered to.
Control of sediment loss	<p>Best practice during construction (silt control measures)</p>	<ul style="list-style-type: none"> The Contractor will be required to implement industry best practice pollution prevention measures in accordance with guidance documents (for example CIRIA 2001 Guideline Document C532 Control of Water Pollution from Construction Sites, during construction in order to control the risk of pollution to surface waters. There will be no direct discharge of surface water from any element of the works without suitable attenuation and treatment.

Objective(s)	Measure	Details of Mitigation
		<ul style="list-style-type: none"> • Excavations: Water will be prevented from entering local excavations. Personnel and/or plant will not disturb water in a local excavation. The means of dewatering excavations in the event there is ingress will include settlement tanks or a silt buster stream if required to ensure that any dewaterings do not increase background suspended solids levels in the receiving environment. No excavations will be required within the river channel itself. • Spoil heaps: Spoil heaps will be located, protected and stabilised in a way that will avoid the risk of contamination of drainage systems and local watercourses. • Site roads will be kept free from dust and mud deposits. In dry weather dust suppression measures will be utilised. • Excavated material will be segregated into inert, non-hazardous and/or hazardous fractions. • The excavation and handling of inert material will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. • Silty water management: Water will not be pumped directly into the Liffey or surface water drains. Adequate provision for dealing with very silty water will be put in place (see “Excavations” in first paragraph above).
<p>Avoid hydrocarbon loss to water</p>	<p>Best practice during construction (hydrocarbons)</p>	<ul style="list-style-type: none"> • Routine practice and procedures to prevent pollution of the environment will apply throughout the duration of the construction phase. These include: • A CEMP will be prepared and implemented by the appointed Contractor. • During the construction stage, standard construction and site management practices will be implemented by the Contractor through the CEMP. • All material including oils, solvents and paints will be stored within temporary bunded areas or dedicated bunded containers. • Refuelling will take place in a designated bunded area away from surface water gullies, drains and water bodies, in the event of refuelling outside of this area, fuel will be transported in a mobile double skinned tank. • All machinery and plant used will be regularly maintained and serviced and will comply with appropriate standards to ensure that leakage of diesel, oil and lubricants is prevented. • Spill kits and hydrocarbon absorbent packs will be available and drip trays will be used during refuelling. • Ongoing monitoring of the water receptors throughout the works.

Objective(s)	Measure	Details of Mitigation
		<ul style="list-style-type: none"> • Mobile plant will be refuelled in the construction compounds, on an impermeable surface away from any drains or watercourses. A spill kit will be available at this location. • Hoses and valves will be checked regularly for signs of wear and turned off and securely locked when not in use. • Generators, diesel pumps and similar equipment will be placed on drip trays to collect minor spillages. These will be checked regularly, and any accumulated oil removed for disposal. • Fuel will be stored in the temporary construction compound, which will be located within the former Bank of Ireland car park or Abbey Lodge car park. All chemical and fuel filling locations will be protected from potential spillages through the provision of appropriate protection measures including bunded areas and double skinned bowser units with spill-kits. • Protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance with the TII/NRA document "Guidelines for the crossing of watercourses during the construction of National Road Schemes".
<p>Avoid concrete loss to water</p>	<p>Best practice during construction (concrete)</p>	<ul style="list-style-type: none"> • Best practice will be employed in bulk-liquid concrete management addressing pouring and handling; secure shuttering / form-work and using adequate curing times. • Where shuttering is used, measures will be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils. • Disposal of raw or uncured waste concrete will be controlled using approved waste disposal and/or concrete wash-out pits to ensure that seepage to drains from the site is avoided. • Cement dust must be controlled as it is alkaline and harmful if enough of it settles on drainage water and is transported to nearby watercourses. Activities which result in the creation of cement dust must be controlled by dampening down areas. • In the event of a spillage on site, the material will be contained (using an absorbent material such as sand or soil or commercially available booms). All spillages will be reported to the project manager who will inform the relevant authorities in the event of a significant occurrence. No concrete works will take place over the river channel itself. • Implementation of An Environmental Incident and Emergency Response Plan (see Section Error! Reference source not found.) including spill prevention control procedures. In

