P2288

ADDENDUM ENVIRONMENTAL IMPACT ASSESSMENT REPORT
VOLUME 3: APPENDICES

CHAPTER 3 ADDENDUM APPENDICES

RIVERINE COMMUNITY PARK

LIFFORD-STRABANE

APRIL 2022

MCL Consulting Ltd

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Appendix 3-1

outline Construction Environmental Management Plan

APPENDIX 3-1

OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (oCEMP)

PROPOSED RIVERINE COMMNUNITY PARK

STRABANE AND LIFFORD

DERRY CITY AND STRABANE DISTRICT COUNCIL/ DONEGAL COUNTY COUNCIL

APRIL 2022

MCL Consulting Ltd

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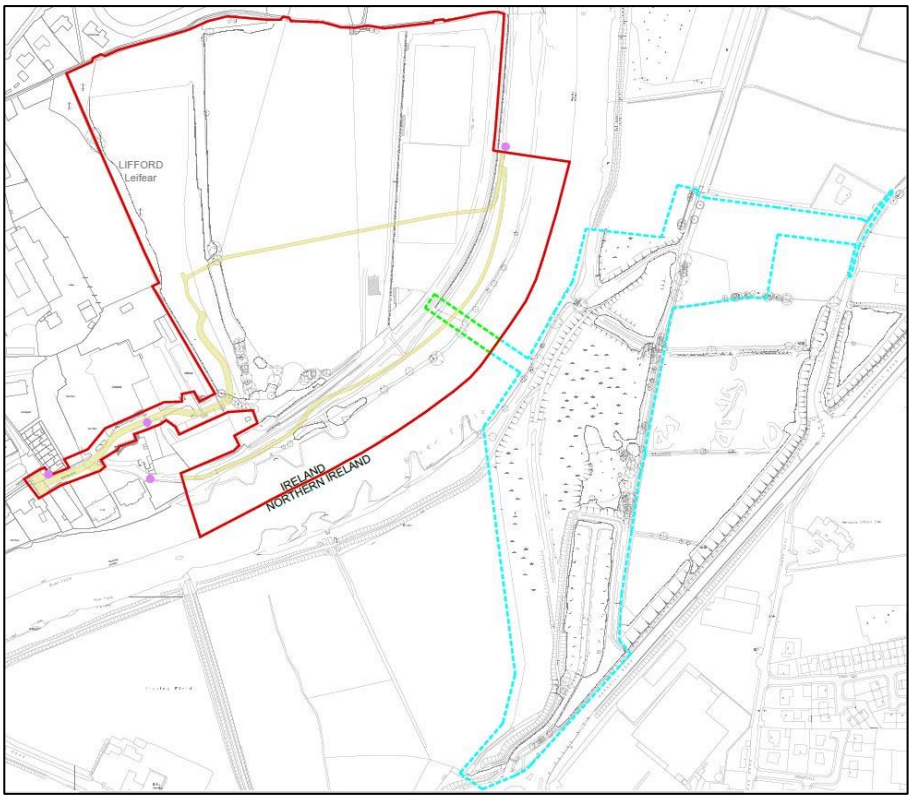
1.0 INTRODUCTION

1.1 Key Changes Made to oCEMP for EIAr Addendum

Red Line Boundary Change

This Addendum EIAR involves an update to the red line boundary of the Project in order to accommodate the largest possible scale temporary bridge construction platform. Planning drawings with the updated red line boundary have been submitted however the maps shown with this Addendum EIAR Main Text and the Addendum Appendices have not been updated. The revised red boundary is shown in **Figure A** for information. Please refer back to this boundary when a site map is shown within the Addendum EIAR. The EIAR has assessed not just the site itself but also the surrounding environs and therefore this amendment to the red line boundary has no impact on the assessments completed.

Figure A : Updated Red Line Boundary



Section 1 Introduction

The introduction chapter has been revised to reinforce the commitment for the contractor to adhere to the contents of this the oCEMP, including all mitigation and environmental control requirements contained within. The revision also better defines the status of the oCEMP and its relationship with a Final CEMP.

Section 2 Site Description

The site description section has been updated to provide more background information.

Section 3 Description of the Proposed Development

The description of the proposed development has been amended to reflect the change in the location of the main car park in Strabane.

The management of the Three Rivers Drainage previously passing through the access portion of the site has been dealt with by Irish Water as part of their upgrading and expansion works to Lifford WWTW and is therefore no longer part of the Riverine development. A new SuDs Drainage system will be implemented for the site runoff. Drainage for a portion of the Lifford access road will be provided by a conventional piped drainage system, discharging to a soakaway via an interceptor.

Section 4 Biodiversity

This section has been amended to include the full Invasive Species Management Plan as an appendix to the oCEMP, as requested by DAU.

Section 5 Soils & Waters

This section has been updated to reflect the increase in the size of the buffer zone to watercourses from 10m (original EIAr) to 15m (EIAr Addendum), as requested by DAU. The updated section also implements the restricting of fuel storage and refuelling operations to the Construction Compounds.

Section 7 Vibration

This section has been updated to prohibit the use of vibrating rollers to compact soils, as an additional measure to protect badgers and aquatic species during the groundworks.

Section 9 Archaeology

A new Section has been added to reflect the findings and outcomes of a recent programme of underwater archaeological works. Additional Construction Phase involving construction phase text excavations and construction phase archaeological monitoring measures, based on the identification of log boat fragments on river banks within and around the site.

Section 10 Natura Impact Assessment

A section has been added discussing the updates and outcomes of the updated Natura Impact Assessment, and also detailing the roles of the various Clerk of Works. This section also introduces further definition of Buffer Zones, implementation measures for buffer zones, detailing the range of restrictions and mitigations which apply to buffer zones and providing a framework for managing any necessary works within Buffer Zones.

Section 11 Construction Specifics

This section has been updated to provide an itemised Indicative Works Programme and detailed description of the construction phasing for the bridge works, to remove ambiguity in relation to the details construction works. The updated CEMP has therefore been based on a more in-depth knowledge of the details of the construction works.

Additional Appendices

Appendix A: Schedule of Mitigation (Lifford and Strabane)
Appendix D: Invasive Species Assessment and Management Plan
Appendix F: Indicative Works Programme
Appendix G: Bridge Construction Works Phasing Drawings

Updated Appendices

Appendix H: Pollution Incident Report Form – Revised Form Provided

1.2 Introduction

This document represents the **Outline Construction Environmental Management (oCEMP)** for the Riverine Project, incorporating lands spanning across Strabane and Lifford. This document will:

- describe the site environmental setting;
- identify local receptors and potential risks to the environment; and
- set out a framework for mitigation of risks during the building construction phase.

The document, covering all construction phases, including all enabling works, main phased and demobilisation, is to be used by the appointed Main Contractor to develop a final CEMP to incorporate company specific personnel detail and specific methods of working that support and attain the measures and objectives presented in this document. This oCEMP is based on the details of the works programme and construction phasing, as detailed in Section 11 of this oCEMP.

Environmental protection during the construction works will be delivered through the implementation of the contractor's CEMP as set out in the oCEMP. The oCEMP sets out how the commitments will be translated into actions in the field and the means by which they will be monitored and verified.

The oCEMP provides the outline of measures to be taken to achieve the objective of environmental protection and is regarded as a 'live document', to be implemented and revised as necessary by the appointed contractor. The oCEMP will be applicable to all works associated with the Proposed Development including those carried out by sub-contractors, however it does not remove or overwrite the legal duties, responsibilities or obligations of the Principal Contractor (and subcontractors) and other parties in accordance with the contract documents and legislation.

This oCEMP includes details on how the works will be carried out and managed to ensure compliance with relevant planning conditions, contractual and legislative requirements and construction industry best practice. The final contractor's CEMP, to be developed from this oCEMP, will form part of the contract arrangements with the appointing contractor in charge of the site will be required to adopt, update with relevant working practice details,

and implement the procedures and recommendations, following current industry best practice.

1.3 This Outline CEMP

Various environmental assessments undertaken as part of this proposed development, as presented within the EIAr. These assessments have flagged various potential environmental impacts which could occur due to the proposed development especially in relation to water quality, ecological species and habitat, and invasive species, land contamination, flood risk, noise, air and vibration. A large proportion of the potential impacts identified are specifically related to the Construction Phase of the development. The delivery of the development would involve significant construction works to be undertaken across a sensitive site, portions of which are located within an Special Area of Conservation (SAC).

This oCEMP details the environmental risks posed by the entire construction phase of the development, and presents a programme of site-specific mitigation designed to provide the highest level of environmental protection possible to ensure that the impact of the construction phase of the development is not significant, and does not lead to any post construction phase residual impacts.

This document:

- Describes the site environmental setting;
- Identifies all sensitive receptors;
- Describes the construction processes and indicative works programme.
- Identifies all construction activities which potentially pose an environmental risk;
- Describes all construction activities that could potentially generate pollution sources;
- Provides details of all pollution control techniques expected to be deployed, including for use and storage of oils-fuels-chemicals, managing risks from use and storage of concrete products, working near and in watercourses, stockpile management, earthworks management, invasive species management, habitat protection, habitat exclusion measures, lighting controls, traffic and transport controls, security measures and other controls relevant to managing environmental risks.
- Details appropriate environmental control measures for Air, Noise, Vibration, Surface Waters, Groundwaters, Ecological Species and Habitat, Archaeology, Transportation &

Waste Management during the Construction Phase of the development, drawing from the programme of mitigation described in Appendix 1-2 (Lifford) and Appendix 1-3 (Strabane) of the EIAr Addendum, and as presented in **Appendix A** of this oCEMP.

- Provides a framework to ensure that all parties are aware of their responsibilities;

Environmental protection measures required during the construction works will be delivered through the implementation of a Construction Environmental Management Plan (CEMP), to be based on this Outline CEMP report, incorporating all management controls and environmental mitigation measures contained within the oCEMP. The oCEMP sets out how the commitments will be translated into actions in the field and the means by which they will be monitored and verified.

This document provides the outline of measures to be taken to achieve the objective of environmental protection and is regarded as **a 'live document',** to be implemented and revised as necessary by the appointed contractor, however all management controls and environmental mitigation measures contained within this oCEMP must be implemented within the final CEMP.

The oCEMP will be applicable to all works associated with the Proposed Development including those carried out by sub-contractors, however DOES NOT remove or overwrite the legal duties, responsibilities or obligations of the Principal Contractor (and subcontractors) and other parties in accordance with the contract documents and legislation.

The oCEMP includes details on how the works will be carried out and managed to ensure compliance with relevant planning conditions, contractual and legislative requirements and construction industry best practice. The oCEMP will form part of the contract arrangements with the appointing contractor in charge of the site will be required to adopt, update with relevant working practice details, and implement the procedures and recommendations, following current industry best practice within the Final CEMP.

A Final CEMP, incorporating all management controls and environmental mitigation measures contained within this oCEMP, must be provided to relevant authorities at least 8 weeks prior to works beginning for review and final agreement.

1.4 Status of the oCEMP and Final CEMP

The status of the oCEMP is as follows:

- **This document comprises the oCEMP and has been prepared based on development layouts and preliminary construction designs and works programmes. This oCEMP is presented as part of the EIAr Addendum supporting a planning application for the Proposed Development.**
- **The oCEMP (and adopted final CEMP, which must incorporate all management controls and environmental mitigation measures contained within this oCEMP) is a 'live' document that can be reviewed on a regular basis and updated where necessary based on relevant working practice details, and implement the procedures and recommendations, following current industry best practice.**
- **During construction, the final CEMP may be revised to consider any modifications to the design, changes in external factors (for example, regulations or standards), any unforeseen circumstances, and any failings in environmental performance arising from routine inspections. All subsequent versions of the CEMP must, however, incorporate all management controls and environmental mitigation measures contained within this oCEMP.**
- **The provisions of the oCEMP, implemented through the production of a final CEMP, must be incorporated into the contracts for construction of the Proposed Development. It would be a mandatory requirement for both the Principal Contractor and all subcontractors to comply with the final CEMP to ensure that best practice is implemented during construction and to safeguard the environment.**
- **The requirements of the oCEMP and final CEMP do not remove or overwrite the legal duties, responsibilities or obligations of the Principal Contractor (and subcontractors) and other parties in accordance with the contract documents and legislation.**
- **The final CEMP is the mechanism for ensuring that the Proposed Development adopts relevant best practice management techniques for sustainable construction, which may include the following:**

  a) **Identification of potential opportunities to further reduce the capital carbon (i.e. carbon associatedwith the construction activities) would be progressed prior to construction. Similarly, opportunities for the efficient use of resources (including construction materials and water) may be explored.**

b) **Sustainable procurement methods may be developed during construction to define the principals to be followed in the procurement of materials and services required. This may include appropriate objectives on the responsible sourcing of materials and support to local suppliers and services where feasible.**

1.5 Supporting Documents

Associated project-related documents that are relevant to developing this oCEMP include:

- *EIAr and associated EIAR Addendum Supporting the Planning Application, with particular regard to Construction Phase Mitigation Measures developed for each Chapter.*
- *All Design Drawings and Construction Plans included within the Planning Application.*

2.0 SITE DESCRIPTION

2.1 Lifford

The **Lifford** site (c 15 hectares in area) is situated on lands to the west of Station Road in the Town of Lifford, County Donegal, (IGR 233882, 398765). The site boundary is indicated within **Figure 1**.

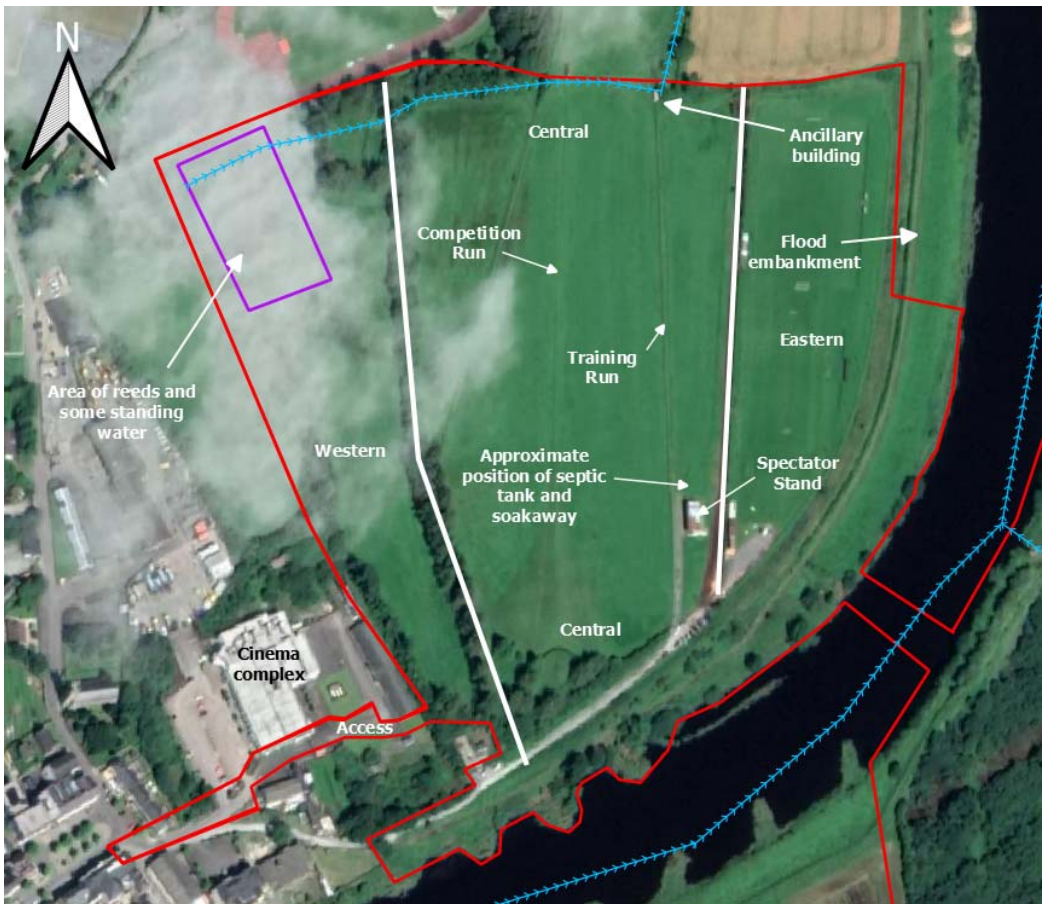
Figure 1 : Site Location with approximate extent of site outlined in red

The Red Line Boundary, defining the area assessed within report is reflective of the Red Line Boundary submitted within the Pre Application Notice to Derry City and Strabane District Council

in April 2021. Whilst the full extent of the area enclosed within the Red Line Boundary has been assessed in this report, an area within Strabane, towards the north-east of the study area, will not be developed under the Proposed Development. This assessment is also inclusive of a red line amendment to envelop in-river temporary works for the construction phase.

The Lifford site (**Figure 2**) is comprised predominantly of flat, open pasture lands with hedgerow / tree boundaries, with the lands currently used for hare coursing activities. There area number of modest buildings /structures associated with the current use including an existing spectator stand (to be demolished as part of the development scheme) with associated underground septic tank – soakaway (to be removed as part of the development scheme). A earthen flood embankment, running parallel to the River Foyle, extends through the eastern side of the site. The grassed riparian margin beyond the flood embankment slopes gradually to the convoluted, shallow, sandy river bank of the River Foyle.

Figure 2: Lifford Site Features



Geologically, the site is situated in a deep glacial valley (Foyle Valley) with fluvio-glacial and later river deposits filling the valley to form the current landform. A thin layer of made ground lies over recent alluvial (c2m thick) and fluvioglacial superficial sediments (in excess of 18m thick) which in turn overly a crystalline bedrock. No significant soil contamination was identified in the made ground across the site, with some low levels of ground gas detected. The Lifford site is located in a elevated radon gas area. Gas protection measures are low risk, requiring CS2 gas protection measures for new structures.

Shallow groundwater, demonstrating some degree of contamination (not environmentally significant) was encountered within the generally low permeability alluvium, hydraulically connected to the River Foyle. Deeper occurrences of groundwater, demonstrating a degree of confinement, were encountered in the fluvioglacial superficial sediments. Groundwater flow is generally west to east across the site toward the River Floyle, providing baseflow to the Foyle.

The Lifford site is located within the River Deele surface water catchment. A small partially culverted watercourse (Roughan Stream) flows through the northern end of the site. This stream is hydraulically connected to the River Deele, which is hydraulically connected to the River Foyle SAC. The site is located within the 100 year fluvial flood catchment.

2.2 Strabane

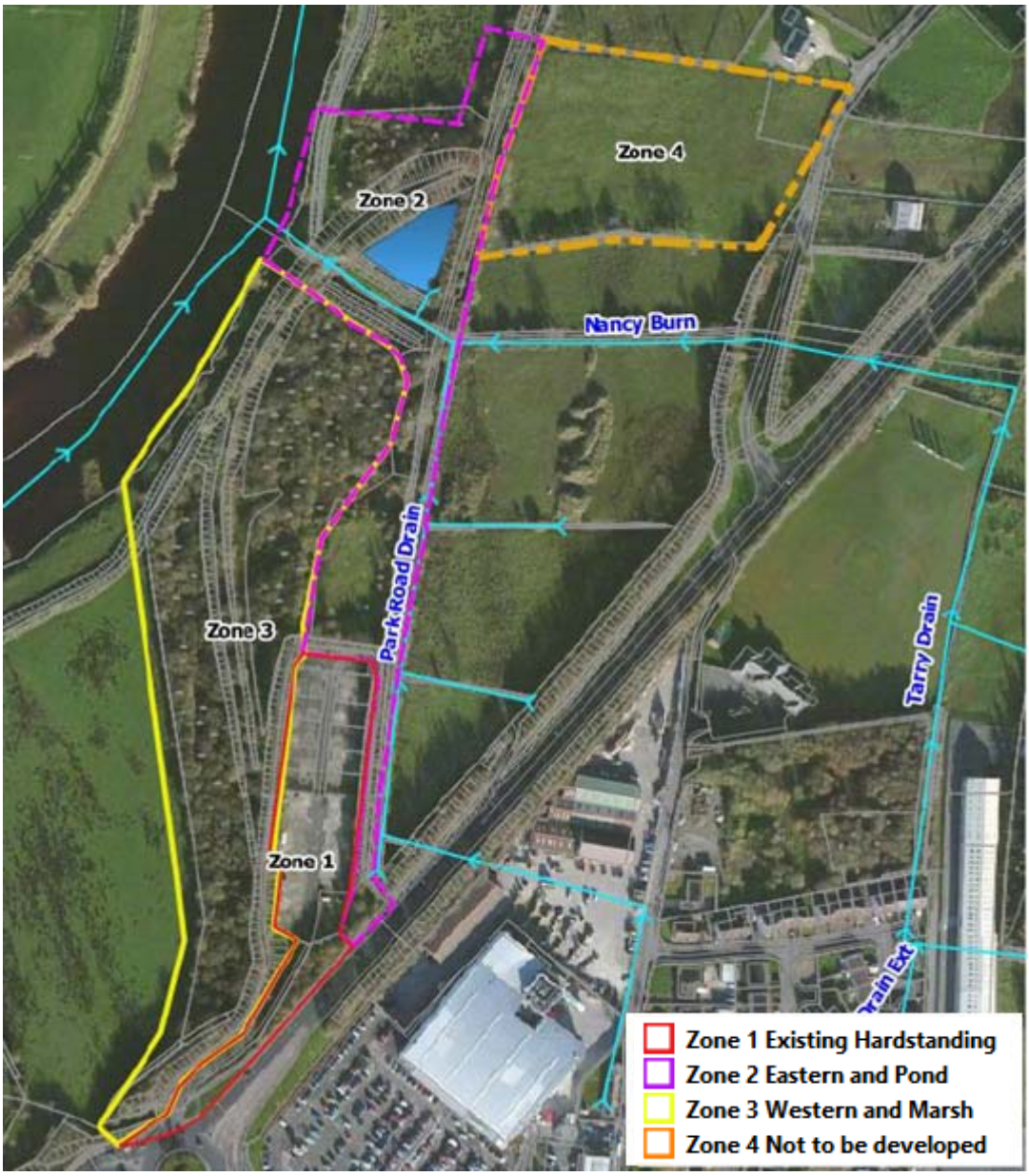
The **Strabane** site is situated at Barnhill Road, in the north-western area of Strabane, County Tyrone (IGR 234119, 398597). The site boundary is indicated within **Figure 1**.

The Red Line Boundary, defining the area assessed within report is reflective of the Red Line Boundary submitted within the Pre Application Notice to Derry City and Strabane District Council in April 2021. Whilst the full extent of the area enclosed within the Red Line Boundary has been assessed in this report, an area within Strabane, towards the north-east of the study area, will not be developed under the Proposed Development. This assessment is also inclusive of a red line amendment to envelop in-river temporary works for the construction phase.

The Strabane site (**Figure 3**), comprising 6.7 Hectares of land, comprises overgrown brownfield land which has been historically developed for a range of uses including steam railway lands (including lines, sidings, buildings – historically demolished, embankments and ponds, and more recently hardstanding serving as a 'travellers rest / halting site'. Geologically, the site is situated

in a deep glacial valley (Foyle Valley) with fluvio-glacial and later river deposits filling the valley to form the current relatively flat landform.

Figure 3 Strabane Site Features



A variable thickness layer of made ground lies over recent alluvial (c2m thick) and fluvioglacial superficial sediments (in excess of 18m thick) which in turn overly a crystalline bedrock. Areas of infill associated with the former railway uses include small localised hotspots of soil contaminated (including asbestos), requiring specialist remediation as part of the development.

Shallow groundwater, demonstrating some degree of contamination (not environmentally significant) was encountered within the made ground / low permeability alluvium, hydraulically connected to the River Foyle. Deeper occurrences of groundwater, demonstrating a degree of confinement, were encountered in the fluvioglacial superficial sediments. Groundwater flow is generally east to west across the site toward the River Floyle, providing baseflow to the Foyle.

The Strabane site is located within the River Foyle catchment, with a small portion (c. 0.4 ha) of shown to be located within the Mourne River Deele surface water catchment, which is a tributary of the River Foyle. A number of small watercourses traverse the site including the designated Park Road Drain which flows north along the eastern boundary of the Application Site into the designated Nancy Burn, which flows in an east to west direction through the Application Site and discharges into the River Foyle. The main ponded area in the Strabane site overflows into the Nancy Burn. Water features across the site are directly hydraulically connected to the River Foyle SAC.

3.0 DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 General Description of Proposed Development

The development aims to address the impact of the conflict in the Lifford and Strabane area, and its hinterlands, by regenerating the border riverside area to create an iconic cross-border community park straddling the River Foyle as a shared space to bring communities together from both sides of the border, to re-connect and form new, long-lasting connections and relationships.

Riverine Community Park will be of local and regional importance and will incorporate the core elements of a pedestrian and cycle bridge between Lifford and Strabane, Riverine Park Building, multi-functional outdoor space and external stage provision, play area, river walk and access, landscaped green-spaces interlaced with a network of pathways and cycleways, wetlands supported by car parking provision.

The project will comprise the creation of new community park infrastructure in excess of 21 hectares by utilising agricultural land and wetlands lying along either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of

the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities. This diversity of offering makes for a more inclusive and freeing sharing experience.

The Development Layouts are presented in **Appendix B** of this oCEMP. The proposed project, although not restricted to, comprises the following key components:

- The construction of a Hub Amenity Building in the south of the Central Zone
- Adventure play area
- Managed parkland
- Outdoor events space
- A Maintenance Depot in the south of the Western Zone
- Sewage and clean water supply connections to amenity building and maintenance depot
- Sewage and Stormwater Pumping Stations
- New slipway and fishing points.
- Car parking
- Road vehicle access routes.
- Footbridge crossing the River Foyle
- Temporary construction pad for the footbridge in the River Foyle
- Embankment access route to the footbridge
- River access and embankment support
- Landscaping / earthworks (cut and fill)
- New site access roads, with associated drainage.
- Accommodation Works for Hare Coarsing activities, including the relocation of the Greyhound Coursing spectator stand and the small building structure at the northern extent of the coursing area along with piped stormwater drainage, foul infrastructure and power lines.

3.2 Proposed Site Design

Sustainable development is central to the design, delivery and implementation ethos of both Donegal County Council (DCC) and Derry City and Strabane District Council (DCSDC). It is proposed to design an iconic park to create a welcoming, person centred environment which will optimise the opportunity for person-to-person interaction.

It is proposed to reuse earth material for landform rather than removal off site in order to reduce carbon emissions and landfill. Where possible, Sustainable Urban Drainage Design System (SUDS) will be employed to harvest rainwater, allow for containment of run-off and deploy attenuation measures for hard surfaces. Mitigation measures will be put in place, through consultation with Loughs Agency to ensure that the River Foyle remains unaffected throughout the construction and lifespan of the proposed development.

The following elements are to be incorporated into the final design of the proposal in order to minimise environmental impact:

- Use of site contours where possible for new path networks to minimise site impact and the carbon footprint of new path infrastructure.
- Layout of the park and construction methods for piling etc has been designed to minimise impact to protected species.
- Minimisation of cut-fill operations to reduce extent of earthworks.
- Conservation of the wetland areas with proactive biodiversity and environmental training programmes to encourage its enhancement and protection.
- The design must primarily optimise the use and mix of space in terms of functional space, circulation space and provision for services both planned at this stage and provide flexibility to accommodate other potential development schemes in the area.

3.3 Specific Proposed Design Elements in Lifford (Republic of Ireland)

3.3.1 Riverine Community Park - Indoor Space (Lifford)

Lifford

A community resource building is to be provided on the Lifford site incorporating meeting/events space, toilets, offices and café. Indoor provision allows for sanitary provision which includes baby changing facilities, Changing Places toilets and fully accessible toilet facilities. Separate meeting spaces will be incorporated to be available for community engagement in a managed multifunctional environment and for the use of the various community groups.

The building will be dual aspect with an emphasis on easy access and interaction between spaces and the people using the spaces, this dual aspect will provide for a diversity of experience, with external space for larger community gatherings on the gravel surfaced formal courtyard, or a more intimate, informal, softer experience for a smaller number of people.

The finished floor level of the Hub Building and the mechanical and electrical elements of any necessary wastewater pumping station will need to be elevated above the level of the 0.1% Fluvial Annual Exceedance Probability Event as indicated by the CFRAM Study.

Internal and external signage will meet the requirements of the visually impaired, (Braille), Section 9(1) of the Official Languages Act (ROI) and bi-lingual signage requirements including English, Irish and Ulster Scots where required. The building will also meet the requirements of TDG Part M 2010 as required under the Disability Act 2005 (ROI).

The expected functional life of the Hub building is estimated to be a minimum of 50+ years with 15 years to the first significant external maintenance works.

The Lifford development will include a Maintenance Depot facility comprising a single storey steel container and external concrete hardstanding yard area, with storage bays. The maintenance depot will include welfare facilities (wash-hand basins and toilets) for council staff use.

A replacement spectator stand for the Coursing activities is proposed in the west of the site, as referred to as ‘Accommodation Works’. This will replicate the existing structure (located in the

south of the site, to be demolished) in terms of size, scale and use, i.e. covered stand for spectators.

The management of the Three Rivers Drainage previously passing through the access portion of the site has been dealt with by Irish Water as part of their upgrading and expansion works to Lifford WWTW and is therefore no longer part of the Riverine development. A new SuDs Drainage system will be implemented for the site runoff. Drainage for a portion of the Lifford access road will be provided by a conventional piped drainage system, discharging to a soakaway via an interceptor.

Strabane

There is no indoor space proposed for the Strabane Site, which has ecological sensitivities that must be retained and enhanced, but connectivity to all facilities within the park will be provided via a pedestrian / cycle bridge over the River Foyle.

3.3.2 Riverine Community Park - Outdoor Space

It is proposed to include an outdoor covered stage area and community events space to accommodate up to 3000 people, incorporating a flexible scalable arena with stage provision and easy access to the facilities of the Hub Building (Lifford).

The multifunctional outdoor space and Hub Building (Lifford) will be interconnected, with the stage provision of the larger outdoor space and the indoor spacing being physically linked, allowing for changing provision for arts and cultural events as necessary. The permanent stage will be available with a retractable canopy cover with the future option for canopy cover over the outdoor space.

The events space (Lifford) will frame the Southeast aspect of the arena and will have safe access to car-parking along the boundary. Event space ground cover will be suitably and tastefully selected to allow for efficient percolation in the event of poor weather or flooding.

A toddler and junior play environment with a variety of approved equipment is proposed to be incorporated and sited close to the Hub Building (Lifford). This will provide for a fully accessible play space, including wheelchair inclusive play. Play equipment using pre-treated, high-quality, low-maintenance play-grade timber from sustainable sources may be considered, however, all

play equipment will conform to EN1176: Playground Equipment Standard and EN15312: Free Access Multi-Sports Equipment. Safety surfacing of the play area shall also be carefully considered to reinforce the essence of environmental conservation throughout the community parkland while providing a safe ground cover for children to play in.

Walkways and greenways in Lifford will be linked to the Strabane site via the Bridge and will be designed to a minimum of 3.5m wide and to accommodate a 5m minimum underpass height requirement.

River walkways and safe access to the river are integral to the linked path network. The pathways will be finished in bound bitumen or similar to minimise maintenance while encouraging accessibility for all. All paths will be edged, and path gradients will comply with the regulations in both jurisdictions. Some wooden boardwalks will also be provided to provide close access to areas of wetland.

Seating is to be provided along the route to provide resting points. Walkways and cycle paths around the park will connect and inter-relate, framing views and vistas, maximising aspect and orientation to further engage the user. The path network, footpaths and car parking areas must be adequately lit to allow for their use after dark.

3.3.3 East Donegal Hare Coursing Grounds

The extent of the project site on the Lifford side extends to approximately 5.67ha and is to be located on part of a larger (c.12-14.2ha) of agricultural land which accommodates the East Donegal Hare Coursing ("EDHC") grounds. As part of the agreement with EDHC to acquire the 5.67ha site to accommodate the Riverine Project, DCC have agreed to reconfigure the remainder of the EDHC grounds to accommodate their future requirements (the "EDHC Accommodation Works"). These works are relatively modest comprising some drainage works, car parking and a replacement spectator stand. For the purpose of defining the Project in the context of EIA requirements, these works are considered as part of the Project.

3.4 Specific Proposed Design Elements in Strabane (Northern Ireland)

3.4.1 Outdoor Space

Walkways (including greenways being developed under a separate scheme) will be linked to the Lifford Site via the Bridge. River walkways and safe access to the river are integral to the linked

path network. All paths will be edged, and path gradients will comply with the regulations in both jurisdictions. The pathways, punctuated with environmental artworks, will be finished in bound bitumen or similar to minimise maintenance while encouraging accessibility for all.

Seating is to be provided along the route to provide resting points. Walkways and cycle paths around the park will connect and inter-relate, framing views and vistas, maximising aspect and orientation to further engage the user. The path network, footpaths and car parking areas will be adequately lit to allow for their use after dark, subject to various ecological mitigation measures to minimise lighting impacts.

In conserving the ecological integrity of the existing wetlands on the Strabane site, the project will, wherever possible remodel existing tracks, contours and gradients, minimising the extent of cut and fill. The authentic character of the wetland must be preserved by developing and retaining existing vegetation where appropriate and supplementing with indigenous varieties as necessary enhances this existing and currently underused environmental asset, maintaining the highest quality of landscaping and native habitat throughout the project. Planting will be provided throughout the outdoor area including pollinator friendly, indigenous and ornamental plants.

Invasive species management, including excavation and re-location to treatment areas of some areas of Japanese Knotweed / Himalayan Balsam / Giant Hogweed will be necessary to facilitate the development.

The main car park for the Riverine development is proposed to be located on the footprint of the former travellers halting site, an existing area of hardstanding which is to be removed and the lands redeveloped as a new Car Park served by lighting and permeable paving and a SuDS Drainage scheme.

3.4.2 Accommodation of A5 Road Scheme

A portion of site consisting of the southern end of the Strabane site, including the area of the proposed car parking to serve the Riverine Development, falls within the landtake of the proposed A5 road scheme, though no specific details of the extent and nature of the road development are yet available.

Agreement on future infrastructure or interface issues, between the A5 and Riverine will be developed with DFI WTC A5 Project Team once identified following further design evolution of the A5 realignment. It has been agreed that during the Riverine development, regular working groups between the projects will be maintained to inform of progress and discuss shared project matters.

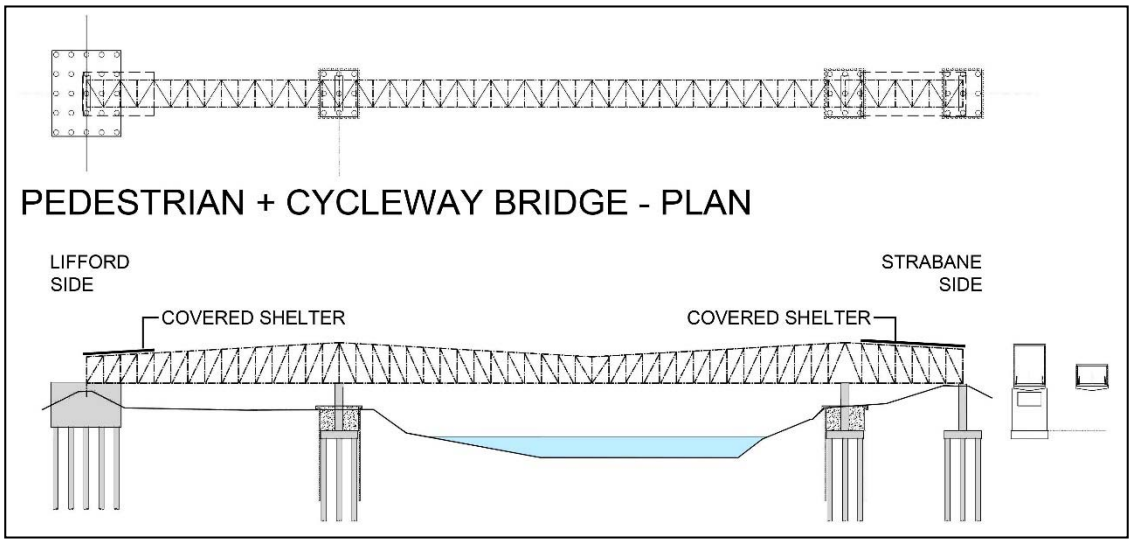
3.5 Bridge Design (Lifford and Strabane)

An outline plan of the proposed bridge is provided in **Figure 4.** The pedestrian and cycle bridge will have an overall span of approximately 115m.

There will be intermediate supports on the riverbanks resulting in an intermediate span of approximately 80m over the River Foyle. The width of the bridge will be a minimum of 3.5m. The bridge will connect the two towns; the design concept has been informed by community consultation and is reflective of a historic railway bridge further along the River Foyle. As such this visual association and reference of the history and heritage of the area reinforces a sense of place, allowing context to inform the design resolution and rooting the project very firmly in the area.

Following consultation with the Loughs Agency, the pedestrian bridge must consist of a single span structure across the river to mitigate against potential negative impact or harm to the river/riverbank and associated habitat, incorporating focussed lighting to minimise the risk of light pollution, with bird collision risk also taken to account within the bridge design.

Figure 4: Pedestrian and Cycleway Bridge Design



4.0 BIODIVERSITY

4.1 Introduction

The subject site straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way. The access road leads to a former halting site in concrete hardstanding, with the rest of the site consisting of a combination of banks, paths, woodland and wetland.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road. The subject site on this side consists mostly of improved grassed land, with a sports pitch located to the northeast and a band of woodland running in a north-south line to the west of the site.

4.2 Preliminary Ecological Assessment

A Preliminary Ecological Appraisal (PEA) desk study and walkover survey was undertaken to inform the assessment. This triggered requirements for a range of more detailed species-specific surveys to be undertaken at the site including surveys for birds, bats, badger, otter, newts & aquatics and invasive species. In addition, a collision risk assessment was undertaken for permanent structures. The outcomes of these assessments led to the development of a range of species-specific and other ecological mitigation which is detailed later in this section of the oCEMP.

4.2.1 Existing Environment

The existing environment within the Lifford area comprises improved grassland (GA1), fringed by treelines (WL2), hedgerows (WL1) and woodland areas comprising mixed broadleaved woodland mixed broadleaved / conifer woodland (WD1 & WD2). The northern section of the site also supports a drainage channel which is a tributary of the River Deele (Donegal)_050 (NW_01D010650).

The south-eastern (Strabane) section of the study area is poor draining when compared with the Lifford side of the river and supports rush dominated wet grassland (GS4), improved agricultural grassland (GA1), wet willow-alder-ash woodland (WN6) comprising grey willow (Salix cinerea) and

hedgerows and treelines. The wet willow-alder-ash woodland supports widespread, but localised occurrences of Himalayan balsam (Impatiens glandulifera) and Japanese knotweed (Fallopia japonica).

Within the study area, the river is a large open watercourse and is classified by the Environmental Protection Agency (EPA) as a transitional waterbody; i.e. the Foyle and Faughan Estuaries (UKGBNI5NW250010). The river is fringed intermittently by reed and large sedge swamp (FS1) and localised areas of exposed fine aggregates. The higher areas of the riverbank support dry meadows and grassy verge habitat (GS2) that comprise stout, dense growing grasses. Both sides of the river bank supports sporadic growth of three invasive species including Himalayan balsam (Impatiens glandulifera) which is the most abundant and widespread, in addition to localised areas of Japanese knotweed (Fallopia japonica) and Giant Hogweed (Heracleum mantegazzianum).

4.2.2 European Sites within the Project Zone of Influence

A 15km buffer zone of influence (ZoI) was selected as a precautionary measure, to ensure that all potentially affected European Sites are included in the screening process, which is in line with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG, 2009, rev. 2010).

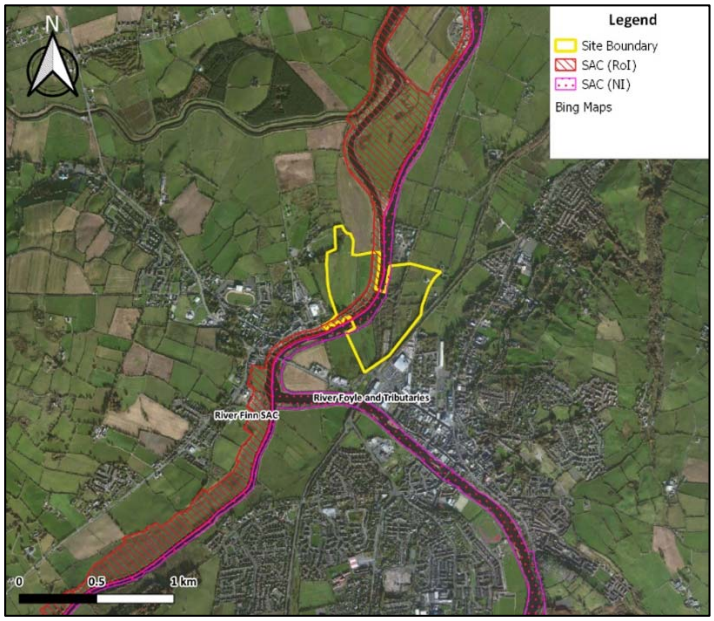
There are four European sites located within 15km of the proposed works. These are as follows:

- River Finn SAC (002301)
- River Foyle and Tributaries SAC (UK0030320)
- Moneygal Bog SAC (UK0030211)
- Owenkillew River SAC (UK0030233)

The proposed development site is partially located within / overlaps two European Sites; i.e. River Finn SAC (002301) and River Foyle and Tributaries SAC (UK0030320) and supports remote hydrological connectivity to two European Sites Lough Foyle SPA (Site Code: UK9020031)[1] and Lough Foyle SPA (Site Code: 004087), as shown in **Figure 5**.

The proposed development site does not support connectivity with any other European Sites within the project Zone of Influence.

Figure 5: European Sites located within the approximate site boundary



River Foyle and Tributaries SAC (UK0030320)

This area has been designated as a Special Area of Conservation (SAC) because it contains habitat types and/or species which are rare or threatened within a European context. The ASSI citation describes the special interests for which the site was notified in the Northern Ireland context. [NB: not for marine interests below mean low water mark. The interests for which the site was selected as ASSI may differ from the interests selected in a European context. The habitats and/or species for which this area has been designated as a SAC are listed below.

- *Lutra* (Otter) for which the area is considered to support a significant presence
- *Salmo salar* (Atlantic Salmon) - for which this is considered to be one of the best areas in the United Kingdom.

This area contains the interests described although it may not contain all the typical features (EHSNI, 2007).

Lough Foyle SPA (004087)

The site comprises a section of the western shore of Lough Foyle from Muff to north of Vances Point in Co. Donegal. The site is part of the larger cross-border Lough Foyle complex which regularly supports in excess of 20,000 wintering waterbirds.

The majority of the wintering waterbirds that utilise this site occur along the southern and eastern shoreline of Lough Foyle in Derry, which is also designated as an SPA in Northern Ireland. The site is selected as a Special Protection Area (SPA) under the E.U. Birds Directive, as it is part of an internationally important wetland site that regularly supports in excess of 20,000 wintering waterbirds (NPWS, 2015).

Lough Foyle SPA UK9020031

This major sea lough is remarkably shallow, with extensive mud and sand flats exposed at low tide. Though considerably diminished by historical reclamation schemes, notably around Myroe, Ballykelly and Longfield, it hosts the second largest area of inter-tidal habitat in Northern Ireland. The shoreline is generally engineered except around the Roe Estuary and northwards. Adjoining agricultural land is of importance as high tide roosts and in supporting wintering geese and swans.

River Finn SAC (Site Code: 002301)

This site comprises almost the entire freshwater element of the River Finn and its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. All of the site is in Co. Donegal. The underlying geology is Dalradian Schists and Gneiss for the most part though quartzites and Carboniferous Limestones are present in the vicinity of Castlefinn. The hills around Lough Finn are also on quartzite. The mountains of Owendoo and Cloghervaddy are of granite felsite and other intrusive rocks rich in silica. There are many towns along the river but not within the site, including Lifford, Castlefinn, Stranolar and Ballybofey (NPWS, 2014).

4.3 Bats

It has been concluded that both Strabane and Lifford sides offer little in relation to roosting potential, however, has a high potential for foraging and commuting bats. There is significant nocturnal bat foraging activity on both sites.

Mitigation measure for the construction phase, applicable to all lit areas such as construction compounds, access points / haul roads and working areas are as follows:-

- No lighting should be directed towards existing mature vegetation i.e. mature trees or boundary hedgerows.
- All lights should be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill.
- Any external lighting around any structures (e.g. safety lights at the front and rear) must be fitted with motion sensors (timer of up to 60 seconds).
- The intensity of lighting must be kept to the minimum level required for safety. Low-UV LEDs or low / high pressure sodium lamps is the preferred bulb type, as they have least adverse effect on bats.

4.4 Birds

Habitats within the site support widespread nesting opportunities for a range of common and widespread breeding bird species.

Mitigation measure for the construction phase are as follows:-

- Pre-construction site clearance works and removal of vegetation including immature trees and scrub must take place outside the bird breeding season which extends between 1st March and 31st August inclusive to ensure breeding birds are protected from harm.
- If pre-construction site clearance and removal of vegetation is deemed necessary within the bird breeding season an ECoW will undertake a survey to check for breeding birds immediately prior to works and confirm that breeding birds will be protected from harm during works.