Objective(s)	Measure	Details of Mitigation
		the event of a spillage on site, the material will be contained (using an absorbent material such as sand or soil or commercially available booms). All spillages will be reported to the project manager who will inform the relevant authorities in the event of a significant occurrence.
Protection of river bed disturbance	Best practice during maintenance	<ul style="list-style-type: none"> All works will be undertaken in accordance with the IFI guidance (Guidelines On Protection Of Fisheries During Construction Works In And Adjacent To Waters (IFI, 2016)); Bridge maintenance works will be conducted from July to Sept in accordance with the IFI 2016 guidance (i.e. outside salmonid spawning season); The pontoon will be positioned under the work area to catch falling debris from the arches. Netting will be used to catch falling debris; and The Contractor will be required to agree the method statement for the works with the IFI in advance of works taking place.

Invasive Species

The Third Schedule IAS species Himalayan Balsam is located upstream of the proposed works. The proposed works shall be sited to avoid all Third Schedule¹ invasive non-native species. Great care will be taken at all times to ensure that plant material (i.e. fragments of stems, leaves and roots) is not spread while carrying out the proposed works.

The infested area shall be fenced-off and appropriate signage erected by a suitably qualified ecologist/IAS management specialist.

The contractor shall include measures to avoid the spread of IAS within the CEMP. The IAS measures within the CEMP will contain the intended construction methodology for avoiding the spread of viable reproductive material of Himalayan Balsam and other species (i.e. leaves, stems and roots) and will follow best practice guidance documents. The CEMP shall include appropriate biosecurity measures to avoid the introduction of invasive alien plant species into the site. Management options for the control of Himalayan Balsam are as follows:

There are four main management options for Himalayan Balsam:

1. Best practice avoidance and biosecurity measures;
2. Physical or mechanical control;
3. Chemical control;
4. Excavation and burial on-site or disposal off-site.

The Himalayan Balsam is located upstream of the existing road bridge. As such, the current preferred option is avoidance. A pre-construction IAS survey shall be undertaken to establish the location of IAS in relation to the footprint of the works. Following the results of the pre-construction survey, should avoidance not be feasible, physical control of the infestation can be undertaken.

The Himalayan Balsam infestation at the proposed site is small. Hand pulling of Himalayan Balsam is considered to be the most effective treatment option for smaller stands as the species is shallow rooted (10-15cm). It is also the best method where the species occurs in mixed-stands of vegetation.

¹ <http://www.irishstatutebook.ie/eli/2011/si/477/made/en/print>

Hand pulling should be carried out in late April or May² when plants can be easily identified but will not have developed seedpods. The plant stems should be gripped 0.5 metres above ground and carefully pulled which will normally remove the entire root. While the species does not spread by vegetative means, e.g. from fragments of root or stem, uprooted plants left in moist conditions can re-root from nodes on the stem. The plants removed should be placed in an area away from any watercourses and covered with light blocking material e.g. jute. By blocking out light the plants will degrade naturally, eliminating the potential to re-root or set seed. The infested area should be regularly monitored for new growth during this time. It is still possible to hand-pull isolated plants after they have flowered, but the plant tops should be covered with a plastic bag to prevent seed spread.

General Protective Measures

In addition to the measures outlined above for Himalayan Balsam, the following best practice avoidance measures shall be implemented by the Contractor which will help to contain and/or prevent the introduction of invasive species on the site as follows:

- All plant and equipment employed for the proposed development (e.g. diggers, tracked machines, footwear etc.) shall be thoroughly cleaned down using a power washer unit, and washed into a dedicated and contained area prior to arrival on site and on leaving site to prevent the spread of invasive aquatic/riparian species such as Japanese knotweed *Fallopia japonica* and Himalayan Balsam *Impatiens glandulifera*. A sign off sheet shall be maintained by the Contractor to confirm cleaning;
- Material gathered in the dedicated and contained clean down area shall be appropriately treated as contaminated material on site;
- For any material entering the site, the supplier shall provide an assurance that it is free of invasive species;
- Ensure all site users are aware of invasive species measures and prevention and treatment methodologies;
- Provision of toolbox talks before works begin on the site; and
- Adequate site hygiene signage shall be erected in relation to the management of non-native invasive material.

The Contractor will be required to prepare and implement an Invasive Species and Biosecurity Plan, which incorporates the above measures.

4.1.4 Soils, Geology and Hydrogeology

The following mitigation measures relating to the protection of soils, geology and hydrogeology will apply during the construction phase of the Project:

- The construction works will be carried out with the least feasible disturbance of soils, thereby minimising the amount of excavated soil. The inert excavated soil will be reused within the Proposed Development wherever possible.
- Where applicable, design measures will be put forward to minimise the excavation of soil that cannot be reused due to their mechanical properties or contamination;
- All waste produced as part of the proposed development will be dealt with in accordance with the relevant waste and environmental management legislation;
- The contractor will be required to submit a Construction Waste Management Plan (CWMP) to the local authority for approval which will address all types of material to be disposed of;
- Where soil stripping and excavation occurs, the resulting excavated soil fractions will be segregated into material that can be disposed of in the appropriate manner in accordance with Waste Management legislation;
- Excess topsoil, inert soil, and all hazardous soil waste will be separately removed off site to an appropriately licenced facility by a licenced contractor;
- Non-hazardous waste exceeding inert Waste Acceptance Criteria (WAC) will be sent to a licenced non-hazardous landfill for disposal/recovery;

² The Himalayan Balsam at this site was not in flower during the survey undertaken on 14th June 2021

- Construction personnel will be required to wear appropriate Personnel Protection Equipment (PPE) and carry out other protective measures outlined in this OCEMP when handling hazardous waste;
- All associated hazardous waste residuals will be stored within temporary bunded storage areas prior to removal by an appropriate EPA approved waste management contractor for off-site treatment/recycling/disposal. Any other building waste will be disposed of within on-site skips for removal by a licensed waste contractor;
- For the importation of topsoil and imported good-quality granular soils materials, the material will be sourced from nearby sites where possible, in order to reduce transport distances;
- To minimise any impact on the underlying subsurface strata from material spillages, fuels, oils, solvents and paints used during construction will be stored within specially constructed bunded areas or within bunded containers;
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place away from surface water gullies or drains;
- Spill kits and hydrocarbon absorbent packs will be stored in the site compound and relevant personnel will be fully trained in the use of this equipment;
- Fuel for vehicles will be stored in a mobile double skinned tank;
- Silt and sediment barriers will be installed at the perimeter of earthworks construction areas to limit transport of erodible soils outside of the site; and
- Where applicable, all excavated and/or stripped surfaces will be covered with a required depth of topsoil to encourage the growth of the vegetation after the construction stage, in order to eliminate erosion and negative visual impacts.

4.1.5 Hydrology

The following mitigation measures relating to the protection of water quality will apply:

- The CEMP will detail procedures for the control, treatment and disposal of potentially contaminated surface water including monitoring systems and oversight required throughout the construction phase.
- The contractor will be required to implement industry best practice pollution prevention measures in accordance with guidance documents (for example CIRIA Guideline Document C532 Control of Water Pollution from Construction Sites), during both construction and operation in order to control the risk of pollution to surface waters. In addition, pollution of aquatic systems during the construction phase will be reduced by the implementation of the protection measures as outlined in Section 4.1.3 of this OCEMP.

4.1.6 Landscape and Visual

The following mitigation measures relating to the protection of landscape and visual will apply during the construction phase of the proposed Proposed Development:

- Site hoarding will be erected to restrict views of the site and, in particular, at the construction compounds;
- Hours of construction activity will be restricted in accordance with guidance from Kildare County Council;
- The extent of construction lighting will be kept to a minimum in the interests of landscape and visual amenity; and
- Measures outlined in BS 5837:2012 Tress in relation to construction will be implemented to protect retained wooded vegetation in proximity to the construction site.

4.1.7 Noise and Vibration

The Construction Environmental Management Plan (CEMP) shall detail appropriate mitigation measures to manage any risk of noise impacting the community.

The contract documents will clearly specify that the Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures. These measures will typically include:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Vehicles required to wait on site will switch off engines.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screens.
- Location of plant shall consider the likely noise propagation to nearby sensitive receptors.
- During the course of the construction programme, supervision of the works will include ensuring compliance with the noise limits prescribed.

Construction vibration management measures for the Proposed Development shall include:

- A vibration monitoring programme should be adopted at the nearest properties during the most critical phases of construction e.g. rock breaking etc. to assure the property owners that the prescribed limits are not exceeded.