A resident nesting owl is present on the Lifford site within a tree line in the Accommodation Works area. Additional mitigation has been put in place to protect this protected species, as follows:-

- The long-eared owl nest must be left undisturbed and intact within the coniferous treeline. Proposed plans currently include the relocation of the current hare coursing grounds and proposed drainage pipework systems along the coniferous treeline where the long-eared owl nest is located. Long-eared owls are considered a species which has a moderate ability to co-exist with human populations, confirmed by the nest's close location to Lifford town.
- The hare coursing grounds include an area of land raise at the end of the run, where the hare chase terminates. This land raise is within close proximity to the long-eared owl's location. Development will involve the importation of fill (clay and similar materials) to the area during the construction phase. A proposed new open drainage ditch is being constructed along the inner edge of the retained coniferous treeline along the western boundary of the site. Whilst this treeline is to remain unaltered, some scrub clearance and excavation works to construct the drain will be required during the construction phase. The works will, therefore, include an area close to the foot of the treeline.
- Proposed works and clearance are within 150m of the nest site, therefore, these works will require appropriate wildlife licensing and will need to be conducted outside of the breeding season. Replacement raptor boxes must be installed within 200m of the area as a compensatory/mitigation measure to ensure the long-eared owl has appropriate replacement nesting. All works near the long-eared owl nesting site and installation of replacement raptor boxes must be carried out under supervision and installed by a suitably qualified ecologist via the presence of an ecological clerk of works.
- It is also proposed that due to the presence of the long-eared owl nesting on site as well as the buzzards observed on site that the use of rodenticides for any pest control are prohibited on site.

4.5 Newts

No newts were discovered during survey works, however, the contractor must adhere to best practice since newts may potentially colonise the wetland and ponds.

4.6 Otter

Otters have been identified in the area and the site is used for foraging by otters, moving backwards and forward from the Foyle river corridor in and out of the site in both sides of the river. No otter holts were identified in the river banks in the vicinity of the site.

Mitigation measure for the construction phase is as follows:-

- No light should be directed onto woodland or river habitat features during the construction or operational phase.
- Any excavations must be covered or must have a means of egress overnight.
- Exclusion fencing must be installed surrounding the old halting area (new carpark), Strabane, prior to any construction works occurring.
- Fencing designs must provide unrestricted access to the remaining areas of the site from the River Foyle to prevent reducing the otters access to the extended foraging grounds within the site.
- If an otter is discovered or any activity suggesting otters have been disturbed during construction, all work must cease immediately, and the site ecologist should be notified as soon as possible to detail how to proceed.
- Control measures to protect water quality, including deployment of silt fencing between all areas of construction works and the nearest watercourse/s, must be implemented to minimise risk to foraging habitat.
- Buffer zones to watercourses (15m for all watercourses and 100m for River Foyle SAC), as proposed in any case for surface water management, to protect foraging grounds and allow access.
- A compensatory planting scheme shall be carried out in order to re-create any areas of foraging habitat disturbed or damaged during the construction phase

4.7 Badgers

Strabane

A number of active sett structures have been identified within the site, with evidence of foraging across the site and surrounding lands.

Lifford

The badger sett located on the Lifford side of the site has been classified as abandoned with no evidence of current activity and sett entrances having become overgrown and covered with vegetation, pine needles and cobwebs. Currently due to the inactive and abandoned nature of the sett as well as the nature of the current proposed development on the Lifford side the mitigation recommended is reduced to the mitigation protocols outlined below in order to avoid unlicenced destruction of this sett while it is inactive now it may become active again.

Protection Mitigation Measures for Badgers

Strabane

The proposed project will encroach on the exclusion zone of subsidiary / annex setts within the Strabane site. It will be necessary to temporarily exclude badgers from some of their setts during the bridge construction works on the Strabane side and during any works which infringes the 25m exclusion zone. This work to exclude badgers and monitor the badgers during the construction phase must be subject to time constraints as detailed in the Badger Report and must be undertaken by qualified ecologists under NIEA license.

Rotary CFA piling technique to be utilised during bridge construction/installation to minimise vibration impact on nearby badger sett, with continual vibration monitoring requirement in place during these works.

The use of vibrating rollers is not permitted at the site. Where rollers are used to compact emplaced materials, then the vibrating function shall be turned off and the materials compacted using rolling action only.

Badgers and other wildlife must be excluded from entering the Construction Compounds as far as reasonably practical.

For the Strabane site, the following mitigation measures shall also apply:-

- Annex setts on the Strabane side are to be temporarily closed under license prior to construction works to accommodate works for bridge landing and flood embankment works. No works can occur within 25m of these sett entrances before they have been cleared by ecologists.
- Process of sett closure starts in July with construction works aimed to begin from early August following a 21 day monitoring period.
- Monthly monitoring of sett to occur from August to November.

Strabane and Lifford

For the entirety of the development site the following mitigation measures will apply to the construction phase:-

- **NO** works to occur within 25m of sett entrances.
- Construction of bridge landing aimed for completion by November/December allowing for the permanent re-opening of the closed setts.
- Any groundworks within 100m of the badger setts less impactful methods than standard percussive piling methods e.g: CFA piling, with the use of vibrating rollers for engineering compact of soils and use of rock hammers to break out concrete etc. not permitted anywhere on the site.
- Exclusion fencing to be installed surrounding the old halting area (new carpark) in Strabane prior to any construction works occurring.
- During the construction phase noise may cause disturbance, therefore the adoption of best practice as defined by the Control of Pollution Act 1974 should be implemented. All noise caused by machines should be minimised and should operate during daytime hours only as agreed with the council.

- With regards to dust it should be ensured that an adequate supply of water is available on site for effective dust suppression.
- Similarly, no light should be directed onto woodland features during the construction or operational phase.
- During the construction phase management and protection measures should be implemented prior to works commencing on site, these include:
    - No excavations must be left uncovered or without a means of egress (a sloped plank for example) overnight, as badgers may fall in or enter in search of food and become trapped.
    - No buildings or storage units must be left open overnight, as badgers may enter and become trapped.
    - No poisonous or potentially harmful substances or materials must be left unsecured overnight.
    - No vehicles or machinery must be used installing any badger fencing or exclusion gates.
- A compensatory planting scheme must be carried out in order to re-create any areas of foraging habitat disturbed or damaged during the construction phase.

If a badger is discovered or any activity suggesting badgers have been disturbed during construction, all work must cease immediately, and the site ecologist should be notified as soon as possible to detail how to proceed.

4.8 Aquatic Ecology

The River Foyle and its banks are designated an SAC based on a number of aquatic species including salmon, a migratory fish which uses the Foyle as a commuting corridor. Mitigation measure for the construction phase are as follows:-

- All bridge construction, in-river piling, riverbank piling and all piling works within the SAC for both Lifford and Strabane sites must be carried out between May and September. This has been agreed in order to time works to occur before the salmon

run begins in autumn, and to avoid impacting on the migrating salmon during the construction phase of the development.

- Low vibration techniques must be used for all construction elements including piling, groundworks and soil / ground compaction for creation of pathways.
- A minimum of 15 metres must be retained as a buffer between the proposed development and the surrounding watercourses to reduce any potential impact (100m for River Foyle SAC).
- Refuelling of mobile plant (excavators, dumper trucks, rollers etc.) should take only place in a suitably bunded hardstanding area, within the construction compound.
- A soft start approach must be implemented when the use and starting of heavy machinery is required. The soft-start methodology will be required every time machinery is started following a 30 minute rest period. Once machinery is in full operation associated noise and vibration will keep fish outside of the area of influence allowing them time to leave the area of disturbance.
- No lights from the site compound or working areas shall be directed at the river. All lighting shall be directed away from the water surface and must be switched off at night once works have stopped.
- The use of silt traps and / or curtains within or marginal to watercourses will be required for works in close proximity to watercourses (for any necessary works within buffer zones) in order to trap any silt generated from ground disturbances etc, in addition to other measures implemented to control silt production. It is essential that silt containment measures used are not convoluted in form and will allow water to free flow through them to avoid any accidental capture and death of fish. These traps should also be inspected on a regular (at least daily) basis to ensure that any fish that are accidentally trapped within them are released quickly and to ensure the silt traps / curtains are working correctly. Silt traps shall only be in place within watercourses for the minimum period necessarily to facilitate the works and shall be removed as soon as possible after the works are completed, taking great care to inspect the materials being removed for the presence of fish and release any fish captured to the wild as close to the point of capture as possible.
- Plant nappies and spill kits must be available in close proximity to all working areas. All pollution response equipment shall be regularly checked to ensure it is in working

condition on site at all times. Staff training such as toolbox talks must be provided to all site operatives to ensure appropriate use of pollution response equipment.

4.9 Invasive Species

The site within both Strabane and Lifford is affected by Japanese Knotweed, Himalayan Balsam and Giant Hogweed. The locations of the references mentioned are indicated within the drawings, attached as **Appendix C** of this oCEMP. A full copy of the Invasive Species Assessment and Invasive Species Management Plan is provided in **Appendix D** of this oCEMP.

An invasive species specialist should be in attendance during all required works to embankments and river banks. An Invasive Species Clerk of works must be in place to carry out regular site inspections and manage the excavation, removal, stockpiling and treatment of invasive plant species during the works.

The following summarises the invasive species management measures for the construction phase of the development:

4.9.1 Japanese Knotweed

Lifford

The proposed plan is to feature two main objectives to deal with the Japanese Knotweed (JK14, JK15 & JK16):

- The in-situ herbicide treatment of the Japanese Knotweed. (JK16)
- The excavation of Japanese Knotweed contaminated material which lies in areas critical to the development and relocated to a set aside containment area for continued herbicide treatment. (JK14 & JK15).

Table 1 summarises the management plan approach for each stand of Japanese Knotweed for the construction phase.

Table 1 Management of JK, Lifford

JK	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE
14	YES	Excavate & Relocate to CA1
15	YES	Excavate & Relocate to CA1
16	NO	Fenced off & Herbicide applied

Strabane

The proposed plan is to feature three main objectives to eradicate/control with the Japanese Knotweed (JK1-JK10):

- The in-situ herbicide treatment of the Japanese Knotweed.
  (JK1, JK2, JK3, JK4, JK5, JK01 remainder of JK8, JK9 and JK10)
- The excavation of Japanese Knotweed contaminated material which lies in areas critical to the development and relocated to a set aside containment area for continued herbicide treatment.
  (JK6 & JK7 total removal) (JK8, JK9 & JK10 Partial removal)
- The installation of a root barrier membrane
  (JK1, remainder of JK8, JK9 and JK10)

Note: (JK11-JK13) will be eradicated/controlled under an earlier development of the path by the Strabane North Greenway team and will be not considered in the Management Plan.

The Japanese Knotweed infestations of JK1-JK10 will be controlled / eradicated as part of the Management Plan associated with this development.

Table 2 summarises the management plan approach for each stand of Japanese Knotweed for the construction phase.

Table 2 Management of JK, Strabane

JK	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE
JK1	NO	Fenced off & Herbicide applied Membrane Installed
JK2	NO	Fenced off & Herbicide applied
JK3	NO	Fenced off & Herbicide applied
JK4	NO	Fenced off & Herbicide applied
JK5	NO	Fenced off & Herbicide applied
JK6	YES	Excavate & Relocate to Containment Area
JK7	YES	Excavate & Relocate to Containment Area
JK8	PARTIAL	Excavate & Relocate to Containment Area Fenced off & Herbicide applied Membrane Installed
JK9	PARTIAL	Excavate & Relocate to Containment Area Fenced off & Herbicide applied Membrane Installed
JK10	PARTIAL	Excavate & Relocate to Containment Area Fenced off & Herbicide applied Membrane Installed

4.9.2 Himalayan Balsam

Lifford

The proposed plan is to feature two main objectives to eradicate/control the Himalayan Balsam (HB8-HB10):

- The stripping of lands that contain Himalayan Balsam which lie in areas critical to the development are to be relocated to a set aside containment area for continued herbicide treatment and monitoring. (HB8, HB9 & HB10)

- The in-situ herbicide treatment of the Himalayan Balsam which may remain close to the water's edge from HB8, HB9 & HB10.

It is necessary to strip the lands in development critical areas that contain Himalayan Balsam as this is best suited to timescale of the project.

In situ herbicide application is not a viable option in the development critical areas as this requires a 2-year treatment plan, therefore the stripping of these lands and relocation of material is the preferred treatment option.

Table 3 summarises the management plan approach for each area of the Himalayan Balsam for the construction phase.

Table 3 Management of HB, Lifford

HB	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE
HB8	PARTIAL	Strip & Relocate to CA1/ Apply herbicide what remains in situ
HB9	YES	Strip & Relocate to CA1/ Apply herbicide what remains in situ
HB10	PARTIAL	Strip & Relocate to CA1/ Apply herbicide what remains in situ

Strabane

The proposed plan is to feature two main objectives to eradicate/control the Himalayan Balsam (HB1-HB7):

- The in-situ herbicide treatment of the Himalayan Balsam.
  (HB1 Partial, HB2 Partial, HB3 Partial & HB7 Partial)

- The stripping of lands that contain Himalayan Balsam which lie in areas critical to the development are to be relocated to a set aside containment area for continued herbicide treatment and monitoring.
  (HB1 Partial, HB2 Partial, HB3 Partial and HB7 Partial)

Note: (HB2 (partial), HB4-HB6) will be eradicated/controlled under an earlier development of the path by the Strabane North Greenway team and will be not considered in the Management Plan.

The Himalayan Balsam infestations of HB1, HB2 (partial), HB3 and HB7 will be controlled / eradicated as part of the Management Plan associated with this development.

It is necessary to strip the lands in development critical areas that contain Himalayan Balsam as this is best suited to timescale of the project.

In situ herbicide application is not a viable option in the development critical areas as this requires a 2-year treatment plan, therefore the stripping of these lands and relocation of material is the preferred treatment option. Table 4. that follows summarises the management plan approach for each area of the Himalayan Balsam for the construction and operational phases.

Table 4 Management of HB, Strabane

	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE
HB1	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ
HB2 **PARTIAL**	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ
HB3	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ
HB7	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ

4.9.3 Giant Hogweed

Lifford

It is proposed to the Giant Hogweed (GH1) via herbicide application twice per season for a period of at least 2 years.

- The Giant Hogweed on located on site has already undergone herbicide treatment it is proposed to continue this process and treat the Giant Hogweed (GH2) in situ.
- The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians.
- A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.
- The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species.
- Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying.
- Spraying will only be carried out only in suitable weather conditions, to reduce spray drift.
- The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard.

Strabane

It is proposed to the Giant Hogweed (GH1) via herbicide application twice per season for a period of at least two years.

- The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians.
- A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.
- The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species.

- Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying.
- Spraying will only be carried out only in suitable weather conditions, to reduce spray drift.
- The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard.

4.9.4 Biosecurity

To ensure biosecurity on site and reduce the spread of the invasive species throughout the site and on to other sites the following measures are to be implemented:

- Erect fencing around the invasive species (Japanese Knotweed & Giant Hogweed) and place relevant signage.
- Erect Fencing around Containment Treatment Area and relevant signage.

Invasive Species (Plants and Bivalves) Construction Phase

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.) is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high risk machinery that has recently involved in in-river works.
- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows:-

    - On arrival at or departure from the site, **ALL** construction machinery and for delivery vehicles travelling within the site beyond the construction compound / delivery bay should be visually inspected and disinfected in the self-contained biosecurity washing area of the Construction Compounds.
    - The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.

- The machinery should then be power-hosed with water of 60 ^{o}C + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.
- The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.
- Sludge from the self-contained biosecurity facility shall be routinely (on at least a weekly basis) removed from the washing area and transferred to a water-tight covered skip for storage, awaiting off-site disposal to an appropriately licensed landfill site for deep burial.

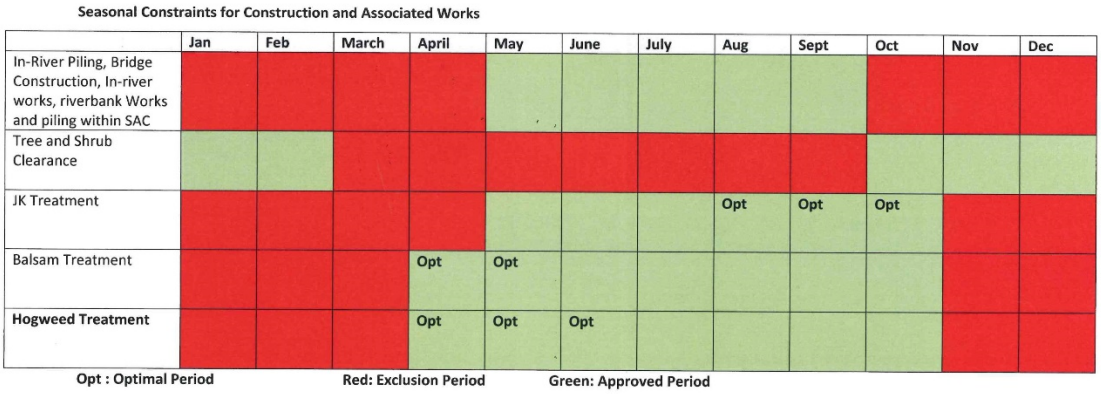
Mitigation Measures Invasive Species (Plants only) Construction Phase

- The Invasive Species Clerk of Works and Ecological Clerk or Works will be jointly responsible for the monitoring of biosecurity onsite. These responsibilities include site management, restrict personal and movement to designated areas, restrict access to site, clean maintain PPE, equipment and plant machinery.
- Plant Machinery are to restrict to in movement around the site, and within given work areas and haul routes to from containment areas.
- Plant machinery will remain on site in restricted area until excavation, and replacement to the containment area have been completed.
- Recommend the use of rubber tyre plant wherever possible rather than tracked plant.
- Plant machinery to be thoroughly cleaned down upon completion of works including tracks, tyres, buckets, trailers etc and material place in the containment area.
- PPE especially boots to be deep clean and any material placed in containment area.
- Cleaning of Plant Machinery and PPE will be overseen and undertaken by onsite Invasive Species supervisor who will instruct if the plant and personal are safe to leave.

4.10 Seasonal Constraints

Based on the various ecological constraints to the construction works, and to ensure optimal management for invasive plant species, the following seasonal constraints will apply for the construction phase.

Seasonal Constraints for Construction and Associated Works



5.0 SOILS AND WATERS

The Site is located on Alluvium which is typically clay and sand (2-3m thick) overlying deep fluvioglacial sands and gravels extending to >18m depth. There may be organic deposits which would be a source of ground gas for any future permanent end structures. These superficial deposits on review of the historical GSNI information are indicated to be +9m of thickness, with water strikes. The deposits are also classified as a Locally Important Sand and Gravel Aquifer. The strata will be hydrologically connected to the Foyle River, with shallow groundwater in these deposits discharging into the river.

There will be some variability of the strata. The ground investigation may confirm the presence of more cohesive layers which would limit the lateral and vertical migration therefore lowering the risk to the water environment which at present is Very High under CIRIA classification risk categories due predominantly to the risk during construction.

The underlying bedrock Dungiven /Claudy Formation (psammite, quartzite, coarse grained grits) which is of limited productivity, however, is classified under the Northern Ireland Groundwater

Vulnerability as Class 4e, on a scale from 1 to 5 where 1 is lowest vulnerability and 5 is highest vulnerability. This is due to the expected granular nature of the overlying Alluvium.

Physically within the Strabane side of the site, a historical railway with multiple lines and associated infrastructure was located.

5.1.1 Lifford

There are three aspects to the construction phase where impacts should be considered. These can be summarised as firstly the ground conditions themselves which will be exposed during excavation works. The second is spillage of vehicle fuels or construction materials (e.g. cement) which could have a direct toxicity pollution effect and the third is general mobilisation of sediments and particulates which could smother the water column and base of receiving water courses.

The key civil engineering works which will have potential impact on the land and water environment during construction are summarised below:

- The initial site clearance and demolition works/ topsoil strip;
- Invasive species removal;
- Excavation of cuttings;
- Earthworks (cut/ fill, see **Appendix E**);
- Land contamination remediation works involving excavations and shallow soil removal;
- Construction of pre-earthworks drainage and temporary settlement lagoons;
- Construction of drainage networks, including Sustainable Drainage Systems (SuDS) basins and outfall installation;
- Constructions of buildings / structures;
- Construction of a bridge crossing with pilling support
- Retaining wall construction;
- The construction of material deposition areas;
- The construction of spoil repositories;
- Construction of new / replacement of watercourse crossings; and
- Direct disturbance of the banks and bed watercourses.

5.1.2 Strabane

The key civil engineering works which will have potential impact on the hydrology and water environment during construction are summarised below:

- The initial site clearance works/ topsoil strip;
- Creation of Phase 1 (heavy civils, works to flood embankments, bridge abutments and bridge lift) Contractors Compound, with Biosecurity Facility, at the former halting site.
- Excavation of cuttings;
- Earthworks (cut/ fill, see **Appendix E**);
- Construction of pre-earthworks drainage and temporary settlement areas;
- The construction of material deposition areas for invasive species.
- The construction of spoil repositories for cut – fill operations;
- Construction of new / replacement of watercourse crossings; and
- Direct disturbance of the banks and bed watercourses.
- Relocation of Construction Compound for Phase 2 works (construction of car park and landscaping).
- Removal of existing concrete hardstanding at halting site and construction of new Main Car Park and associated SuDS drainage engineering.
- Landscaping and planting works.

5.1.3 Measures Applicable to Strabane and Lifford

- Pollution Prevention Plan must be prepared prior to the commencement of works.
- Emergency Response Plan must be implemented following spillage events.
- Pluvial flooding management.
- Good stockpile management must be implemented to prevent erosion.
- Appropriate surface management must be implemented to prevent erosion after vegetation/topsoil clearance and during vegetation colonisation following placement of landscaped features.
- All Buffer Zones restricting high risk activities close to high risk receptors (15m around water courses and at least 100m away from the boundary of the SAC) must be put in place prior to commencement of works.
- Silt management measures must be implemented to prevent the risk of any sediment laden flow entering watercourses.

- Concrete pouring near or in watercourses to be undertaken only within protective barriers to prevent dispersion.
- Fuels and chemicals must only be stored within bunded areas with at least 110% storage volume within the Construction Compound only.
- Refuelling of mobile plant must only be undertaken within the bunded area with at least 110% storage volume within the Construction Compound.
- Spillage kits must be immediate available close-to-hand in working areas.
- Stationary plant must be fitted with plant-nappy style drip trays that are regularly emptied or stored within bunded area on an impermeable surface.
- Vehicles only to be parked up at the Construction Compound.
- Vehicles to be regularly inspected and maintained.
- On-site Personnel training should be adequately trained such that all site operatives are aware of standard good practices, the site rules, site-specific mitigation measures and work restrictions within the buffer zones.
- The contractor must ensure that they obtain all relevant consents for all proposed environmental discharges and in-river works well in advance of the works and comply with all of the conditions therein.
- The contractor must undertake environmental monitoring at sensitive site boundaries for deposited dust.
- Thye contractor must undertake environmental monitoring for surface waters and groundwaters in accordance with the outline Water Quality Monitoring Programme (**Appendix 9-11 of EIAr**).
- All monitoring results shall be provided to the client on at least a monthly basis, or as soon as any abnormal result is detected, with immediate action taken to bring the concentrations to within baseline levels.

<u>Earthworks / Excavations</u>

To minimise the risk of erosion, topsoil stripping, cut and fill and other necessary excavation works must be undertaken in a phased manner and limited to areas where earthworks are immediately programmed.

There shall then be restoration of bare surfaces (seeding and planting) throughout the construction period as soon as possible after the work has been completed or protecting exposed ground with geotextiles if to be left exposed. Existing topsoil and cut materials should

be retained safely on site to be used for the proposed development, subject to stockpiling controls including appropriate buffers (15m for all watercourses, 100m for River Foyle SAC).