4.1.8 Air Quality and Climate

The contractor is required to implement the following measures in relation to air quality and climate during construction:

- The coordination, implementation and ongoing monitoring of dust produced by site activities. The key aspects of controlling dust are listed below:
 - The development of a documented system for managing site practices with regard to dust control;
 - Spraying of exposed earthwork activities and site haul roads during dry weather;
 - Provision of wheel wash at exit points;
 - Covering of stockpiles;
 - Control of vehicle speeds, speed restrictions and vehicle access;
 - Sweeping of hard surfaced roads;
 - Erection of a 2.4m high hoarding will be provided around work areas where allowable to minimise the dispersion of dust from working areas;
 - Stockpiles will be located as far away as possible from sensitive receivers and covered/dampened during dry weather.
- Generators will be located as far away as practicable from sensitive receivers;
- To prevent the harmful emissions from vehicle exhausts, on-site and delivery vehicles will be prevented from leaving engines idling, even over short periods.
- Where Asbestos Contaminated Material (ACM) is uncovered on site during construction, the ACM will be double-bagged and removed from site by a competent contractor and disposed of in accordance with the relevant procedures and legislation.

At all times, the measures used to control dust will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

To minimise effects to the climate through harmful emissions, the following controls shall be put in place:

- On-site and delivery vehicles will be prevented from leaving engines idling, even over short periods.
- Material wastage due to poor timing or over ordering on site will be minimised to reduce the embodied carbon footprint of the site.
- The travel distance required to complete the delivery of material and supplies shall be taken into account during procurement and minimised where possible.

4.1.9 Emergencies

- The contractor shall prepare an Emergency Response Plan detailing the procedures to be undertaken in the event of a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident with any permit of license issues;
- The Emergency Response requirements will be displayed at several locations throughout site and at sensitive locations.
- The contractor shall ensure that relevant staff are trained in the use of spill kits.
- The contractor will prepare a site plan showing the location of all surface water drainage lines and proposed discharge points. This will also include the location of all existing and proposed surface water protection measures, including monitoring points, sediment traps, settling basins, interceptors etc.

4.1.10 Cultural Heritage

Archaeology - The proposed development area is within the Zone of Archaeological Protection KD011-012001- for the historic town of Celbridge and more specifically the Zone of Notification for KD011-012007- bridge. Given the archaeological potential of the area, it is proposed that archaeological monitoring of all ground excavation works be carried out during the construction (including site investigation). No groundworks of any type (including any enabling works or advance site investigations) are to take place in the absence of the archaeologist without his/her express consent.

The archaeological monitoring programme must be carried out under licence from National Monuments Service (NMS) and in accordance with an agreed method statement. Archaeological monitoring of the sections of the bridge parapet to be demolished will also be undertaken. It is recommended that all phases of archaeological investigations should be augmented by the use of a metal-detector (under licence by the NMS) to assist in the recovery of archaeological artefacts. In the event that any archaeological features and/or artefacts are uncovered during any phase of site investigations or construction, the NMS should be notified and consulted to determine appropriate further mitigation measures.

Should archaeological material be found during the course of the archaeological monitoring, the archaeologist shall stop work on the affected part of the site pending a decision as to how best to deal with the archaeology.

The Department of Housing, Local Government and Heritage and Kildare County Council shall be furnished with a report describing the results of the monitoring.

Built Heritage - The existing bridge is a protected structure and is considered as being of regional importance by the National Inventory of Architectural Heritage (NIAH Reference: 11805054). The proposed development will have a negative slight direct impact on the existing bridge and its setting. However, this is balanced by planned improvements works to the existing bridge (through the removal of the narrow footpath, the rerouting of telecoms services and the addition of a rubbing strip kerb in lieu of the footpath) along with the planned programme of maintenance to the bridge itself are considered to be a positive, moderate, direct impact.

The following mitigation measures will be adopted:

- Prior to commencement of works and following removal of vegetation at the areas where the new pedestrian bridge is to connect with existing pavements, a full record of the sections of walling to be removed will be undertaken by a suitably qualified built

heritage specialist. The record will include full description (i.e. construction, composition and style, etc.) and interpretation of any distinctive phases evident in the walling. This record shall include annotated drawings to be produced from photogrammetry or laser scanner survey.