Removal of vegetation from the riparian corridor shall be limited and retaining vegetated buffer zone should be considered wherever reasonably practicable. A 15m buffer zone will be in place around all watercourses where there are works being undertaken to reduce risk of pollution events or sedimentation.

Dust control measures shall be employed where there is the potential for wind to erode earth works (particularly in exposed areas). Common methods for dust control in soil include; water suppression and the use of covers / screens (where practicable) for fine materials e.g. sand. Deposited Dust monitoring will be required for the duration of the construction works.

Construction Phase Silt Management Drainage Features

All construction runoff water must be passed through treatment facilities prior to outfall to the receiving watercourse. These facilities may be a combination of temporary settlement lagoons, SuDS ponds (constructed in advance of the main earthworks but may be utilised during the construction stage), and proprietary sediment removal tanks. During the construction stage accumulated sediment must be removed on a periodic basis.

It is inevitable that some water will enter the construction site and runoff will entrain sediment. Measures to control this sediment and minimise the amount travelling off site into the wider water environmental must include the installation of appropriate sediment migration controls such as silt fences, check dams, bunds, and other sediment trap structures as appropriate.

Positioning of these silt control measures will be an important aspect of their efficacy i.e., downslope of overland flow paths, sufficiently setback from water edges to minimise pollution in the event of failure. Retaining a grassed buffer zone or compacted earthen berms can also prevent direct runoff of waters from the construction site to watercourses. All control measures implemented will require regular inspection and maintenance to remove sediment that may compromise the efficiency of the measure.

Non-engineering solutions and green engineering (e.g., vegetation, geotextile matting) can also be placed downslope of earth works to help capture silt laden runoff from earthworks.

Timing / Phasing of Works

The timing of specific construction works can help minimise erosion and reduce sediment controls needed on site. For example, checking weather forecasts to avoid heavy rainfall events or take preparatory actions. The indicative works programme (**Appendix F**) has been designed around seasonal constraints necessary for ecological protection. The Biodiversity chapter of this CEPM details specific ecological constraints.

Stockpiling

Unnecessary stockpiling of materials must be avoided. Any required stockpiling must be minimised on site (spatially and in duration) to reduce the amount of contaminated run-off generated.

Areas of stockpiling / material deposition must be appropriately lined, located away from watercourses (outside buffer zones). Stockpiles of topsoil / soils must be covered / dampened during dry weather to prevent spreading of sediment / dust.

In advance of construction, silt fences and bunds must be provided around the footprint of any stockpiles. Any runoff generated on the construction site around the stockpiles must be captured by peripheral cut-off ditches and directed to settlement lagoons and / or sediment tanks which must be provided upstream of the outfall to the receiving watercourse.

Stockpiles must be protected against rain splash and wind erosion by geotextile matting. Plastic sheeting should be avoided as this has the propensity to transfer erosion problems because water will sheet flow off the plastic at high velocity.

Works in Watercourses

Works to existing surface watercourses (such as installation of temporary or permanent culverts or bridges) have the potential to cause an obstruction to flow and may alter conveyance capacities, potentially causing temporary restrictions in watercourse channels, affecting upstream water levels and increasing flood risk.

The same principles of good practice that apply to permanent crossings also apply to temporary river crossings. Their design should prevent access track / road run-off from entering watercourse, reduce risk of erosion and not increase flood risk. Inappropriately sized crossings

can cause flooding by being too small to cope with the flow and / or becoming blocked by debris, therefore, hydrological calculations and examining available flow and rainfall records should be undertaken when considering crossing design.

Good practice methods must be adhered to in order that installation of outfalls does not cause or generate erosion of land, banks or beds during construction phase.

Concrete, Cement and Grout

The use and management of concrete, cement and grout must be carefully controlled to avoid spillage which could potentially have an adverse impact on the water environment. Quick setting products (cement, concrete and grout) will be used for structures that are in or near to watercourses.

Any concrete mixing and washing areas must be located outside all buffer zones and have settlement and re-circulation systems for water reuse. Where concrete pouring is required within buffer zones (15m of a water feature or over a water feature), appropriate protection will be put in place to prevent spills entering the channel (See Section 9.3.3).

Washwater should not be discharged to the water environment but should be disposed of appropriately through containment and disposal to an authorised waste disposal site.

Chemical Storage, Handling and Re-use

Chemical, fuel and oil storage must be undertaken within the site compounds, which will be located on stable ground at a low risk of flooding and at least 15m from any watercourse (100m from River Foyle SAC). The compound chemical stores must also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity.

Apart from use for treatment of invasive plant species by suitably licensed specialists, pesticides, including herbicides, must only be used if there are no alternative practicable measures, and will be used in accordance with the manufacturer's instructions and application rates.

Refuelling and Storage of Fuels

Only designated trained and competent operatives will be authorised to refuel plant and all refuelling will be undertaken at designated refuelling area in the Construction Compounds. Appropriate measures will be adopted to avoid spillages.

Oil / Fuel Leaks and Spillages

Stationary plant must be fitted with plant nappy style drip trays and emptied regularly, and plant machinery will be regularly inspected for leaks with maintenance as required. Spillage kits will be stored at key locations on-site, and all construction activities will comply with a Pollution Incident Control Plan to be prepared by the appointed Contractor prior to commencement of works.

Construction Compounds

It is envisaged that there would be one Construction Compound on each side of the development (Lifford and Strabane) with Biosecurity Facility to serve the development works.

For Strabane, the Construction Compound for Phase 1 works (heavy civils, works to flood embankments, bridge abutments and bridge lift) shall be located on existing hardstanding at the former halting site (hardstanding area in the southern portion of the site). Once Phase 1 works are completed a scaled-down Phase 2 Construction Compound will need to be moved to an alternative location to the north of the halting site to allow for completion of the construction works (construction of main car park at former halting site, plus landscaping and planting works).

Compounds must be located at least at least 15m away from any minor watercourse, ditch or drainage channel and at least 100m away from the boundary of the SAC. Measures must also be implemented to manage silt laden surface water runoff from the compound to direct water to treatment facilities as not to discharge directly to nearby watercourses.

There shall be no discharge of effluent to surface water during the construction phase. All wastewater from the construction facilities must be stored for removal off site for disposal and treatment.

Wheel Washes / Plant Washes

For vehicles and plant leaving material deposition / stockpile areas, self-contained wheel wash facilities must be installed at the exit and all vehicles will be required to pass through them.

To prevent the spread of hazardous Invasive Species and pathogens, high pressure steam cleaning of all items of plant and equipment to be used at and adjacent to waters must be undertaken prior to use.

Monitoring

Daily visual water quality assessments must be undertaken by the appointed Environmental Clerk of Works (ECoW) who will remain on site to monitor construction activities for signs of pollution and advise on the deployment of control measures. A Pollution Prevention Plan (PPP) must be prepared by the Contractor prior to the commencement of works.

An outline Water Quality Monitoring Programme has been developed (Appendix 9-11 of EIAr) which sets out locations and sampling schedules for appropriate surface water quality and groundwater sampling points. This programme must be implemented to monitoring for any degradation of water quality during the works, with procedures in place to manage any breaches. Baseline monitoring is included to establish relevant Control and Trigger levels of key parameters. Post-Construction monitoring is included for confirmation against baseline conditions.

On Site Personnel Training

The CEMP will form part of the site induction for site operatives and a record of inductions will be kept in the site compound and be available for inspection. All site personnel will be made aware of the importance of the requirement to avoid pollution of all types, throughout all stages of the construction phase.

The Contractor will be obliged to ensure no deleterious discharges are released from the site to surrounding watercourses during the construction stage. Throughout the works the Contractor will also take account of relevant legislation and best practice guidance including but not limited to the following:

- CIRIA C649: Control of water pollution from linear construction projects (2006);
- CIRIA C741 Environmental Good Practice on Site Guide (2015);
- CIRIA C753 The SuDS Manual (2015);
- CIRIA C769 Guidance on the construction of SuDS (2017);
- DEFRA Good Practice Guide for Handling Soils (MAFF 2000);
- BS 8582:2013 Code of practice for surface water management for development sites; and
- Guidance on Pollution Prevention (GPP) SEPA & NIEA, 2018.

5.1.4 Ground Gas Protection (Lifford)

Ground gas protection measures should be installed under the community hub building in Lifford in accordance with the requirements of the GQRA (Appendix 9-6 of the EIAr Addendum). One of the following measures should be implemented with all joints and penetrations sealed;

- Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200 g DPM^2.
- Beam and block or precast concrete slab and minimum 2000 g DPM/reinforced gas membrane.
- Underfloor venting or pressurisation in combination with a) and b) depending on use.

The installation of all gas protection measures should be subject to suitable inspection and verification processes.

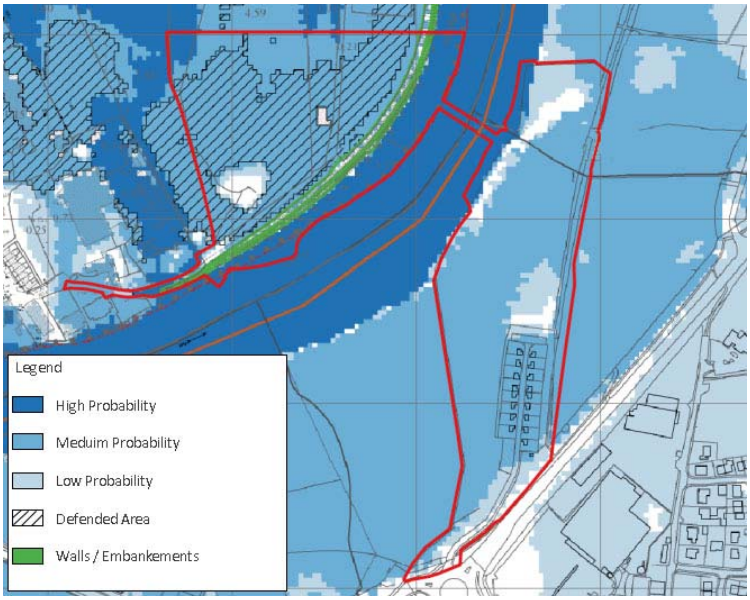
5.1.5 Ground Remediation (Strabane)

A limited programme of ground remediation works is required at the Strabane site. This involves the excavation and off-site removal of contaminated shallow soils (asbestos and metals) from two small areas. A Remediation Strategy for those works is included in the GQRA Report (Appendix 9-6). These works must be subject to suitable inspection and verification to ensure that the remedial recommendations are properly implemented.

5.2 Flood Risk

OPW (ROI) and DfI Rivers (NI) flood mapping shows that most of the proposed development site is affected by fluvial or coastal / tidal flooding). Estimated flood mapping, for OPW and Dfi Rivers is indicated within Figure 6.

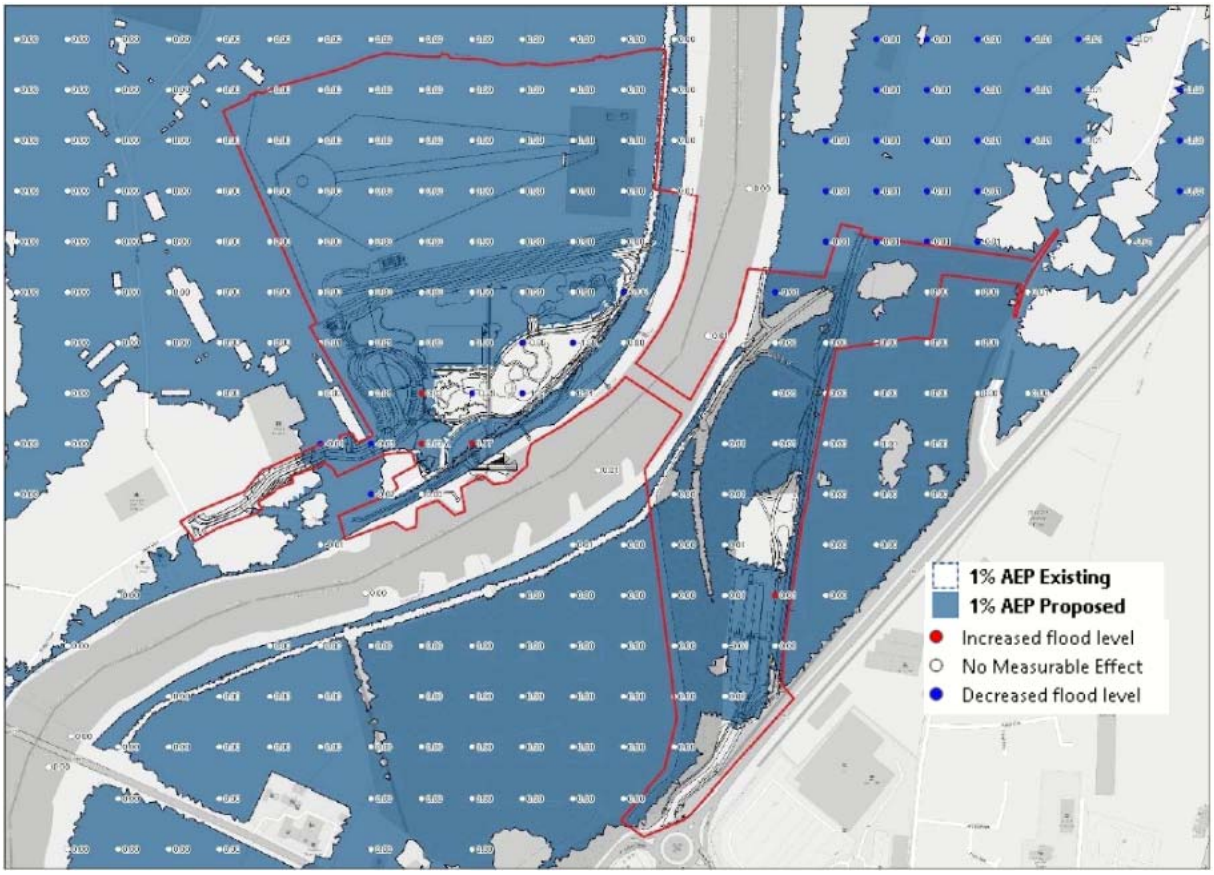
Figure 6: River flood extents (1%AEP) – present day



Detailed hydraulic modelling has since been undertaken, accounting for both pre-development and post-development scenarios. The post development scenario accounts for infilling portions of the site, with cut provided elsewhere to provide compensatory flood storage – see **Appendix E**.

As indicated within Figure 7, analysis of the whole model dataset confirms that for the scenario considered (relevant to planning policy / guidelines in both jurisdictions) there is no measurable affect attributable to the development outside the application site in either jurisdiction. Localised effects within the site are predicted, however these are acceptable in principle and are reflected in proposed predicted water levels that inform mitigation and flood resilience.

Figure 7: Flood level increase because of the proposals



Estimated flooding levels for the post development scenario is indicated within the following tables.

Lifford – Proposed Scenario, 1% AEP including Climate Change

Location	1% AEP		0.1% AEP	
	Water Level (mOD)	Mean / Max Flood Depth (m)	Water Level (mOD)	Mean / Max Flood Depth (m)
Community Hub	N/A (4.61 adjacent)	N/A	N/A (5.05 adjacent)	N/A
Outdoor Events Space / External Stage	4.55	1.1 – 1.5	4.95	1.5 - 1.9
Car Parking	4.57	1.1 - 1.7	5.05	1.5-2.0
Junior Play Area	4.55	N/A	4.95	0.3 - 1.4
Senior Play Area	4.55	1.4 - 2.1	4.95	0.8 - 2.5
Maintenance Building	4.55	1.4 – 1.5	4.95	1.8 - 1.9
Fishing Stands	5.55 – 5.28	2.1 - 2.4	5.85 – 5.67	2.5 – 2.7
Accommodation Works – Spectator Building	4.55	2.5 – 2.7	4.95	2.9 - 3.2

Strabane - Proposed Scenario, 1% AEP including Climate Change

Location	1% AEP	
	Water Level (mOD)	Mean / Max Flood Depth (m)
Car Park	5.15 – 4.97	1.29 / 1.59
Boardwalk	4.9	1.41 / 3.02
Site Entrance Road (Greenbrae Park)	5.19 – 5.15	0.56/ 1.13
Site Entrance Road (Park Road)	4.6	0.83 – 1.16

Furthermore, any watercourse crossing will be required to comply with OPW Section 50 and DfI Rivers Schedule 6 requirements, including gaining consent from the relevant body. Various mitigation measures relating to flood risk are listened within Section 9 of the EIAr Addendum – Soils and Waters.

5.3 Pollution Prevention

To address potential impacts upon nearby designated sites arising because of the Proposed Development, in respect of potential emissions to the Foyle water system including pollutants and sediments and aerial dust and visual disturbance during construction, a range of mitigation measures will be implemented.

The following mitigation measures will be implemented to prevent pollutants entering the drainage systems on site and reaching the River Foyle downstream of the site of Proposed Development:

1. New drainage infrastructure will be bunged at the end of each working day to prevent water ingress and accidental contamination. Final connections will be made post-completion of road construction. Self-contained recirculating wheel washes will be used by the contractor at the entrance and egress points of the site.
2. The contractor will dedicate specific areas for oil storage and refuelling, at the Construction Compounds and comply with legislation, including providing bunds sized to contain 110% of fuel storage capacity. The contractor will use fill point drip trays, bunded pallets and secondary containment units. The site will be enclosed and secured, and fuel storage areas will be secondarily secured.
3. All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.
4. There will be no stockpiling of materials within 15m away from any minor watercourse, ditch or drainage channel.
5. External concrete and cement mixing will take place on an impermeable designated area, external to buffer zones.
6. Equipment, such as chutes, portable mixers, barrows, pump lines, shovels, will be washed out in adesignated area of hard standing drained to a sealed sump and subsequently removed from site (no environmental discharge).

6.0 NOISE

The assessment of construction noise impacts from the proposed development has indicated that construction noise limit criteria will not be exceeded at the nearest residential properties during daytime. Very occasionally elevated construction noise may occur when heavy construction activity occurs near noise sensitive receivers.

Noise from construction works will fluctuate throughout the course of a typical working day as well as over the course of the construction works being undertaken in any one location. Therefore, the daytime construction noise limit of 65 dB $L_{Aeq,12\,Hour}$ will be achieved at the nearest residential properties. The construction noise impacts will be short-term and will not be significant.

Also, while the overall construction activities for the Riverine Community Park will occur over 9 - 12 months, the nature of the proposed works and its duration will mean that noise sensitive receivers will not be exposed to continuous construction noise impact during the construction period. Appropriate construction mitigation measures have been outlined and once implemented, the residual impacts from the construction period will not be significant.

6.1.1 Construction Noise Mitigation Measures

Appropriate mitigation measures have been identified to ensure the Construction Phase target noise limits are not exceeded. The contractor will be required to implement the control measures recommended in BS 5228 and apply the appropriate measures where applicable. Other measures will include:

- Working hours during site construction operations will be restricted to daytime hours from 07:30 hours to 18:00 hours (Monday to Friday) and, as may be required, from 08:00 hours to 13:00 hours (Saturdays). Evening and night-time work is not expected to take place although it is possible that limited 24 hours working may be required to take place on occasion. This will only take place with the prior agreement of Derry & Strabane District Council and Donegal County Council.

- An on-site speed limit will be enforced for all traffic. Drivers of vehicles will be advised of the speed limits through the erection of signs *i.e*. a typically recommended on site speed limit is 10 km/hr.
- Where practicable, the use of quiet working methods and the most suitable plant will be selected for each activity having due regard to the need for noise control.
- Best practicable means will be employed to minimise noise emissions and will comply with the general recommendations of BS 5228. To this end operators will use "*noise reduced"* plant and/or will modify their construction methods so that noisy plant is unnecessary.
- By positioning potentially noisy plant as far as possible from noise sensitive receivers the transmission of sound can be minimised. Earth mounds and/or stockpiles of material or ecology-friendly perimeter hoarding (only in areas of the site where hoarding is absolutely necessary) can be used as a physical barrier between the source and the receiver.
- Mechanical plant used on site will be fitted with effective exhaust silencers. Vehicle reverse alarms will be silenced appropriately in order to minimise noise breakout from the site while still maintaining their effectiveness.
- All plant will be maintained in good working order. Where practicable, machines will be operated at low speeds and will be shut down when not in use.
- Compressors will be of the "noise reduced" variety and fitted with properly lined and sealed acoustic covers.
- In all cases engine and/or machinery covers will be closed whenever the machines or engines are in use.
- All pneumatic percussive tools will be fitted with mufflers or silencers as recommended by the equipment manufactures. Where practicable, all mechanical static plant will be enclosed by acoustic sheds or screens.
- Employees working on the site will be informed about the requirement to minimise noise and will undergo training on the following aspects:
- The proper use and maintenance of tools and equipment.
- The positioning of machinery on-site to reduce the emission of noise to the noise sensitive receivers.
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.

- The use and maintenance of sound reduction equipment fitted to power pressure tools and machines.
- Where excessive noise levels are recorded, further mitigation measures will be employed which may include temporary wooden ecology-friendly hoarding / acoustic screening to be installed to a height of no less than 2.5m around areas of construction where loud noise levels occur.
- The contractor will ensure that the TII Guidelines which identify limits for protection against cosmetic damage as a function of vibration frequency are not exceeded using the selected low vibration piling method.
- Responsible Person –The Contractor will appoint a responsible and trained person who will be present on site and who will be willing to answer and act upon complaints and queries from the local public.
- Night-time Working - If there are items of plant (*e.g*. dewatering pumps and similar) in use during night-time hours they will be chosen, sited and enclosed such that levels at the nearest properties do not exceed the measured background noise levels.
- Where deemed necessary due to excessive impact or complaints received, noise monitoring will be undertaken during construction works to determine noise and vibration levels at sensitive receivers. Based on the findings of such noise monitoring, appropriate mitigation measures will be implemented to reduce impacts.

7.0 VIBRATION

- Working hours for piling activities for less sensitive time or days i.e. during the daytime between 07.30h to 18.00h for Monday to Friday, Saturday 08.30h to 13.00h.
- Use of minimal vibration piling equipment i.e. using a CFA piling method for bridge construction and any other piling works within the SAC or in close proximity to badger setts.
- An alternative low vibration method for removal of the hardstand not involving the use of rock hammers or similar percussive methods must be deployed. Use of low vibration techniques for soil compaction.

- Carry out a baseline vibration survey to determine current ambient vibration levels at the proposed piling and vibration-sensitive receptor locations.
- The measurement location at the vibration-sensitive receptor should be close to, but far enough away so not to disturb i.e 10 m away.
- Identify vibration levels the vibration-sensitive receptors are currently exposed to, and assess the potential impact from CFA piling and Silent Sheet piling on the vibration-sensitive receptors.
- Determine action and limit values based on the baseline vibration survey and available guidance from international standards.
- Install continuous vibration monitoring equipment at the piling location and the vibration-sensitive receptor location measuring the vibration levels.
- Monitor the vibration levels and compare with the agreed action and/or limit values.
- It is recommended the PPV is measured and if possible, the weighted acceleration and hence the VDV could also be measured (and/or determined).

8.0 AIR QUALITY AND DUST

The main existing impact on air quality in the vicinity of the proposed development site is due to emissions from traffic on the A5 (The Great Northern Link) and N14 roads in Strabane and Lifford respectively along with domestic and industrial emissions. The existing air quality in proximity to the site is 'good'. No air quality management areas are currently declared in the area.

Continuous automated dust monitoring must be undertaken at key locations, including bridge crossing points, within the site for the duration of the works.

There will be a potential for construction dust to be generated due to construction activities and the movement of construction vehicles during the construction phase. The approximate 12-month construction duration will have a short-term and localised negligible impact on air quality. The mitigation measures outlined will reduce the potential for construction dust impact to negligible.

8.1.1 Construction Phase Mitigation Measures

These mitigation measures are deemed necessary in addition to those detailed elsewhere within this oCEMP. In accordance with the IAQM Guidance, for proposed mitigation measures, the highest risk category should be applied. Therefore, the mitigation measures applicable to a High-Risk site should be applied. These are outlined as follows:

General Measures

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Dust Management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.
- Continuous automated dust monitoring must be undertaken at key locations, including bridge crossing points, within the site for the duration of the works.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and inspect logs available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.

- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- No bonfires and burning of waste materials is permitted.

The IAQM Guidance Mitigation Measures applicable to the specific works undertaken are as follows:

Measures specific to demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water

suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Measures specific to construction.

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures specific to trackout.

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a self-contained wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible

9.0 ARCHAEOLOGY

9.1 Archaeological Assessment (Underwater Surveys)

A systematic visual survey of the assessment area was carried out over two (2) Low Water Tide cycles, extending beyond the boundary identified for the proposed development. The onsite work included an intertidal/bankside walkover, waded/snorkel survey (where water depth was <500mm), and dive survey of the sub-tidal areas (where water depth was >500mm).

Targeted metal-detection was also employed to assess the degree of *ferrous* and non-*ferrous* metallic debris present within a series of sample areas. Existing riverine topography was recorded (bed/bank profiles), along with any in-water features of interest that were encountered. A combination of DGPS and Total Station recording facilitated this work.

In addition, a drone was deployed to capture aerial images of the assessment area and a sonar device was used to capture acoustic images of the sub-tidal riverbed.

9.2 Archaeological Finds

Two (2) fragments of logboat (dug-out canoe) were discovered as part of the underwater survey (Figure 7). Both represent re-deposited items, lying on the surface of the riverbed close to the northwest side of the River Foyle; having most likely floated downstream during a recent floodwater event.

9.3 Impact Assessment

Potential impacts associated with the proposed development and corresponding impact classifications have been tabulated in **Table 5**. There are no impacts (primary or secondary) to any known archaeological material, deposits, or features arising from the proposed works.

Table 5 Nature and Classification of Archaeological Impacts arising from the Development

Proposed works	Location	ITM	Potential Impacts	Classification of Impact
1. Bridge Abutment; 5.6m x 5m footprint	Intertidal/ Riverbank/ Bankside Areas (Lifford)	1. 633906 E, 898676 N	While there is no known impact to any visible archaeologically or historically significant features, the potential for buried (sub-surface) features, deposits, or material remains moderate-high.	Direct, negative, impact to any sub-surface features; moderate and permanent in nature.
2. Intermediate Pier; 5m x 1m footprint.	Intertidal/ Sub-tidal Areas (Lifford)	2. 633930E, 898660N	While there is no known impact to any visible archaeologically or historically significant features, the potential for buried (sub-surface) features, deposits, or material remains moderate-high.	Direct, negative, impact to any sub-surface features; moderate and permanent in nature.
3. Crane pad and construction works area for the bridge build; bankside area measuring *c.* 128m x 27m, intertidal/sub-tidal area measuring 18m x 52m.	Riverbank/ Intertidal Areas (River Foyle)	3. 633912E, 898639N	While there is no known impact to any visible archaeologically or historically significant features, the potential for buried (sub-surface) features, deposits, or material remains moderate-high.	Direct, negative, impact to any sub-surface features; moderate and permanent in nature.
4. Concrete Slipway; *c.* 46m x 11m construction footprint.	Intertidal/ Sub-tidal Areas (River Foyle)	4. 633821E, 898557N	While there is no known impact to any visible archaeologically or historically significant features, the potential for buried (sub-surface) features, deposits, or material remains moderate-high.	Direct, negative, impact to any sub-surface features; moderate and permanent in nature.
5. Bridge Abutment; 6.7m x 5m footprint, 18m x 19m works area.	Riverbank/ Bankside Areas (Strabane)	5. 634005E, 898608N	While there is no known impact to any visible archaeologically or historically significant features, the potential for buried (sub-surface) features, deposits, or material remains moderate-high.	Direct, negative, impact to any sub-surface features; moderate and permanent in nature.
6. Footpath and associated landscaping; *c.* 700m	Riverbank/ Bankside Areas (Lifford)	6. 633716E, 898528.N – 633969E, 898966N	Minimal ground disturbances anticipated limited to topsoil stripping over made ground.	No impact to sub-surface features anticipated.
7. Footpath and associated landscaping; *c.* 250m	Riverbank/ Bankside Areas (Strabane)	7. 633952E, 898518N - 634068E, 898753N	Minimal ground disturbances anticipated limited to topsoil stripping over made ground.	No impact to sub-surface features anticipated.

9.4 Construction Phase Measures

9.4.1 Archaeological Test-excavation

Given the high archaeological potential of the intertidal/riverbank areas surrounding the proposed bridge abutment and slipway impacts (including their associated works areas) on the northwest (Lifford) side of the River Foyle, Archaeological Testing of these areas will be undertaken. This requirement would normally be carried out in advance of construction.

However, due to environmental and health/safety concerns identified, this work will be undertaken during the construction phase of the project.

This work will be an archaeologically led endeavour, undertaken by a suitable qualified maritime archaeologist with expertise in riverine archaeology. The test-excavation will be machine assisted and continued to sufficient depth as to adequately assess those deposits present with the identified impact areas. A detailed record of the stratigraphic sequence of the deposits that form the riverbank/bankside area will be made.

9.4.2 Archaeological Monitoring

Archaeological Monitoring will be undertaken for the excavation/removal of any bankside/riverbed deposits from those areas surrounding the proposed bridge and slipway structures. Particular attention will be paid to the location of the intermediate bridge pier. This work will be carried out by a suitably qualified maritime archaeologist with expertise in riverine archaeology.

As part of the monitoring, a sample amount of the removed material (spoil) will be subject to metal detection to assess the potential for the retrieval of small finds from these deposits. In the event that archaeologically significant items are encountered, the percentage of spoil to be detected may be increased. Where little or no items are encountered, the percentage may be decreased. The archaeological work will be carried out in accordance with the terms of Section 5 of the National Monuments Act (2004 Amendment).

RETAINING AN ARCHAEOLOGIST/S

An archaeologist will be retained for the duration of the relevant works. The archaeologist should be familiar with and experienced in river/estuarine environments and have a good understanding of riverine archaeology and its associated features.

TIME SCALE

The timescale and programme of works for the entirety of the construction phase will be made available to the archaeologist, with information on where and when ground disturbances and/or dredging will take place.

SUFFICIENT NOTICE

The contractor will ensure that sufficient notice is given to the archaeologist/s in advance of the construction works commencing. This will allow for prompt arrival on site to monitor the ground disturbances. As often happens, intervals may occur during the construction phase. In such cases, it will be necessary to inform the archaeologist/s as to when ground disturbance works will recommence.

DISCOVERY OF ARCHAEOLOGICAL MATERIAL

In the event of archaeological features or material being uncovered during the construction phase, it is crucial that any machine work will be cease in the immediate area to allow the archaeologist/s to inspect any such material.

ARCHAEOLOGICAL MATERIAL

Once the presence of archaeologically significant material is established, full archaeological recording of such material will be undertaken. If it is not possible for the construction works to avoid the material, full excavation will be undertaken. The extent and duration of excavation will be a matter for discussion between the client and the statutory authorities.

ARCHAEOLOGICAL TEAM

The core of a suitable archaeological team will be on standby to deal with any rescue excavation situation. This will be complimented in the event of a full excavation.

SECURE SITE OFFICES & FACILTIES

Secure Site offices and facilities will be provided to the archaeological team near to any sites where excavation is required. This will be at one of the two Construction Compounds (Lifford and Strabane, within the relevant jurisdiction).

FENCING

Fencing of any excavation / investigation areas will be undertaken once discovered and during excavation.

MACHINERY TRAFFIC

Machinery Traffic during construction will be restricted as to avoid any of the selected investigation / excavation sites and their environs.

SPOIL / WASTE OR MATERIALS

Soil, Waste or materials will not be dumped on any of the selected investigation / excavation sites or their environs.

10.0 NATURA IMPACT ASSESSMENT

A Stage 1 screening for Appropriate Assessment undertaken by Delichon Ecology. This accounts for baseline conditions in and around the site to identify any potential environmental impacts that could potentially affect Natura 2000 sites due to the proposed development.

The Stage 1 screening for Appropriate Assessment identified a range of potential impacts to the designated Lough Foyle SAC and therefore triggered the need for a Stage 2 Appropriate Assessment Natura 2000 Impact Assessment Statement (NIS) to be undertaken. The Stage 2 NIS has been undertaken for the development by MCL Consulting, taking into account the consultation response and subsequent consultation meeting with DAU, the consultation response from ABP and with the benefit of the PEA and all of the species specific ecological surveys (updated where necessary) and other relevant environmental impact assessments including noise, vibration, land quality, soils and waters and flood risk, undertaken with respect to the proposed development**.**

The updated NIS work has deemed that the impacts of the site to the ecological environment can be fully mitigated for the full Construction Phase. The NIS implements a wide range of necessary ecological mitigation measures to ensure appropriate protection of Natura 2000 sites from impact from this development scheme for the construction (and operational Phases of development).

The range of mitigation measures developed within the NIS within the wider EIAR for the construction phase, through the environmental assessment process, are detailed in **Appendix A** of this oCEMP. For clarity, a more detailed description of the definition and working restrictions applicable to the Buffer Zones, additional mitigation applicable to necessary works within Buffer Zones, and the roles and responsibilities of the ECoW and ISCoW are also provided in this section and will apply in full to the construction works.

10.1.1 Ecological Clerk of Works

An Ecological Clerk of Works (ECoW) will be employed to provide advice both pre-construction and during construction in relation to relevant international and national legislation relating to the protection of ecological receptors; to provide advice on the timing of works and the implementation of mitigation measures; to apply for relevant derogation licences; to monitor identified works; and to produce site inspection reports.

In accordance with BS 42020:2013 Biodiversity, an ECoW is a person who has the ecological qualifications,training, skills and relevant experience to undertake appropriate monitoring and to provide specialist advice to site personnel on the necessary working practices required to safeguard ecological features on site andto aid compliance with any consents and relevant wildlife legislation (BSI 2013). There may be more thanone ECoW required depending on the specialist advice required throughout the project.

An Ecological Clerk of Works must be in place to carry our regular site inspections and be in attendance on a full time basis during site works near to buffer zones for protected species and within the SAC.

10.2 Invasive Species Clerk of Works

An Invasive Species Clerk of Works must be in place to carry out regular site inspections and manage the excavation, removal, stockpiling and treatment of invasive plant species during the construction works.

Part time supervision of general construction works will be carried out, with full time supervision of any works to excavate and remove invasive species including from within any defined buffer zones to the containment areas.

The Invasive Species Clerk of Works will provide advice on the timing of works and the implementation of mitigation measures and produce site inspection reports.

10.3 Environmental Clerk of Works

An Environmental Clerk of Works must be in place for the duration of the construction works. All construction works within the SAC and any construction works within buffer zones shall be monitored on a full time basis to ensure that mitigation measures are being implemented correctly.

10.4 Environmental Protection Buffer Zones

The oCEMP sets two types of environmental protection buffer zone, as follows:-

- 15m Buffer to all watercourses / areas of standing water.
- 100m Buffer to River Foyle SAC.

These are required to be established during the construction works to provide a safeguard against routinely carrying out high pollution-risk activities close to high risk pollution pathways linked to the SAC. The high risk pollution pathways have been identified through the EIA process as being local waterways / streams connected to the SAC, and overland flow of rainfall dependent runoff. Both of these pathways could potentially rapidly transfer contaminants from construction lands directly into the SAC.

Providing a pathway buffer, within which construction activities are severely restricted, between the source and the receptor provides a range of safeguards such as:-

- Allowing greater attenuation potential for dissipation / breakdown or capture of pollutants in the event of an un-noticed spillage.
- Allowing a period of time to react to a pollution event to clean it up or contain it before it reaches the receptor.
- Providing space within which additional pathway controls can be put in place where necessary, e.g. lined cut off trench or sump.
- Preventing direct release of contaminants to water.
- Allowing a zone for airbourne dust generated from construction works etc to settle out of the atmosphere.

A range of other mitigation is in place with this CEMP for managing other pollution pathways and other environmental risks such as transfers of pollutants via the groundwater system, noise pollution and ecological protection and restoration in addition to the buffer zones. However, the proper establishment of buffer zones is an appropriate and commonly used tool for managing environmental risk.

10.4.1 Defining the Extent of a Buffer Zone

It is important for proper adherence to the Site Rules with respect to implementing the buffer zone mitigation, that trained site managers, construction workers and environmental monitoring staff should be able to easily recognise the limits of buffer zones whilst on site, and therefore the limits of all 15m buffer zones must be clearly defined by marker tape and/or posts. Silt fencing must also be placed around the entire perimeter of each buffer zone (including the SAC buffer zone) at the 15m limit to prevent water-laden sediment flowing toward watercourses.

Where appropriate, these boundary markers can also be used to restrict access to the buffer zones.

Each buffer zone should be assigned a reference number which should be displayed at the buffer boundary limit for easily identification of which buffer works are being completed near or within. This will assist in record keeping and incident reporting.

10.4.2 Defining Activity Restrictions within Buffer Zones

It is important to properly define what construction activities are prohibited within buffer zones and what activities can be carried out on a routine basis within buffer zones. The buffer zones seek to limit construction activities, not to preclude activities altogether.

The following activities are routinely prohibited from being carried out within buffer zones:-

- Oil storage, oil drums / cans and refuelling activities.
- Chemical storage (including road salt).
- Vehicle servicing / mechanical repairs.
- Vehicle / machinery parking, Lay-up or washing down.
- Concrete Mixing, washing out.
- Storing of stockpiles of soil, clay, cement, vegetation or any wastes.
- Placement of welfare units.
- Vehicle movements, unless these cannot be avoided by using an alternative route.
- Ground disturbance, excavations, vegetation stripping, application of chemicals*

* Unless being carried out as part by trained personnel as part of the implementation of the Invasive species management system

10.4.3 Activities within Buffer Zones Subject to Additional Controls and Authorisation

Given that the development is riverine in nature, it is recognised that there will be a range of construction works required to be undertaken in close proximity to some watercourses (within the buffer zones) to implement the new park infrastructure. These would include:-

- Excavations and piling works to install bridge abutments.
- Works (ground strip, piling, concreting, breaking out) to construct and deconstruct a temporary working platform on the river bank (Lifford).
- In-river construction and de-construction of Crane Pad (rock armour, geotextiles, granular fill emplacement) and installation of bridge by crane.
- Widening and realignment works to existing riverside embankments and former railway embankments, laying of bitmac surfacing.
- Infilling of watercourse channel and re-routing of watercourse (Roughan Stream, Lifford).

- Earthworks around wetlands and watercourses, including (Strabane) removal of hardstanding, installation of SuDS system and interceptors, laying of new car park surfacing.
- Excavation and removal of invasive plant species.
- Ancillary works such as lighting installations, vegetation cutting back, landscape planting, installation of fences and gates.

For these activities with buffer zones, the following mitigation measures will apply as detailed in **Appendix A**:-

- Where possible silt fencing shall be installed between the activity and any downslope watercourse at the maximum achievable buffer zone distance, or at an appropriate break in slope or natural containment feature if present.
- Where installation of silt fending is not feasible, Installation of shallow (0.2m deep) elongate cut-off trench downslope of the activity to catch sediment etc and prevent it reaching the watercourse. Reinstatement thereafter.
- Silt traps must be deployed in any minor watercourses immediately downstream of the works and inspected on a daily basis with any captured debris / silt removed to the waste storage area at the construction compound. The silt traps must be removed following completion of works within the buffer zone.
- Plant nappy style drip trays shall be deployed around all portable oil-containing equipment. These must be inspected on a daily basis and renewed as necessary with all contaminated materials removed from the site with 24 hours.
- Double skinned fuel / oil bowsers only to be used. Bowsers to be locked at all times during transport, with access to the fuel controlled by the site manager. Bowsers shall be brought into to the buffer zone as and when required for refuelling of static plant only (cranes and piling rigs) and removed immediately to the construction compound thereafter. No fuel / oil bowsers shall be stored within the buffer zone.
- It is permissible to undertake emergency repairs and essential maintenance of static plant, whilst positioned in the buffer zone, provided all appropriate oil spill prevention and clean-up measures are in place, including deployment of plant

nappies under any works and spill kits are available at close quarters within the buffer zone.

- Non-putrescible wastes to be stored in covered skips or covered bins which must be removed to the construction compound for emptying on a twice weekly basis. No putrescible wastes permitted in buffer zones.
- The following activities are not permitted within Buffer Zones:-
    - Chemical storage (including road salt).
    - Vehicle servicing / mechanical repairs (apart from undertaking emergency repairs to static plant – cranes and piling rigs).
    - Vehicle / machinery parking, Lay-up or washing down.
    - Concrete Mixing, washing out.
    - Storing of stockpiles of soil, clay, cement, vegetation or any wastes.
    - Placement of welfare units.
- All works within buffer zones must be approved in advance by the site manager.

All buffer zones shall be inspected in a daily basis by the Environmental Clerk of works and records kept of these inspections. The inspection must include assessment of the conditions of mitigation measures such as condition and status of silt traps, general site conditions, any evidence of increased pollution risk or spillages, with any significant findings reported immediately to the site manager for appropriate remedial actions to be undertaken if necessary.

11.0 CONSTRUCTION SPECIFICS

This section provides detailed construction specifics, including an indicative programme of works and construction phasing for the bridge construction. This oCEMP has been based on the construction specifics provided in this section, along with consideration of the wider development drawings, development proposals, the EIAr and the EIAr Addendum.

11.1 Proposed Duration of Works

The proposed construction programme is an estimated 12 months, whilst some site preparation may also be necessary to remove and manage invasive species and create access etc.

There are a number of seasonal constraints for construction and related works which must be adhered to in order to protect ecology. In addition, the treatment of various invasive plants has to be undertaken during specific periods of the growing season to be most effective. These seasonal constraints are presented below:-

Seasonal Constraints for Construction and Associated Works

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Piling and Bridge Construction, In-river and riverbank Works												
Tree and Shrub Clearance												
JK Treatment								Opt	Opt	Opt		
Balsam Treatment				Opt	Opt							
Hogweed Treatment				Opt	Opt	Opt						

Opt : Optimal Period Red: Exclusion Period Green: Approved Period

11.2 Indicative Works Programme

An indicative Works Programme has been developed and is presented in **Appendix F** of this oCEMP. This describes the sequence, timing and duration of all key elements of the construction phase, and has been developed around the seasonal constraints defined by ecological mitigation.

11.3 Proposed Development Pedestrian & Cycle Bridge & Construction Phasing

Whilst detailed method statements and programming works will be developed by the Contractor (aligned to the construction stage temporary works design), the proposed phasing of the bridge installation work, as presented in the sequence of Phasing Drawings presented in **Appendix G** of this oCEMP, will give due consideration to the environmental constraints and requirements outlined in the EIAr Addendum Volume 3, Appendix 3-2, as provided in

Appendix G of this oCEMP "Bridge Construction Phasing Works" and to the installation technique, outlined below:

11.3.1 Installation Technique

In response to the prohibition of permanent in-channel works, this bridge installation technique considers two single span lifts;

- Lift one – of single span length c30m, between the proposed abutment and the intermediate pier (both located on the Lifford landside of the River Foyle)
- Lift two - of single span length circa 90m and weight circa 100T, to achieve a clear span over the River Foyle, between the intermediate pier (Lifford landside) and the proposed abutment (Strabane landside).

11.3.2 Crane Requirements

To facilitate the single span lift of c90m and c100T, a 1200T structural crane such as the AK 680 1200T will be required. This is a very large crane which will require an additional service crane, somewhere in the region of 200T to 300T capacity, to assemble the 1200T structural crane and load the required ballast of c300T. The out-rigger centres of the structural crane are expected to be c14.5m x 14.5m with a jib length c85-100m long and a lifting radius of c30-35m.

11.3.3 Temporary Working Platform Requirements

To assemble to structural crane (and the bridge, which will be transported to site in section lengths of approximately 30m long), a temporary working platform will be required on land adjacent to the Lifford river bank.

The Contractor's detailed installation sequence of this (land based) temporary working platform, adjacent to the river bank, should give due consideration to the following:

1. Install of basal geotextile separation membrane to provide segregation of the existing environment and temporary environment and to act as a barrier to the river.
2. Install and compaction of fill, with intermittent geogrid reinforcement and geotextile separation membrane to contain the fill material.

3. Completion of site investigation to obtain CBR values on platform.
4. Install of Continual Flight Auger (low vibration) piles to support bridge and structural crane assembly.
5. Completion of pile testing.
6. Install of temporary, cast in-situ, reinforced concrete crane platform over the CFA piles. Formwork with geotextile separation membrane to be provided and remain in-situ until concrete cured, to act as a barrier to the river.
7. Completion of bridge and structural crane assembly and transfer to lifting location.
8. Removal of the temporary platform by digging around the CFA piles and break down to c500mm below ground level and subsequent removal of temporary working platform in reverse order to installation. Removal works to utilise low vibration methods (e.g., the use rock hammers will not be permitted) and will require the immediate loading and off-site removal of fill (no temporary storage of removed materials will be permitted).
9. Restoration of original habitat(s).

In consideration of the expected lifting radius of the structural crane, a temporary working platform, extending into the river channel, will be required to facilitate the single span lift of c90m and c100T. This temporary working platform is expected to be designed and constructed in the region of following the parameters:

- Platform Area: 1000-1500m^2
- Perimeter Length: 100-150m
- Average Depth: c2-3.5m

The Contractor's detailed installation sequence of the temporary working platform, extending into the river channel, should give due consideration to the following:

1. Install of basal geotextile separation membrane and install rock armour sequentially from upstream side to create access and working area of temporary platform. The geotextile separation membrane will be required

to provide segregation of the existing environment and temporary environment and to act as a barrier to lateral sedimentation migration toward the river.