- Prior to commencement of works, a conservation method statement shall be prepared by a suitably qualified conservation consultant/architect to specify (a) works for the planned interventions to the parapet walls and (b) a programme of general repairs to the existing bridge. This is to ensure that the works conform with conservation best practice.
- Any proposed conservation or repair works will be (a) undertaken by a contractor with proven experience of the conservation and repair of historic masonry structures and (b) under supervision of a suitably qualified conservation consultant/architect. The appointed conservation consultant/architect shall carry out periodic inspections and will approve workmanship. At the discretion of the conservation consultant/architect, the contractor may be directed to prepare sample work for approval (such as repointing and sample masonry panels).
- All masonry removed during the course of works shall be retained by the contractor for the duration of works. The retained material will be reused, where practicable, for any planned repairs.

The application of the aforementioned mitigation measures will reduce impacts on archaeological and built heritage resources. In addition, the new pedestrian and cycle bridge has been designed to avoid any significant direct impacts on the fabric and architectural form of the existing protected bridge and the built heritage significance of Celbridge. The new pedestrian and cycle bridge is of a high-quality contemporary form and will be clearly legible as a modern intervention.

5 TRAFFIC MANAGEMENT

5.1 TRAFFIC MANAGEMENT PLANS

5.1.1 The Contractor will develop a Construction Stage Temporary Traffic Management Plan developed in consultation with Kildare County Council Roads & Transportation Department prior to commencement of construction. This TMP will be prepared in accordance with the constraints which will be set out in the tender documentation to be prepared for the Proposed Development. Some of the likely requirements of the plan are outline below.

5.2 ENVIRONMENTAL CONTROLS

5.2.1 All roads, accesses, drains and ditches will be kept clear of all dirt, mud and material arising from the execution and completion of the Works and suitable clearing equipment and labour will be provided by the Contractor for this purpose.

5.2.2 Attention will also be given to the loading of lorries carrying bulk materials into the Site and spoil from the Site to ensure that these will not be overloaded or are loaded in such a way that spillage is avoided. All trucks entering and exiting the site will be covered with a tarpaulin.

5.2.3 Any dirt or mud adhering to the tyres or chassis of any vehicles will be thoroughly cleaned off before the vehicle is permitted to leave the Site. In the case of delivery to the Site, vehicles will be thoroughly cleaned before they leave the point of collection. The Contractor will be equally responsible for the vehicles of his subcontractors and suppliers and the like.

5.2.4 The Contractor will allow for the installation and maintenance of an automatic wheel-washing unit on the entrance to the site. This will be available for use at all times. Maintenance will include for cleaning out of the equipment and disposal of any material gathered within. The Contractor must ensure that the required equipment for supplying water and power to the wheel washing facility are available and in good working order. At the end of the Contract, the Contractor must remove the wheel washing facilities in total from site.

5.2.5 Local roads outside the site will be visually inspected daily for dirt and debris tracked from site and washed as required.

5.3 VEHICLE MOVEMENT AND DELIVERIES

5.3.1 Access routes to and from the site, delivery times and off-loading proposals will be formally agreed with the Local Authority as part of the Construction Stage Temporary Traffic Management Plan (CTTMP). In developing the construction and logistics plans, the Contractor will fully include representatives of the Kildare County Council Roads Department, and other interested parties, in a consultation process to ensure that intentions are properly communicated, agreed and do not unduly affect the surrounding residential and retail properties. The CTTMP will demonstrate how pedestrians, cyclists and motorised vehicles can pass through the works areas safely and that measures are in place which ensure traffic operates in an efficient a manner as possible.

5.3.2 Details of the agreed access routes to and from site shall be provided to suppliers and other relevant third parties prior to attending site.

5.3.3 All site staff including delivery drivers are required to abide by the normal rules of the road.

5.3.4 Adequate parking and set-down areas shall be provided for personnel and deliveries to avoid queuing at the site entrances and prevent disruption to neighbouring business and local traffic.

5.3.5 All deliveries of materials, plant and machinery to the site and removals of waste or other material, will take place within the permitted hours of work. Vehicle movements will be planned to ensure arrival and departure times are maintained inside the agreed working hours. No day-time or night-time parking of vehicles will be permitted outside agreed areas.