2. In tandem with the installation of the geotextile separation membrane and rock armour, install and compaction of fill, with intermittent geogrid reinforcement, working way out and along bank in a downstream direction.
3. Continued install of rock armour to front face and backfill in tandem with temporary fill material. This will include wrapping of the geotextile separation membrane up existing riverbank margins and up the inner side of peripheral rock armour.
4. Completion of rock armour install on downstream edge (to protect the temporary platform from washout during flood event).
5. Completion of site investigation to obtain CBR values on platform.
6. Install of Continual Flight Auger (low vibration) piles to support crane throughout the access and working area of temporary platform.
7. Completion of pile testing.
8. Install of temporary, cast in-situ, reinforced concrete crane platform over piles. Formwork with geotextile separation membrane to be provided and remain in-situ until concrete cured, to act as a barrier to the river channel.
9. Placement of structural crane into lifting location, ensuring minimum edge distance maintained between jacklegs and edge of platform.
10. Completion of bridge lift.
10. Removal of the temporary platform by digging around the CFA piles and break down to c500mm below bed level and subsequent removal of temporary working platform in reverse order to installation, i.e., downstream end first. Removal works to utilise low vibration methods (e.g., the use rock hammers will not be permitted) and will require the immediate loading and off-site removal of fill (no temporary storage of removed materials will be permitted).
11. Restoration of original habitat(s).

11.3.4 Temporary Platform Material Considerations

Class 1A stone below water level - mitigating fines dissipation into the watercourse by reducing the amount of fines available and by reducing the velocities (through the fill).

Potential use of rounded cobbles below water level - so that if any cobbles were “lost” they could provide benefit to salmon and other fish species in the river.

Traditional piling matt – to be provided over the clean stone.

A geotextile separation membrane - to be provided over clean stone and any finer fill (e.g., Type 1 <50mm), which will be compacted and tested in order to support the structural crane within the working area of the platform.

11.4 Security

The access points and compound areas will operate within a secure hoarded perimeter regulations and will be controlled by the General Contractor. All access will be monitored and recorded. The compound area shall exclude local wildlife such as otter and badger.

All construction support activities will be controlled within the site construction compound including office facilities, toilets, canteen etc. Materials and waste handling and storage will be within the confines of the site.

The work area will be protected from the public at all times. CCTV may be installed and compliant Health & Safety information signs will be installed. The external facade of the solid hoarding panels will have a mixof Health & Safety warning signs.

Perimeter hoarding through the rest of the site shall be avoided where possible to allow unrestricted movement of local wildlife, but where it is necessary, shall include animal gates at key locations to be agreed by the ECoW.

11.5 Site Access and Construction Compound

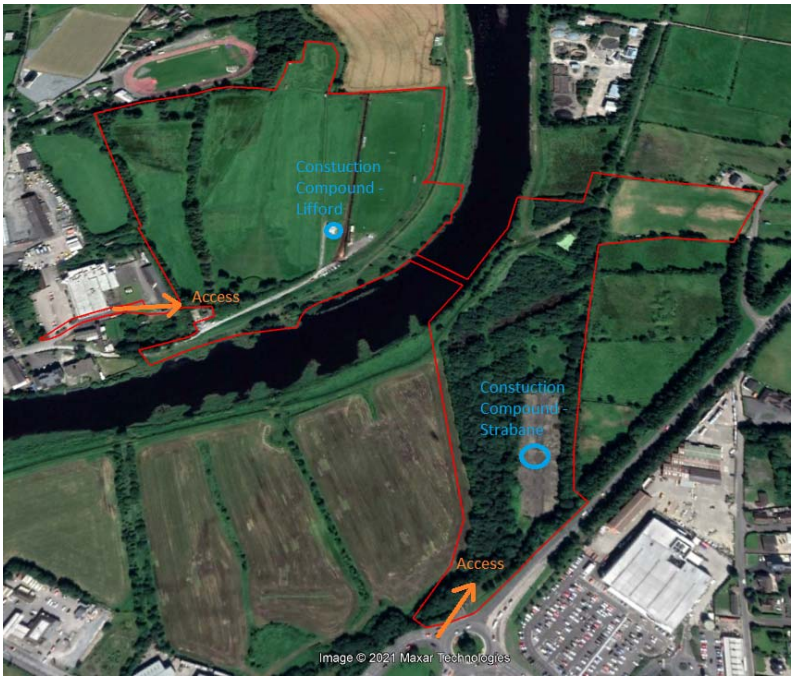
The approximate locations for construction compounds incorporating Biosecurity Washing are shown in **Figure 8**. For the Strabane side, site access for plant and delivery lorries will be controlled via a manned access point using the existing access, just off the adjacent roundabout on the A5. A dedicated construction compound will be set up on the existing hardstanding area at the Travellers Rest / Halting site for Phase 1 Construction Works.

Although area had been previously constructed to accommodate a travellers resting site, and therefore is fully serviced with foul and storm connections, this infrastructures to be decommissioned and removed as part of the development works, therefore all effluent and runoffs shall be collected for appropriate disposals off site using alternative route/s.

For Strabane, the Construction Compound for Phase 1 works (heavy civils, works to flood embankments, bridge abutments and bridge lift) shall be located on existing hardstanding at the former halting site (hardstanding area in the southern portion of the site). Once Phase 1 works are completed a scaled-down Phase 2 Construction Compound will need to be moved to an alternative location further to the north of the halting site to allow for completion of the construction works (construction of main car park at former halting site, plus landscaping and planting works).

The Construction Compound for the Lifford side will have a manned access point utilising the existing access (passed the Three Rivers Centre). The construction compound on the Lifford side will be located in the vicinity of the existing spectator stand – there are no known services in this area and therefore all runoffs shall be collected for offsite disposal.

Figure 8 – Compound and Access Arrangements (Locations of Compounds may vary)



11.6 Construction Hours

It is anticipated that the construction hours will be:

- **07:30 to 18:00 Monday to Friday;**
- **From 08:00 to 13:00 on Saturdays,**
- **Closed on Sundays and Bank Holidays.**

11.7 Deliveries

Delivery of equipment and materials will be carefully controlled and managed at the site. Access and egress to the proposed area will be managed by the General Contractor. Delivery times will be planned with consideration to surrounding businesses.

There will be occasions whereby materials are needed to be delivered to site, a banksman will be in placeto ensure safe access is provided. The times of deliveries will be limited to arrive on site during off peak periods of time.

There will be periods of time during the construction programme whereby larger piling and lifting equipment will be needed to be delivered and the demobilsed by special arrangement (wide loads anticipated) to construct various elements of the development including the bridge and associated temporary and permanent infrastructure, Hub Building and Spectator Stand. The bridge itself will be brought to the site by road (again wide loads anticipated) in sections.

A number of piling techniques have been selected as appropriate for the site such as CFA (requiring concrete deliveries) and silent sheet piles (requiring steel deliveries).

A self-contained wheel washing facility will be positioned near to access and egress points to ensure that debris or lose inertmaterials are removed from any vehicle leaving the site. A Biosecurity process (detailed in Section 3.4.4) necessary for invasive species management, will also be in place for any machinery entering or leaving the site. Any delivery vehicle

travelling beyond the Construction Compound / delivery bays will be subject to the washing process as detailed in the Biosecurity process (Section 3.4.4).

11.8 Traffic Management

A series of traffic management measures may be included as part of the project, these include:

1. Temporary Signage - The Contractor is required to provide appropriate signage
2. Operation of a Contra Flow - There are no proposals to operate a Contra Flow system.
3. Temporary Road Closure - There are no proposals to introduce temporary road closures. Any roadclosure can only be operated under agreement with the appropriate authorities.
4. Temporary Traffic Signals - There are no proposals to operate Temporary Traffic Light Signals.
5. Arrangements for Local Access, Pedestrian and Cyclist Access - There are no proposals to alter theexisting local access to the surrounding areas.

Dust and Dirt

During the construction phase the increase in dust and dirt will be minimised by effective site management. The construction routes will be discussed and agreed with respective roads departments and disruption will be mitigated. The construction routes and the phasing of the scheme will be agreed with respective roads departments.

Self-contained wheel washing facilities will be provided for all construction vehicles and construction areas will be fenced-off with wildlife excluded. It should be noted that a OCEMP has been undertaken and has been included as part of the planning submission.

Any impact will be ameliorated using best practice including damping down excavated material and haul roads when the roads are dry and covering loads of surplus material leaving and entering the site. Self-contained wheel washing will be provided on site.

Operatives Travel Behaviour

The Contractor will be required to develop a Construction Travel Plan to ensure operatives vehicles use are kept to a minimum with the use of mini-buses and shared vehicle trips.

11.9 Piling

An environmental Piling Risk Assessment (Chapter 9, **Appendix 9-9**) has been undertaken based on anticipated foundation designs for bot temporary infrastructure required for the construction phase and for piling necessary to construct permanent infrastructure across the site.

Overall, the Piling Risk Assessment has concluded a low risk associated with the use of permanently installed CFA piles as the foundation solution for the Hub Building, Spectator Stand and Working Platform (outside the river channel) and the use of silent sheet piles for the temporary flood defence during localised embankment realignment works at Lifford.

The CFA piling solution (permanent installations not to be removed) would appear to be good practice and an appropriately conservative approach in terms of ensuring protection of groundwaters close to the baseflow recharge zone, the bridge landing sites being close to the River Foyle. The CFA Pile method, being a low vibration option, also provides adequate protection for ecological purposes.

The use of Silent sheet piles for other temporary works to the flood embankment, which will be withdrawn following completion of the embankment realignment works, meets all of the environmental objectives to minimise environmental impact.

If an alternative piling solution is considered at the detailed design stage, all piling methods must be low vibration during installation and removal (where necessary), and must offer similar degree of environmental protection to the piling solutions assessed at the planning stage.

Following consultation with Loughs Agency regarding concerns over impacts to migratory fish species particularly salmon, all bridge construction, in-river piling, riverbank piling and all piling works within the SAC for both Lifford and Strabane sites must be carried out between May and September, as per the seasonal constraints detailed as follows-.

Seasonal Constraints for Construction and Associated Works

Seasonal Constraints for Construction and Associated Works

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
In-River Piling, Bridge Construction, In-river works, riverbank Works and piling within SAC												
Tree and Shrub Clearance												
JK Treatment								Opt	Opt	Opt		
Balsam Treatment				Opt	Opt							
Hogweed Treatment				Opt	Opt	Opt						

Opt : Optimal Period Red: Exclusion Period Green: Approved Period

12.0 PROJECT RESPONSIBILITY AND COMMUNICATION

12.1 Communications

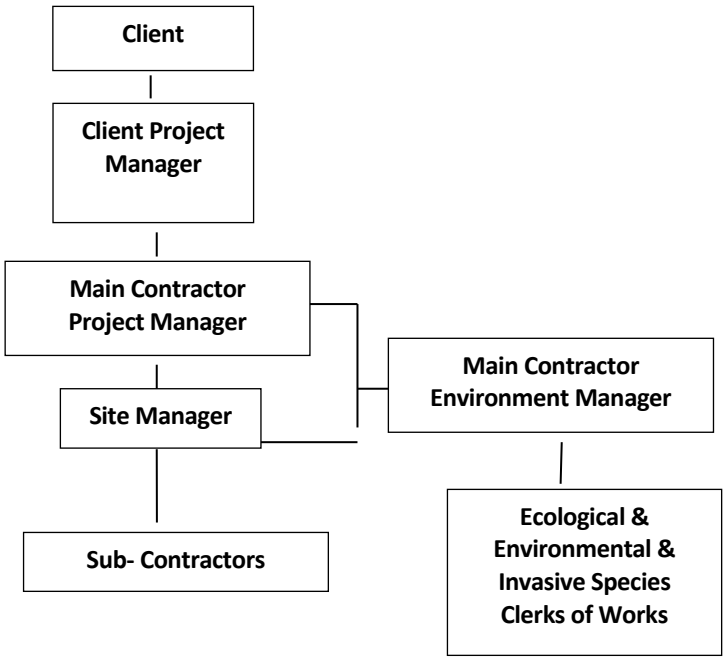
Effective communication is essential to ensure the appropriate employment of environmental standards and relaying of information, assessments, and data. The following points are some of the key forms of communication required:

- Statutory and Non-Statutory Bodies - During the construction works, communication will be required with external parties such as, statutory authorities, interest groups and the public/business owners.
- Public/businesses - The Site Manager shall ensure that the public/businesses within the locality are kept informed of operations that may have an effect upon them. This may involve letter drops and meetings to keep local commercial premises owners up to date with progress with the Proposed Development and any new operations that are to be carried out. The Site Manager will provide details of contacts within the project team for the public/businesses to contact should any issues arise;
- Consents, Licences and Permits - The provisions for controlling, pumping and discharging water will be agreed with the relevant statutory body. The Contractor will ensure that any licences required are in place prior to works commencing;
- Changes in legislation or guidance - Legislative changes or proposed improvements to manage processes on site that have a bearing on the commitments given in the supporting environmental documents or other consultations will be communicated by the Site Manager to the Client;

- Meetings & Records - Environmental issues relevant to the project will be discussed during weekly Site Progress Meetings attended by the Site Manager and Environment Manager. Environmental performance will also be discussed at regular HSEQ meetings. This will include dissemination and discussion of the findings of audits, environmental reports and other inspections where appropriate.

12.2 Responsibilities

This oCEMP defines the follows roles and responsibility relevant to environmental protection on the proposed project.



The Client Project Manager (OR persons nominated by the Client to manage the project) will be responsible for ensuring the CEMP requirements are represented within the tender process and are communicated to and acknowledged by the main contractor representative and will have an overview role in checking that they are being implemented during the works.

The Main Contractor Project Manager will be responsible for final development of the CEMP, including any detailed working method statements, and for obtaining approval for these from the client project manager and NIEA. The Main Contractor/Project Manager or appointed representative will be responsible for ensuring the CEMP requirements are being implemented on site through site visits and communication with the Site Manager and will be responsible for ensuring correct procedures are followed in the event of any environmental incident including

reporting on the risk, alerting relevant authorities and the client project manager if required and documenting the response.

The appointed contractor will be required to identify one or more accredited emergency spill contractors that will be available to call upon in the event of a significant incident, for example the Emergency Preparedness and Incident Response forms. An example incident response form is attached as Appendix D.

The main contractor will be informed that they may be held liable for any pollution incident or adverse impact on designated features.

The Site Manager will be responsible for ensuring that the final CEMP is implemented during all phases of the site works and that all contractor workers and sub-contractors are aware of the environmental sensitivity of the site and the CEMP requirements. The Site Manager will be responsible for ensuring appropriate emergency response spill kit supplies are maintained on-site and for directing /implementing pollution incident responses to any incidents.

Site Manager will also be required to or delegate to competent staff:

- Promote a Health & Safety culture on site, to read, understand and implement the CEMP ensuring contractors are aware of their responsibility to ensure correct working methods where there are environmental risks;
- Ensure that environmental matters are taken into account when considering Contractors' construction methods and materials at all stages;
- Be aware of any potential environmental risks relating to the site, plant or materials to be used on the premises and bring these to the notice of the appropriate management;
- Ensure materials/waste register is completed as appropriate and ensure Contractors method statements include correct waste disposal methods

An Ecological Clerk of Works will be required to oversee the pre-construction creation of all ecology aspects of Phases 1, 2 and 3 of construction, as part of the creating of compensation areas of the CWW butterflies.

All site personnel, on the project will adhere to the following principal duties and responsibilities:

- To conduct all their activities in a manner consistent with regulatory and best environmental practice as laid out in the CEMP;
- To participate fully in the environmental training program and provide management with any necessary feedback to ensure effective environmental management at the site; and,
- Adhere fully to the requirements of the site environmental rules.

12.3 Health and Safety

In developing the final CEMP the appointed contractor will be responsible for reviewing the relevant reports produced for the site to inform development of safe site practices and environmental protection during the construction phase.

12.4 Project Planning and Co-ordination

Prior to the works beginning, project members shall meet to review the Final CEMP requirements (as agreed with NIEA) and plan in detail implementation of working methods to ensure CEMP compliance. At that time a programme for works shall have been designed.

Any mitigation measures that have been agreed with the Statutory Authorities 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.

Specific method statements required for all phases of the works will be prepared by the main contractor for submission with the final CEMP, to be issued to NIEA at least 8 weeks prior to works beginning.

Method statements and risk assessments produced by sub-contractors will be reviewed / approved by the Main Contractor and incorporated within the Final CEMP. Where required, input from a relevant Environmental Specialist will be obtained. An example method statement and risk assessment is shown in **Appendix E**.

12.5 Communication and Implementation

The Main Contractor Environmental Manager will be responsible for communicating the Final CEMP to the project management team and all contractors/sub-contractors as part of site induction and prior to any works being undertaken.

All contractors/sub-contractors will be required to attend site induction and will not be permitted to undertake works until attendance is recorded. Relevant persons appointed by the contractor will be required to demonstrate previous knowledge or undertake relevant training with respect to use and application of pollution incident response and other pollution prevention equipment.

The induction procedures will include as a minimum:

- The requirements and use of the CEMP;
- Key risk activities and sensitive areas which will be clearly marked out with posts and tape;
- The site communication system;
- Incident reporting plan/forms;
- Identification of personnel responsible for dealing with site incidents;
- Use of spill kits.

The environmental sensitivity of the site and required working practices will be briefed to site workers as a Toolbox Talk on site, prior to works beginning and at the beginning of each main phase of works. Regular review meetings will be held to monitor implementation of the CEMP and update/modify working practices as required to ensure compliance. Induction of sub-contractors on site will include communication of the CEMP requirements.

13.0 SITE CONTROL SEQUENCE

13.1 Physical Site Works

The main site works will comprise:

- Site Set-up and Enabling Works, including establishment of Buffer Zones, Construction Compound, Biosecurity Measures.

- Phased Construction including Bridge Installation, Embankment Works;
- Removal of Temporary Infrastructure, Reinstatement, Planting and Demobilisation;

13.2 Pollution Guidance

Based upon the nature of the work, a major risk to the water environment would be from spills of cements, chemicals or oils and migration of suspended solids/dirty water via overland flow to the watercourses or infiltration to the highly vulnerable groundwater. Working methods will follow standard industry guidance for construction sites as set out in guidelines including:

- CIRIA C532 Control of Water Pollution from Construction Sites;
- CIRIA C650 Environmental Good Practice on Site;
- DAERA Standing Advice Pollution Prevention Guidance.

Guidance for Pollution Prevention (GPP's) (Environment Agency/SEPA/NIEA):

- ;
- GPP2: Above Ground Oil Storage Tanks;
- GPP5: Works and Maintenance in or near Water;
- PPG6: Working at Construction and Demolition Sites;
- PPG7: The Safe Operation of Refuelling Facilities;
- GPP8: Safe Storage and Disposal of Used Oils;
- GPP 13 Vehicle washing and cleaning;
- GPP 20: Dewatering underground ducts and chambers;
- GPP21: Pollution Incident Response Planning;
- PPG22: Dealing with spills.

13.3 Additional Pollution Prevention Measures

All site workers including sub-contractors will only be permitted to undertake work on-site following attendance of a site induction which will:

(a) emphasise the sensitivity of the site.
(b) define the roles and responsibilities relating to pollution prevention and incident response;
(c) outline the pollution prevention measures that must be followed and marked out buffer zone;

(d) describe the location and use of emergency response spill kits.

- Contractors will be required to immediately report all pollution incidents or 'near misses' to the Site Manager. The Site Manager will be required to maintain a log of all such incidents and incidents will be reported to the Client's Project Manager and relevant authorities as required.
- Access to the construction areas will only be via the agreed access routes.
- Any storage of fuel, oil and chemicals will be within the construction compound within appropriate and secure storage areas. The compounds will be sited beyond a 15m buffer zones to all watercourses and at least 100m for River Foyle SAC.
- Fuels and oils (including waste oils) will be stored in fit-for purpose containers in impermeable bunded areas which comply with the Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010 (110% secondary containment).
- Fuel and Oil storage will take place in a dedicated bunded location within the Construction Compound. All mobile plant will be refuelled at this location, not across the wider site.
- Rainwater will be managed to ensure the containment capacity within the bund structures is not compromised.
- All storage tanks and containers will be appropriately labelled with their contents and storage capacity.
- No temporary use (refilling, topping up) of oils, chemicals or other hazardous substances will be undertaken outside the construction compound.
- Re-fuelling of mobile plant will take place in a dedicated bunded location within the Construction Compound.
- Plant nay-style drip trays will be utilised beneath any non-mobile machinery and spill kits and adsorbent materials will be stored on site for rapid deployment by trained staff. Spills will be cleaned up as quickly as possible with waste materials bagged and disposed of through appropriate waste carrier and disposal arrangements.
- Regular inspection of plant and equipment will be undertaken, and preventative maintenance undertaken to reduce the risk of spills and drips.
- Regular inspection of the security and integrity of containers and bunds will be undertaken and regular checks made that spill response equipment remains available and appropriate at relevant locations.

- Any waste oil/chemical/ containers will be placed in a secure impermeable facility (covered skip or other container) within the Construction Compound or removed from site on the same day.
- Vehicles and equipment will be left secure during periods of non-working and site security measures implemented to manage the risk of any adverse disturbance to plant or equipment.
- Where concrete is not brought to site ready mixed, mixing of concrete shall take place outside all Buffer Zones (unless associated with piling works for bridge construction, where additional mitigation is required, see Section 9.3.3 of this oCEMP). Cement wash-out of delivery vehicles will take place off-site. Wash-out works associated with vehicle chutes, contractor equipment and tools shall be collected in suitable containers for, following settlement, off-site disposal. Wet concrete waste from construction plant buckets/dumpers will be emptied into containers and, when dried, it will be transported by a registered waste carrier to a licensed landfill site for disposal.
- Any wet concrete waste from construction plant buckets/dumpers will be emptied into containers and, when it has dried, be transported to a licensed landfill site for disposal.
- Cleaning of equipment and tools used in concrete production/use shall not take place within the northern portion of the site and should ensure no discharge of contaminated water to the surrounding environment, through use of a specified, contained washdown area.
- Where concrete is poured on the surface adequate shuttering/bunding shall be used to prevent any lateral escape away from the construction area.
- Foul sewage from any temporary portaloo facilities will be collected and disposed of by a registered contractor at the appropriate design frequency of the facilities.
- The site will be secured, and potentially polluting materials stored safely or removed from site overnight such that the risk of impact from vandalism is controlled.
- Contractors will only be permitted to undertake work on-site following attendance of a site induction which will describe the pollution prevention measures and methodologies that must be followed.
- Contractors will be required to immediately report all pollution incidents or 'near misses' to the Environmental Manager. The Environmental Manager will maintain a log of all such incidents and incidents will be reported and response actions reviewed at project meetings.

- A pollution response procedure should be displayed at the site incorporating actions to be followed including use of the **NIEA emergency pollution hotline 0800 80 70 60** or the **EPA compliant** making process https://www.epa.ie/our-services/compliance--enforcement/whats-happening/make-an-environmental-complaint/
- An example Pollution Incident Report Form is included as **Appendix H** and a Spill Response Procedure is included as **Appendix J**. A pollution incidents and near misses shall be recorded by the contractor and reported to the client and relevant regulatory bodies with 12 hours of the event, providing details of the incident, remedial works carried out and measures to ensure no future reoccurrence.

13.4 Emergency procedures

A Site Environmental Emergency Plan will be prepared prior to construction and communicated to all members of the project team including sub-contractors and emergency services. A Pollution Incident Emergency Response Plan would be developed in accordance with the guidance set out in the Guidance for Pollution Prevention GPP 21: Pollution Incident Response Plans (NIEA, July 2017). The Response Plan would setout the procedures to be followed and measures to be implemented in the event of a pollution incident. These incidents may be the result of:

1. **delivery and use of materials;**
2. **spillages of oils or chemicals;**
3. **discharge of silty water or other pollutants to watercourses;**
4. **flooding event; and,**
5. **fire (emissions to air) and failure to contain firewater runoff.**

Emergency procedures are developed to support the response plan. The procedures define the circumstances when the plan should be activated and include:

1. **the names and contact details of staff trained in incident response,**
2. **clearly defined roles and responsibilities,**
3. **the types and location of emergency response equipment available,**

4. **the location of the emergency assembly point, and,**

5. **Procedures for recovering spilled product.**

Responsible staff will be trained in emergency procedures to form an Emergency Team, so that theseprocedures can be implemented swiftly and effectively.

- Periodic testing of emergency procedures will be undertaken by the Site Manager.The Environmental Manager will observe the test and to report on results.
- Any corrective actions are taken forward for review and approval.
- Should an emergency incident occur, the Environmental Manager will be notified immediately.The emergency response will be co-ordinated by the Site Manager.
- Protective measures, mitigation, clean up and remediation actions will be identified from the evaluation andshall be put into place, having regard for the sensitivities of the environment.

A record of the emergency incident will be kept showing the nature of the corrective action undertaken. An example emergency response plan is provided in **Appendix K**.

13.5 Waste Management

Given the extent of cut and fill required within the site, and the required removal of materials, the appointed/Principal Contractor will be required to further develop a Site Waste Management Plan (SWMP) for incorporation within the final CEMP.

This SWMP will specify the procedures for collection, storage and disposal of all waste products and materials associated with the development.

The procedures will be developed to be compliant with relevant legislation and best practice guidance including the *Environmental Protection (Duty of Care) Regulations 1991* (and amendments), Article 5(9) of *the Waste and Contaminated Land (Northern Ireland) Order 1997*; NIEA *Waste Management: The Duty of Care – A Code of Practice for Northern Ireland* and PP6: *Working at Construction and Demolition Sites.*

All handling, transport and final disposal of waste off-site will be undertaken only by authorised and registered companies and complying with legal responsibilities such as Duty of Care.

In future developing the SWMP, the contractor will be required to consider:

- Identification of potential waste streams and volumes.
- Planning for waste generation minimisation through pre-construction planning and design including reuse and recycling of materials.
- Ensuring all necessary permits and authorisations are applied for in a timely manner.
- Developing of management systems for the recording and archiving of all associated documentation including plans, procedures, transfer notes, etc.
- Identifying necessary contractors and waste management infrastructure required to deal will all waste arisings, including foul sewage.
- Ensuring all procedures and methodologies adopted meet the objectives of the PPIP.
- Personnel training and measurement and monitoring of site waste management procedures to ensure waste minimisation opportunities are achieved and implementation of the agreed plan procedures is occurring.

The bulk of demolition works proposed to facilitate this development is as follows:

Lifford

- Demolition of existing Spectator Stand in southern area of the site, comprising an open-sided blockwork structure with concrete base and steel-clad roofing with steel uprights and lean-to with toilets and washing facilities.
- Draining and removal of underground pipework and septic tank – soakaway associated with the spectator stand.
- Demolition of small single storey outbuilding in northern area of the site comprising blockwork walls and steel-clad roof.

Strabane

- Clearance of concrete and other barriers blocking site access from the main roundabout entrance.

- Breaking up and lifting of large area of concrete and bitmac hardstand, including granular substrate in the southern area of the site, including demolition of small control room building.
- Excavation and removal of existing underground services infrastructure. underlying the concrete area, including foul sewage, storm and water supply systems.

There will be a dedicated central waste storage area within each construction compound in Strabane and Lifford. Appropriate facilities will be put in place to ensure no air or water pollution from waste materials can occur. Waste materials generated on-site such as wooden pallets, waste oil, paper, waste batteries, etc. will be segregated to ensure appropriate disposal through authorised recycling and disposal routes. Waste materials generated at construction areas will be collected and transported to the central waste storage area within the construction compound on a regular basis. Appropriate offsite disposal shall then be arranged.

Foul sewage from the construction compound will be collected and disposed of by a registered contractor at the appropriate design frequency of the facilities.

13.6 Control of Imported Soils and Clays

The development will include a degree of cut and fill to create the desired site profiles. For each jurisdiction, the re-use of site-derived excavated materials shall be prioritised to minimise the volumes of imported materials required. Where soils and clays are to be imported the following rules will apply:-

- Re-use of site-derived materials between jurisdictions is not permitted.
- Materials shall be imported subject to compliance with all Duty of Care and Waste Management legislative requirements. All materials derived from sites other than licensed quarries will be considered as waste.
- Imported clean topsoil and clay must be imported by pre-movement agreement with regulator bodies will all permissions in place, including compliance with NIEA Regulatory Position Statement 'Guidance on the Regulation of Greenfield Excavated Materials in Construction and Development' and any other relevant guidance.

- Where any inert wastes are to be imported, appropriate exemptions / authorisations shall be in place with NIEA prior to any wastes being imported.
- All imported soils and clays shall be subject to appropriate human health screening assessment testing at a density of at least one sample per 1,000 m^3 of materials imported.
- All imported wastes, including clays, shall be subject to appropriate waste classification (WAC and WM3) testing at a density of at least one sample per 1,000 m^3 of materials imported.
- Proper records shall be kept by the contractor and made available for all topsoil, clay and wastes imported to the site to serve as make-up or fill. Records shall include including waste transfer notes, details of the volume and nature of imported materials, photographic records of the materials, the position and extent of deposits for each individual source, the exact source of the materials and date imported.
- No suspect contaminated materials or materials from other brownfield sites shall be imported to the site.

14.0 ENVIRONMENTAL PERFORMANCE

14.1 Daily Checking and Corrective Action

The Site Manager with the Environmental Clerk of Works during the CWW PP will establishment to undertake daily checks of the works being undertaken to ensure compliance with agreed working practices and to identify any new environmental risks or harm/damage that requires corrective action or development/modification of working practices.

Such requirements will be reported to the Project Manager, with subsequent actions agreed with the Client Project Manager and implemented into the CEMP working document on-site.

In addition, where necessary daily records of the site activities, records, complaints and incidents, will be kept ensuring that all site operatives adhere to the prevention and protection requirements.

14.2 Environmental Risk Register

The Environmental Manager/Officer will prepare and maintain an Environmental Risk Register having regard for legal requirements, project environmental commitments the potential for aspects of works to cause significant environmental impact.

The Environmental Manager will record responsibilities assigned for actions required for mitigation and control of the environmental risks in the Environmental Risk Register.

The Environmental Risk Register will be subject to regular review by the Environmental Manager togetherwith the Site Manager.

14.3 Consents

The Proposed Development may require consents from various regulatory bodies in advance of construction activities. These may include discharge consents / licenses for construction runoff, where any construction-phase discharges are being proposed. Copies of legal consents, permits and licences obtained will be held in the site environmental file by the Environmental Manager.

14.4 Construction Method Statements

This document provides the basis for the Final CEMP to be implemented by the Contractor, incorporating the items outlined above and other requirements identified during site works. It should be regarded as a 'live document' to be updated as necessary to ensure the stated environmental objectives are achieved.

The appointed building contractor will be required to develop a series of method statements, to be agreed with the Client Representative, which integrate and supplement the information provided in the CEMP.

The method statements are to be developed for each main construction task and/or other activities that could potentially result in an adverse impact on soils, surface water or groundwater or have the potential for accidental release of fuels, oils or other hazardous substances.

The method statements will:

- Describe how each specific task will be undertaken and what pollution prevention/mitigation measures are to be adopted, including excavation along the proposed stormwater discharge route;
- Contain a detailed risk assessment of each task;
- Contain a list of pollution prevention and control equipment to be provided, where it will be stored and how it is to be used in the event of an incident; and
- Identify training and communications procedures.

14.5 Notices of Non-conformance

In instances where the requirements of the CEMP are not upheld a non-conformance and corrective actionnotice/procedure will be produced. The notice/procedure will be generated during the inspections conducted by the Supervisors, the Site Manager, Environmental Manager or any external third-party audits.

The Site Manager will be responsible for ensuring a corrective action plan is established and implementedto address the identified shortcoming.

14.6 Complaints Handling

The response to any complaints will be managed by the Site Manager, who will inform the Environmental Manager of any environmental complaints. A Complaints Register will be maintained to detail the name and contact details of the complainant, date and time of the complaint, nature of complaint, action taken to resolve issues, and date of complaint handover.

The Environmental Manager will ensure that all environmental complaints and concerns will be responded to within 24 hours of the complaint being received. An example complaints form is show in Appendix H.

14.7 Key performance indicators and objectives

The Contractor should set environmental objectives to continuously improve environmental performance on the site. The Contractor will set objectives based on each significant environmental impactand they will be reviewed, and revised, if necessary, on a monthly basis. Procedures, monitoring requirements and key performance indicators will be measured against achievable targets.

Appendix A

Appendix 1.2 – Lifford Schedule of Mitigation Measures

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
Biodiversity	General disturbance of all Fauna	During the construction phase noise may cause disturbance, therefore the adoption of best practice as defined by the Control of Pollution Act 1974 should be implemented. All noise caused by machines should be minimised and should operate during daytime hours only as agreed with the council. With regards to dust it should be ensured that an adequate supply of water is available on site for effective dust suppression. No light should be directed onto woodland features during the construction or operational phase. No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as otters may fall in or enter in search of food and become trapped. No buildings or storage units are to be left open overnight, as wildlife may enter and become trapped. No poisonous or potentially harmful substances or materials are to be left unsecured	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		overnight. The use of rodenticides for any pest control are prohibited on site. No vehicles or machinery are to be used installing any fencing or exclusion gates.	
	Disturbance of Otters	If an otter is discovered or any activity suggesting otters have been disturbed during construction, all work must cease immediately, and the ecologist should be notified as soon as possible to detail how to proceed. It is also recommended that compensatory planting scheme be carried out in order to recreate foraging habitat which may be lost due to the proposed site plans. A minimum of 15 metres should be maintained as a buffer between the proposed development and surrounding water courses. Fencing designs should provide unrestricted access to the site for the otters in an effort to allow otters to use their extended foraging grounds. A surface water management plan must be prepared and implemented prior to construction works to avoid potential impacts on the water courses and water quality. Either a small culvert or small ledge structure must be worked into the bridge landing areas to allow otters free land access across the areas where the bridge makes contact with the	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		banks of the River Foyle. These culverts or ledges will follow best practice guidance and meet current specifications for dimensions. These culverts/ledges must be of minimum 500mm x 600mm diameter and be at least 150mm above the highest water level and run the length of the bridge landing sites extending past the bridge landing to re-join the riverbank allowing the otters free unhindered access along the riverbanks out of the water. A compensatory planting scheme will have to be implemented following the construction phase in order to re-create foraging habitat which may be lost or damaged due to the proposed site plans The re-planting scheme implemented must use native riverine species for the restoration of the bank habitats temporarily damaged and lost during the construction works. This should also include increasing the size of the thin corridor of reed and large sedge swamp habitat located along the riverine corridor. This type of habitat is highly vital to riverine ecosystems and based on the evidence found is used heavily by the otters within the area. Re-planting and restoring the temporarily lost habitat to help expand this area of reed and large sedge swamp habitat will help to compensate for the permanent loss of habitat experienced from the bridge landings and jetty.	
	Disturbance of Badgers	If a badger is discovered or any activity suggesting badgers have been disturbed during construction, all work must cease immediately, and the ecologist should be notified as soon as possible to detail how to proceed.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		It is also recommended that compensatory planting scheme be carried out in order to recreate foraging habitat which may be lost due to the proposed site plans.	
	Disturbance of Atlantic Salmon and Riverine Habitat	Use of single span bridge to avoid in-channel support pier. Temporary crane platform (in the river channel) and working platform (on the river bank) will need to be constructed in order to construct and install the bridge. Mitigation of temporary works platform to prevent silt release through design and control methods. Seasonal restrictions implemented for bridge construction and associated works to minimise impact on migratory fish. Due to the embankment works close proximity to the River Foyle there is an increased risk of pollution from silt and debris disturbance, potential oil and hydrocarbon spills as well as vibration disturbances. As such, it is recommended that in order to reduce these potential risks all surface water contaminated by spoil during the embankments excavation works should be collected and treated before discharged in order to remove and potential contaminants. Spill kits and plant nappies must be readily available along# with the use of silt fencing and bunds in order to capture any potential silt, oil and hydrocarbon spills and leaks. Part of the process will involve compacting the freshly laid fill in order to achieve robust embankments. This poses a risk to aquatic species due to the potential risk of vibrations produced causing disturbance and disorientating migratory fish e.g: during the salmon run. Similar mitigation to what has been previously mentioned with regards to the bridge landing is required through the implementation of low vibration methods. Conventional vibratory rollers are only to be used	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		with the vibration turned off allowing for a low impact method to ensure the fill can be appropriately compacted. Due to the location or the proposed carpark on the Strabane side of the site, within the old halting area located within the sites southern corner, there is a perceived risk of runoff water from the car park potentially introducing pollutants and hydrocarbons into the water systems. Therefore, it has been recommended that the SUDS scheme developed to create an environmentally safe drainage system to protect the nearby riverine habitat from potential pollution through surface runoff. The SuDS Drainage scheme is detailed in the Sustainable Drainage Strategy (**Appendix 9-3**) but in summary comprises hardstanding incorporating areas of permeable surfacing which allows infiltration of runoff waters into a permeable substrate. The substrate will be hydraulically sealed from the underlying made ground (under the permeable substrate) using an impermeable membrane to prevent downward migration of runoff into the underlying groundwater system. This prevents any enhancement of mobilisation of any contamination in the made ground soils, and also prevents any oil spillage from entering the groundwater system. The infiltrated runoff within the substrate layer, which will provide SuDS source control for sediment and pollutants, is captured by a series of laterally-laid perforated pipes, directing the runoff to one of two suitably-sized Class 1 full retention interceptors, discharging to the Park Road Drain along the eastern site boundary. This drainage system will prevent the release of oil to the environment from worst case accidental spillages under all weather conditions.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Restriction of mammal movement within the site and lands beyond Otter and Badger	Mammal gates proposed to be situated at intervals along peripheral fencing within the site to enable badgers and other mammals to move around and in and out of the site unrestricted, thereby not interfering with any foraging. Either a small culvert or small ledge structure must be worked into the bridge landing areas to allow otters free land access across the areas where the bridge makes contact with the banks of the River Foyle. These culverts or ledges will follow best practice guidance and meet current specifications for dimensions. These culverts/ledges must be of minimum 500mm x 600mm diameter and be at least 150mm above the highest water level and run the length of the bridge landing sites extending past the bridge landing to re-join the riverbank allowing the otters free unhindered access along the riverbanks out of the water.	Construction
	Disturbance of Bats	Light spill from the proposed development should be minimised as far as possible. No lighting should be directed towards existing mature vegetation i.e. mature trees or boundary hedgerows. All terrestrial lighting should be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill. Any external lighting around any buildings / structures (e.g. safety lights at the front and rear) should be fitted with motion sensors (timer of up to 60 seconds).	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		The intensity of lighting should be kept to the minimum level required for safety. Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Adaptive lighting, presence and absence controls and seasonal lighting should be implemented where possible to minimise the length of time open areas are lit up during the hours of darkness. With respect to the bridge lighting, lights should be directed away from the river and the riverbanks so as to not directly land on the water surface or tress and vegetation on the banks. Lighting of roads, paths, car parks and temporary construction compounds to be ecologically-friendly and in accordance with relevant ecological guidance to strike a balance between safety needs and environmental protection of foraging habitat.	
	Spread of Invasive plant species.	An Invasive Species Management Plan has been prepared and will be implemented during the construction and operation of the Project. This is designed to manage invasive plant species through a combination of ex-situ treatment of key areas in direct conflict with the development and in-situ treatment of other areas within the site. Installation of a root barrier membrane within areas of footpaths, roads, hardstandings, buildings etc. which are at risk from potential Japanese Knotweed encroachment. These areas at risk are where Japanese Knotweed remains in close proximity to the structure, or where the required excavation is not achievable.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Spread of Invasive bivalve species. Asian Clam	Biosecurity measures (washing facility at Construction Compound) which require measures to irradicate importation of invasive bivalves during the construction phase. Signage to be erected at slipway to advise users to follow Loughs Agency and NIEA Biosecurity Guidance.	Construction Operation
	Disturbance of fish species	Bridge designed to be a single span with no in- channel support structures so as not to disturb the riverbed and channel. Bridge lighting controlled to ensure that there is no direct lighting of the river and to be ecologically-friendly and in accordance with relevant ecological guidance to strike a balance between safety needs and environmental protection of the River Foyle SAC. Seasonal restrictions on bridge construction and piling works within the SAC have been implemented to avoid the most ecologically-sensitive period (salmon runs).	Construction & Operational
	Animals ingesting harmful substances	No poisonous or potential substances to be left unsecured overnight. No use of rodenticides within the site	Construction & Operational
	Disturbance of Long Eared Owl	All construction works within 150m of owl nest must be undertaken outside the bird breeding season and under license from NIEA. It is also recommended that replacement raptor boxes be installed within 200m of the area as a compensatory/mitigation measure to ensure the long-eared owl has appropriate replacement nesting. All works near the long-eared owl nesting site and installation of replacement raptor boxes must be carried out under supervision and installed by a suitably qualified ecologist via the presence of an ecological clerk of works. The use of rodenticides for any pest control are prohibited on site.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Disturbance of other potential nests	Any scrub or tree clearance should be kept to a minimum and undertaken outside of the breeding season 1st March – 31st August. (Seasonal Constraints of elements of construction works). Clearance of scrub/hedgerow's during the breeding season be required, this must be undertaken under the supervision of a qualified ecologist and appropriate surveys undertaken prior to any scrub clearance	Construction
Lands, Soils and Waters	Gas ingress into buildings and site infrastructure	Ground gas protection measures should be installed under the community hub building in Lifford. One or two of the following measures should be implemented with all joints and penetrations sealed; • Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200 g DPM^2. • Beam and block or pre cast concrete slab and minimum 2000 g DPM/reinforced gas membrane. • Underfloor venting or pressurisation in combination with a) and b) depending on use.	Construction & Operational
	Erosion of exposed soils/subsoils and entry of sediment laden run-off to nearby surface water.	A Construction Environmental Management Plan (CEMP), agreed by statutory consultees and implemented prior to commencement of construction works. A detailed copy of the oCEMP is presented in Appendix 3-1. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as **Appendix 9-11**. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Earthworks shall be carried out in a phased manner, limiting exposed areas and timed to avoid sensitive periods. Stockpiles of topsoil / soils will be covered/dampened during dry weather to prevent spreading of sediment / dust. At least 10m buffer to watercourses, at least 100m buffer to River Foyle SAC. Run-off from the site will pass through temporary settlement lagoons and / or sediment tanks prior to discharge to the site watercourse / drains. Top-soiling and landscaping of the works will take place as soon as finished levels are achieved. Silt fences will be erected adjacent to watercourses during construction. Matting may also be used to capture silt-laden runoff. Drilling spoil shall be stored temporarily in sealed bins and removed from the site within 24 hours. No discharges of water shall be made from drilling works.	
	Excavations may act as barriers to runoff diverting surface water away from existing routes or cause flooding elsewhere	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to settlement lagoons or proprietary settlement tanks.	Construction
	Unsecured loads during transport pose a potential risk to the water environment	Fine materials (e.g. sand and / or cementitious products) shall be covered and secured with heavy duty canvas / tarpaulin. Routine checks should be made for rips and tears and repaired immediately. At least 10m buffer to watercourses, at least 100m buffer to River Foyle SAC.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	should there be an accidental leakage/ spillage of materials	For vehicles and plant leaving material deposition / stockpile areas, self-contained recirculating wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them. Double-skinned fuel bowsers only to be used for delivery refuelling and limited to traverse areas >10m from a watercourse.	
	Stockpiling of materials may pose a risk as they can be a ready source of loose material if not adequately protected from water and wind.	Avoid unnecessary stockpiling. Stockpiling areas should be appropriately lined and positioned away from watercourses (at least 10m away for all watercourses, and at least 100m away for River Foyle SAC). Stockpiles of topsoil / soils will be covered / dampened during dry weather to prevent spreading of sediment/dust. Buffer zones to be implemented : at least 10m buffer to watercourses, at least 100m buffer to River Foyle SAC. In advance of construction, silt fences and bunds shall be provided around the footprint of any stockpiles.	Construction
	The development will involve cut – fill operations. Imported materials have the potential to be contaminated, introducing new contamination sources to the site	Re-use of site-derived materials between jurisdictions is not permitted. Materials shall be imported subject to compliance with all Duty of Care and Waste Management legislative requirements. All materials derived from sites other than licensed quarries will be considered as waste.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Imported clean topsoil and clay must be imported by pre-movement agreement with regulator bodies with all permissions in place. Where any inert wastes are to be imported, appropriate exemptions / authorisations shall be in place with the relevant regulator prior to any wastes being imported. All imported soils and clays shall be subject to appropriate human health screening assessment testing at a density of at least one sample per 1,000 m3 of materials imported. All imported wastes, including clays, shall be subject to appropriate waste classification (WAC and WM3) testing at a density of at least one sample per 1,000 m3 of materials imported. Proper records shall be kept by the contractor and made available for all topsoil, clay and wastes imported to the site to serve as make-up or fill. Records shall include including waste transfer notes, details of the volume and nature of imported materials, photographic records of the materials, the position and extent of deposits for each individual source, the exact source of the materials and date imported. No suspect contaminated materials or materials from other brownfield sites shall be imported to the site.	
	Temporary compaction of soils caused by construction phase plant and site traffic	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to settlement lagoons or proprietary settlement tanks.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	movements, may increase the rate and volume of surface water runoff.		
	Works to existing surface watercourses (i.e. installation of a permanent bridge on the River Foyle and construction, use and deconstruction of lifting crane pad in the River Foyle have the potential to cause impact to the River Foyle through disturbance of river bank and river bed, introduction of silt source.	The temporary crane pad shall be constructed, used and dismantled in a manner which shall protect the river from silt release. Temporary and permanent piles will be emplaced using techniques suitable for high-sensitivity sites. No permanent piles for crane pad. CEMP / Pollution Prevention Plan (PPP) including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as **Appendix 9-11**. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Concrete mixing and washing areas should be located at least 10m from water bodies (100m for River Foyle SAC) and have settlement and re-circulation systems for water reuse. Isolation of working area, protective sheeting to be utilised. Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and at least 10 m from any watercourse (100m for River Foyle SAC). The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		The oCEMP sets two types of environmental protection buffer zone, as follows:- • 15m Buffer to all watercourses / areas of standing water. • 100m Buffer to River Foyle SAC. Buffer zones must be clearly defined by marker tape and/or posts. Silt fencing must also be placed around the entire perimeter of each buffer zone (including the SAC buffer zone) at the 15m limit to prevent water-laden sediment flowing toward watercourses. Where appropriate, these boundary markers can also be used to restrict access to the buffer zones. Each buffer zone should be assigned a reference number which should be displayed at the buffer boundary limit for easily identification of which buffer works are being completed near or within. This will assist in record keeping and incident reporting. The following activities are routinely prohibited from being carried out within buffer zones:- • Oil storage, oil drums / cans and refuelling activities. • Chemical storage (including road salt). • Vehicle servicing / mechanical repairs. • Vehicle / machinery parking, Lay-up or washing down. • Concrete Mixing, washing out.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		• Storing of stockpiles of soil, clay, cement, vegetation or any wastes. • Placement of welfare units. • Vehicle movements, unless these cannot be avoided by using an alternative route. • Ground disturbance, excavations, vegetation stripping, application of chemicals* * Unless being carried out as part by trained personnel as part of the implementation of the Invasive species management system For these activities with buffer zones, the following mitigation measures will apply: • Where possible silt fencing shall be installed between the activity and any downslope watercourse at the maximum achievable buffer zone distance, or at an appropriate break in slope or natural containment feature if present. • Where installation of silt fending is not feasible, Installation of shallow (0.2m deep) elongate cut-off trench downslope of the activity to catch sediment etc and prevent it reaching the watercourse. Reinstatement thereafter. • Silt traps must be deployed in any minor watercourses immediately downstream of the works and inspected on a daily basis with any	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		captured debris / silt removed to the waste storage area at the construction compound. The silt traps must be removed following completion of works within the buffer zone. • Plant nappy style drip trays shall be deployed around all portable oil-containing equipment. These must be inspected on a daily basis and renewed as necessary with all contaminated materials removed from the site with 24 hours. • Double skinned fuel / oil bowsers only to be used. Bowsers to be locked at all times during transport, with access to the fuel controlled by the site manager. Bowsers shall be brought into to the buffer zone as and when required for refuelling of static plant only (cranes and piling rigs) and removed immediately to the construction compound thereafter. No fuel / oil bowsers shall be stored within the buffer zone. • It is permissible to undertake emergency repairs and essential maintenance of static plant, whilst positioned in the buffer zone, provided all appropriate oil spill prevention and clean-up measures are in place, including deployment of plant nappies under any works and spill kits are available at close quarters within the buffer zone. • Non-putrescible wastes to be stored in covered skips or covered bins which must be removed to the construction compound for emptying on a twice weekly basis. No putrescible wastes permitted in buffer zones.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase

		• The following activities are not permitted within Buffer Zones:-
		  ○ Chemical storage (including road salt).
		  ○ Vehicle servicing / mechanical repairs (apart from undertaking emergency repairs to static plant – cranes and piling rigs).
		  ○ Vehicle / machinery parking, Lay-up or washing down.
		  ○ Concrete Mixing, washing out.
		  ○ Storing of stockpiles of soil, clay, cement, vegetation or any wastes.
		  ○ Placement of welfare units.
		• All works within buffer zones must be approved in advance by the site manager.
		