5.3.6 The key to efficient material/plant deliveries will be the effective management and co-ordination/timing of all deliveries. Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (including for adjoining properties) and rush hour traffic. Large deliveries will be scheduled outside peak hours to minimise disruption. The Contractor will consider out of hours deliveries and collections to facilitate the smooth continuation of works and minimise disruption.

5.3.7 During the project procurement phase, the Contractor will produce a schedule of deliveries, adopting a 'just in time' approach to avoid potential conflicts and unnecessary storage and handling.

5.4 ROAD SAFETY

5.4.1 The Contractor will organise the construction site so that vehicles and pedestrians are kept separate. Gatemen will ensure that the interface between deliveries and road traffic will be controlled at delivery gates.

5.4.2 All vehicles entering site will be restricted to suitable speed limits and will be directed to the relevant area by the gateman.

5.4.3 Construction site vehicle incidents can and should be prevented by the effective management of transport operations throughout the construction process. The gateman will assist in the entry and leaving from the site.

5.4.4 Key issues in dealing with temporary traffic management on site are:

- Keeping pedestrians and vehicles apart
- Minimising vehicle movements
- People on site
- Turning vehicles
- Visibility
- Signs and instructions

5.4.5 Accidents occur from site establishment to finishing works and managers, workers, visitors to sites and members of the public can all be at risk. Inadequate planning and control are the root causes of many construction vehicle accidents.

5.4.6 Most of construction transport accidents result from the inadequate separation of pedestrians and vehicles. This will be avoided by careful planning, and by controlling vehicle operations during construction work.

5.4.7 The following actions will be taken to keep pedestrians and vehicles apart:

- Entrances and exits - The construction company will provide separate entry and exit gateways for pedestrians and vehicles with a gateman in attendance to interface with the traffic and public to facilitate safe access and egress of vehicles.
- Walkways - firm, level, well-drained pedestrian walkways will be provided.
- Crossings - where walkways cross roadways, The Contractor will provide a clearly signed and lit crossing point where drivers and pedestrians can see each other clearly;
- Visibility - The contractor will make sure drivers driving out onto public roads can see both ways along the footway before they proceed;
- Obstructions - The contractor will not block walkways so that pedestrians must step onto the roadway;
- The contractor will take steps to make sure that all workers are fit and competent to operate the vehicles, machines and attachments they use on site.

5.4.8 People who direct vehicle movements will be trained and authorized to do so. Accidents can occur when untrained or inexperienced workers drive construction vehicles without authority. Access to vehicles will be managed and personnel alerted to the risk.

5.4.9 The Contractor will provide:

- Mirrors and reversing cameras will be provided on site vehicles to aid drivers in seeing movement all-round the vehicle;
- Reversing alarms will be provided on site vehicles to alert pedestrians and site personnel to the hazard of moving vehicles;
- Properly trained gatemen and spotters will be appointed to control vehicle manoeuvres on site and at access/exit gates.
- The site, particularly access routes, will be lit to provide adequate visibility to alert drivers and pedestrians of potential hazards. Additional lighting may be required after sunset or during inclement weather;
- All personnel on site are required to wear high visibility clothing.
- Warning signs and instructions shall be provided where required around site to inform vehicle operators and other personnel of potential hazards. Standard road signs are to be used where appropriate.
- The Contractor will make sure that all drivers and pedestrians know and understand the routes and traffic rules on site.

5.4.10 The Contractor will provide induction training for drivers, workers and visitors and send relevant instructions out to visitors before attending site. The Contractor will make sure that all the drivers and supply chain personnel are competent and have relevant training and certification appropriate for their job.

6 SUMMARY

6.1.1 In summary, this proposed Proposed Development, the Celbridge Pedestrian and Cycle Bridge, will provide a pedestrian and cycle crossing of the River Liffey in Celbridge Town directly adjacent the existing road bridge.

6.1.2 This Outline Construction Environmental Management Plan (OCEMP) has set out the procedures, standards, work practices and management responsibilities to address potential environmental effects that may arise from construction of the proposed Proposed Development.

6.1.3 This OCEMP has also addressed the environmental impacts and health and safety concerns associated with construction traffic during the Proposed Development, and has set out procedures, standards and work practices to address these issues.

6.1.4 The final CEMP, to be prepared by the Contractor, will incorporate the items outlined above and ensure that all requirements identified as part of the planning approvals process will be included in the adopted CEMP.

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