		All buffer zones shall be inspected in a daily basis by the Environmental Clerk of works and records kept of these inspections. The inspection must include assessment of the conditions of mitigation measures such as condition and status of silt traps, general site conditions, any evidence of increased pollution risk or spillages, with any significant findings reported immediately to the site manager for appropriate remedial actions to be undertaken if necessary.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Installation of culverts and drainage system outfalls can cause damage to bank side / riparian habitats, mobilising sediment and releasing material into the surface watercourse.	Outfall design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks.	Construction
	Potential leakage or spillage of cement or other potentially polluting substances resulting in surface water contamination.	CEMP / Pollution Prevention Plan (PPP) including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. A detailed oCEMP is presented in Appendix 3-1. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as **Appendix 9-11**. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Concrete mixing and washing areas should be located more than 10m from water bodies (100m for River Foyle SAC) and have settlement and re-circulation systems for water reuse. Isolation of working area, protective sheeting to be utilised. Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and at least 10 m from any watercourse (100m for River Foyle SAC). The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity. Spill kits to be retained on-site.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		For vehicles and plant leaving material deposition/ stockpile areas, wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.	
	Temporary compaction of soils caused by construction phase plant and site traffic movements, may increase the rate and volume of surface water runoff.	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to settlement lagoons or proprietary settlement tanks.	Construction
	Potential accidental leakage or spillage of hydrocarbons from vehicles/ machinery resulting in surface water contamination.	CEMP/ PPP including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. A detailed oCEMP is presented in Appendix 3-1. Buffer zones to be implemented : at least 10m for all watercourses, at least 100m for River Foyle SAC. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as **Appendix 9-11**. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Stationary plant will be fitted with drip trays and emptied regularly, and plant machinery will be regularly inspected for leaks with maintenance as required. Spillage kits will be stored at key locations on-site, and all construction activities will comply with a Pollution Incident Control Plan to be prepared by the appointed Contractor prior to commencement of works. Only designated trained and competent operatives will be authorised to refuel plant and all refuelling will be undertaken at designated refuelling areas (e.g. on hardstanding, with spill	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		kits available, and at least 10 m from water features, 100m for River Foyle SAC) where practicable. Appropriate measures will be adopted to avoid spillages. Double-skinned fuel bowsers only to be used for delivery refuelling and limited to traverse areas >10m from a watercourse. Diesel bowsers to be locked at all times.	
	Spread of invasive species Discharges to local watercourses from Construction Compound	Washing facilities at Construction Compound to be self-contained with no environmental discharge. All contaminated wastes generated shall be contained and removed from the site to landfill.	Construction
	Potentially polluting substances such as hydrocarbons, heavy metals, and polycyclic aromatics hydrocarbons (PAHs) may be contained in runoff from roads and car parking areas.	Water quality risk management techniques shall be used to determine the appropriate stormwater management system required for the site. The approach shall utilise SuDS mitigation indices (i.e. those outlined in the SuDS Manual (C753) – Chapter 26) to inform the design of the stormwater management system.	Operational
	Potential to increase flood risk by reducing the area of permeable land cover compared to existing conditions (i.e., greenfield site).	The proposed drainage design will incorporate SuDS components to drain the site. These will be designed in accordance with industry good practice guidance and current planning standards and regulations. Final flows discharged from the site will be controlled to calculated greenfield run-off rates up to the 1 in 100 year plus allowance for climate change rainfall event. The Accommodation Works area will be served by piped drainage, limited to greenfield runoff rate.	Operational
	Potential to cause pollution during flood event due to mobilisation of pollutants from stored materials and machinery	Good practice management and storage of materials. These measures shall include • storing high risk materials such as oils, fuels, chemicals inside buildings • maintaining low stocking levels of oils, fuels, pesticides and potentially polluting materials	Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	within Maintenance Depot and Spectator Stand.	• keeping stored materials in appropriate containers / bags to prevent release during flooding • keeping machinery clean and maintained to a high standard	
	Works to existing surface watercourses have the potential to disrupt flow and sediment regime.	Outfall design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks.	Operational
	Buildings & Hardstanding	Detailed assessment confirms that the proposal causes no measurable effect flood extents or floor levels elsewhere including transboundary effects. No further mitigation required.	Operational
	Runoff Discharge at Slipway (small car park, 3 spaces)	Carpark drainage shall be discharged to underground stratum via suitably-sized oil-water interceptor to minimise risk to SAC.	Operational
Air and Climate	Poor communication leading to air quality/issued issues being unresolved	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. Display the head or regional office contact information.	Construction
	Poor site management leading to adverse air quality/dust impacts	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Make the complaints log available to the local authority when asked. Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	
	Poor/lack of monitoring leading to adverse air quality/dust impacts	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	
	Poor preparation/maintenance of site leading to adverse air quality/dust impacts.	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period. Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. Cover, seed or fence stockpiles to prevent wind whipping.	Construction
	Adverse air quality impacts from operating vehicles/machinery and travel	Ensure all vehicles switch off engines when stationary - no idling vehicles. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing.	
	Adverse air quality/dust impacts from general construction operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips.	Construction
	Adverse air quality/dust impacts from construction waste management	Avoid bonfires and burning of waste materials.	Construction
	Adverse air quality/dust impacts from demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. Avoid explosive blasting, using appropriate manual or mechanical alternatives. Bag and remove any biological debris or damp down such material before demolition.	
	Adverse air quality/dust impacts from construction	Avoid scabbling (roughening of concrete surfaces) if possible. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	Construction
	Adverse air quality/dust impacts from trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Avoid dry sweeping of large areas. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. Access gates to be located at least 10 m from receptors where possible.	
Noise and Vibration	Noise disturbance outside of regular working hours	Working hours during site construction operations will be restricted to daytime hours from 07:30 hours to 18:00 hours (Monday to Friday) and, as may be required, from 08:00 hours to 13:00 hours (Saturdays). Evening and night-time work is not expected to take place although it is possible that limited 24 hours working may be required to take place on occasion. This will	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		only take place with the prior agreement of Derry & Strabane District Council and Donegal County Council. Night-time Working - If there are items of plant (e.g. dewatering pumps and similar) in use during night-time hours they will be chosen, sited and enclosed such that levels at the nearest properties do not exceed the measured background noise levels.	
	Adverse noise impacts from construction vehicles and plant	An on-site speed limit will be enforced for all traffic. Drivers of vehicles will be advised of the speed limits through the erection of signs i.e. a typically recommended on site speed limit is 10 km/hr. Where practicable, the use of quiet working methods and the most suitable plant will be selected for each activity having due regard to the need for noise control. Best practicable means will be employed to minimise noise emissions and will comply with the general recommendations of BS 5228. To this end operators will use “noise reduced” plant and/or will modify their construction methods so that noisy plant is unnecessary. By positioning potentially noisy plant as far as possible from noise sensitive receivers the transmission of sound can be minimised. Earth mounds and/or stockpiles of material or perimeter hoarding on site can be used as a physical barrier between the source and the receiver.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Mechanical plant used on site will be fitted with effective exhaust silencers. Vehicle reverse alarms will be silenced appropriately in order to minimise noise breakout from the site while still maintaining their effectiveness. All plant will be maintained in good working order. Where practicable, machines will be operated at low speeds and will be shut down when not in use. Compressors will be of the "noise reduced" variety and fitted with properly lined and sealed acoustic covers. In all cases engine and/or machinery covers will be closed whenever the machines or engines are in use. All pneumatic percussive tools will be fitted with mufflers or silencers as recommended by the equipment manufactures. Where practicable, all mechanical static plant will be enclosed by acoustic sheds or screens.	
	Lack of staff training leading to adverse noise impacts	Employees working on the site will be informed about the requirement to minimise noise and will undergo training on the following aspects: • The proper use and maintenance of tools and equipment. • The positioning of machinery on-site to reduce the emission of noise to the noise sensitive receivers. • Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		The use and maintenance of sound reduction equipment fitted to power pressure tools and machines.	
	Lack of monitoring leading to adverse noise impacts	Responsible Person –The Contractor will appoint a responsible and trained person who will be present on site and who will be willing to answer and act upon complaints and queries from the local public. Where excessive noise levels are recorded, further mitigation measures will be employed which may include temporary wooden hoarding / acoustic screening to be installed to a height of no less than 2.5m around areas of construction where loud noise levels occur. Where deemed necessary due to excessive impact or complaints received, noise and vibration monitoring will be undertaken during construction works to determine noise and vibration levels at sensitive receivers. On the basis of the findings of such noise and vibration monitoring, appropriate noise and vibration mitigation measures will be implemented to reduce noise and vibration impacts.	Construction
	Risk of cosmetic damage from vibration frequency	The contractor will ensure that the TII Guidelines which identify limits for protection against cosmetic damage as a function of vibration frequency are not exceeded through the use of the selected low vibration piling method.	Construction
	General disturbance from vibration	Agree working hours for piling activities for less sensitive time or days i.e during the day-time between 0700h and 1900h for Monday to Friday, avoiding weekends. Use of minimal vibration piling equipment i.e using a CFA drill.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		An alternative low vibration method for removal of the hardstand not involving the use of rock hammers or similar percussive methods must be deployed. Carry out a baseline vibration survey to determine current ambient vibration levels at the proposed piling and vibration-sensitive receptor locations. The measurement location at the vibration-sensitive receptor should be close to, but far enough away so not to disturb i.e 10 m away. Identify vibration levels the vibration-sensitive receptors are currently exposed to, and assess the potential impact from CFA piling on the vibration-sensitive receptors. Determine action and limit values based on the baseline vibration survey and available guidance from international standards. Install continuous vibration monitoring equipment at the piling location and the vibration-sensitive receptor location measuring the vibration levels. Monitor the vibration levels and compare with the agreed action and/or limit values. It is recommended the PPV is measured and if possible, the weighted acceleration and hence the VDV could also be measured (and/or determined).	
Material Assets	Increase in dust and dirt from construction vehicles	During the construction phase the increase in dust and dirt will be minimised by effective site management. The construction routes will be discussed and agreed with respective roads	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
(including traffic)		departments and disruption will be mitigated. The construction routes and the phasing of the scheme will be agreed with respective roads departments. Wheel washing facilities will be provided for all construction vehicles and construction areas will be fenced-off. Any impact will be ameliorated using best practice including damping down excavated material and haul roads when the roads are dry and covering loads of surplus material leaving and entering the site. Wheel washing will be provided on site.	
	Risk to built services during construction phase	A construction, including traffic, management plan should be implemented during the construction phase to protect local amenities and the integrity and operation of the local road network. Provision of utilities should be carried out in accordance with the recommendations of the relevant statutory bodies (ESB, Irish Water, Eircom etc.) Water Metering should be included in each unit to record consumption.	Construction
	Poor pedestrian access to the Project due to lack of pedestrian crossings	The existing pedestrian crossing on the A38 Lifford Road will be upgraded to a controlled toucan crossing.	Operational
Cultural Heritage	Possibility of encountering archaeological finds/remains within the greenfield areas during ground reduction works	Programme of archaeological works should be implemented in both the greenfield areas and within the Zone of Notification before or during the Construction Phase. This should take the form of archaeological testing if feasible and where this is not feasible (particularly within the Zone of Notification) archaeological monitoring (watching brief) shall be undertaken by a suitably qualified archaeologist, during ground reduction works. The archaeological testing	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		should be undertaken to the level of the uppermost archaeological horizon or the natural subsoil, whichever is encountered first. This should be undertaken by 360-degree tracked machines fitted with toothless buckets under an archaeological licence from National Monuments Service. Where archaeological testing is not feasible or if it has not been possible to take place in advance of site construction works, a programme of archaeological monitoring shall occur during Construction Phase. Topsoil/overburden shall be removed by 360-degree tracked machines fitted with toothless buckets under constant archaeological supervision, down to the uppermost archaeological horizon, the level of the natural subsoil or formation level, whichever is encountered first.	
	Archaeological material identified during either archaeological testing or archaeological monitoring	If archaeological material is identified during either archaeological testing or archaeological monitoring, provisions will be made by the developer for its preservation *in situ* or if this is not feasible a fully programme of archaeological excavation and recording (preservation by record). Where archaeological excavations occur, this will be followed by an off-site phase of post-excavation analysis and reporting. The level of the analysis shall be commensurate with the level of archaeology excavated.	Construction
	Potential impact to sub-surface features due to works involving bridge abutment, intermediate pier, crane pad and construction works area for bridge build, and concrete slipway	Recommended that the two fragments of logboat, encountered as part of the UAIA, be subject to detailed recording using laser and/or optical scanning. In addition, consideration must be given to the medium to long term storage of these finds. It is preferable that a suitable location is identified for reburial within the riverbed. (Pre construction mitigation),	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Given the high archaeological potential of the intertidal/riverbank areas surrounding the proposed bridge abutment and slipway impacts (including their associated works areas) on the northwest (Lifford) side of the River Foyle, Archaeological Testing of these areas is recommended. This requirement would normally be carried out in advance of construction. However, due to environmental and health/safety concerns identified, the client proposes that this work be undertaken during the construction phase of the project. This work is to be an archaeologically led endeavour, undertaken by a suitable qualified maritime archaeologist with expertise in riverine archaeology. The test-excavation shall be machine assisted and continue to sufficient depth as to adequately assess those deposits present with the identified impact areas. A detailed record of the stratigraphic sequence of the deposits that form the riverbank/bankside area should be also made. Archaeological Monitoring is recommended for the excavation/removal of any bankside/riverbed deposits from those areas surrounding the proposed bridge and slipway structures. Particular attention is to be paid to the location of the intermediate bridge pier. This work is to be carried out by a suitable qualified maritime archaeologist with expertise in riverine archaeology. As part of the monitoring, a sample amount of the removed material (spoil) should subject to metal-detection to assess the potential for the retrieval of small finds from these deposits. In the event that archaeologically significant items are encountered, the percentage of spoil to be detected may be increased. Where little or no items are encountered, the percentage may be decreased.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		An archaeologist should be retained for the duration of the relevant works. The archaeologist should be familiar with and experienced in river/estuarine environments and have a good understanding of riverine archaeology and its associated features. The time scale for the construction phase should be made available to the archaeologist, with information on where and when ground disturbances and/or dredging will take place. It is essential for the developer to give sufficient notice to the archaeologist/s in advance of the construction works commencing. This will allow for prompt arrival on site to monitor the ground disturbances. As often happens, intervals may occur during the construction phase. In this case, it is also necessary to inform the archaeologist/s as to when ground disturbance works will recommence. In the event of archaeological features or material being uncovered during the construction phase, it is crucial that any machine work cease in the immediate area to allow the archaeologist/s to inspect any such material. Once the presence of archaeologically significant material is established, full archaeological recording of such material is recommended. If it is not possible for the construction works to avoid the material, full excavation would be recommended. The extent and duration of excavation would be a matter for discussion between the client and the statutory authorities. It is recommended that the core of a suitable archaeological team be on standby to deal with any such rescue excavation. This would be complimented in the event of a full excavation.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Secure site offices and facilities should be provided on or near those sites where excavation is required. Fencing of any such areas would be necessary once discovered and during excavation Adequate funds to cover excavation, post-excavation analysis, and any testing or conservation work required should be made available. Machinery traffic during construction must be restricted as to avoid any of the selected sites and their environs. Spoil should not be dumped on any of the selected sites or their environs.	
Landscape and Visual Impact	Negative visual impact from the Project	It is proposed to re-use earth material for landform rather than removal off site in order to reduce carbon emissions and landfill. The use of timber from sustainable sources will be considered. Use of site contours for new path networks to minimize site impact and the carbon footprint of new path infrastructure. Vehicular roads, main footpaths and cycle ways will use an asphalt surface, matching the specified surface on Strabane North Greenway for consistency. Secondary paths will use either	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		reinforced grass or a bound path with local aggregate. Irish Limestone paving will be used around the Hub building. This will ensure that all the main areas of the park will be wheelchair accessible and that defined routes around the building will be DDA compliant. Proposed Play Areas alongside the existing embankment to maximise play value and landform. Plant protection will be managed through BS5837:2012 to minimise loss and/or damage during construction. Planting proposals will be managed through BS 4428:1989. Invasive species on both sides are to be managed by the respective council and include a specific Invasive Species Management Plan. Removal of trees to create entrance/egress to car park is not quantified but large sections of existing planting is to be retained in the proposed car park and enhanced with proposed SUDs mix, wild flower mix, and native and ornamental trees. A section of existing woodland at the entrance to Site is to be retained and seeded with woodland wildflower mix. Native shrubs are proposed around the Hub building and Events space and ornamental shrubs line the main paths from the car park to play areas. Ornamental shrubs, native trees, and wildflower meadow mix are proposed in the Toddler, Junior Play Area and Senior Play Area along with grass mounding.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Long swathes of riverside edge seed mix (WF3) line the river banks with scattered ornamental shrubs and grasses.	
	Change in nature of the landscape character from largely managed grassland to construction site.	This will be for a limited time span, estimated at 9 to 12 months. The size and scale of the proposed works are small and localised when set in the context of the surrounding environment. Good construction management practice will be adhered to informed by Construction Management Plans. The building works are largely contained within the site and the dense, mature woodland strips and vegetative boundaries to the west will be retained and screen the works. Existing tracks, contours and gradients will be used for new path networks to minimise site impact and the carbon footprint. Reuse of earth material for landform rather than removal from site.	Construction
	New pedestrian bridge across River Foyle	Single span structure reduces the negative impact to river/riverbank. Construction Management Plans to minimise disturbance, with focussed, managed lighting to minimise light pollution in area.	Construction
	Change in nature of the landscape character to designed park with	The buildings occupy a small parcel of land, adjacent to existing recreational facilities: the cinema and community centre.	Operation

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	recreational indoor and outdoor facilities.	Existing tree, hedgerow and shrub planting contains and encloses the proposed park: • Narrow strip of woodland along western boundary to be retained along with dense, mature trees and planting retained to the west of the site adjacent to the Community Centre and in the proposed car parking area and entrance to the site. • New boundary hedgerow planting to the north of the Lifford site. • New native and specimen trees planting to the north and in the central areas. • New shrub planting to the north east area around the Senior Play Area. • Greater access to riverside.	
	New pedestrian bridge across River Foyle	The pedestrian bridge has little visibility from the south west on Lifford Bridge due to the curve of the River Foyle. Further screening is provided by existing woodland north of the site and along Barnhill Road. Single span structure to reduce potential negative impact to landscape and visual amenity. Visual association and reference to history and heritage of the area reinforces a sense of place and will be a feature linking communities.	Operation
	Removal of vegetation including trees from Lifford/Strabane side.	Planting protection will be managed through BS5837:2012 to minimise loss and/or damage during construction. Existing areas of native planting will be increased and supplemented to improve biodiversity. Reference will be taken from the National Biodiversity Action Plan (NI) and the Biodiversity Species List for County Donegal (ROI). Replacement planting will be of a reasonable specification for immediate visual impact and amenity.	Construction and Operation

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Introduction of vehicular roads and pedestrian and cycle paths.	Hard surfaces have been kept to a minimum and confined to the asphalt entrance/egress road and parking, and main pathways. Secondary paths will use either reinforced grass or bound local aggregate. Irish Limestone paving will be used around the Hub building. Accessibility will be a key consideration and design focus for all areas to be accessible for all and limit stepped and ramped access where possible.	Construction and Operation

Appendix 1-3 Strabane Schedule of Mitigation Measures

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
Biodiversity	General disturbance of all Fauna	During the construction phase noise may cause disturbance, therefore the adoption of best practice as defined by the Control of Pollution Act 1974 should be implemented. All noise caused by machines should be minimised and should operate during daytime hours only as agreed with the council. With regards to dust it should be ensured that an adequate supply of water is available on site for effective dust suppression. No light should be directed onto woodland features during the construction or operational phase. No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as otters may fall in or enter in search of food and become trapped. No buildings or storage units are to be left open overnight, as wildlife may enter and become trapped. No poisonous or potentially harmful substances or materials are to be left unsecured	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		overnight. No vehicles or machinery are to be used installing any fencing or exclusion gates. The use of rodenticides for any pest control are prohibited on site.	
	Disturbance of Otters	If an otter is discovered or any activity suggesting otters have been disturbed during construction, all work must cease immediately, and the ecologist should be notified as soon as possible to detail how to proceed. It is also recommended that compensatory planting scheme be carried out in order to recreate foraging habitat which may be lost due to the proposed site plans. A minimum of 15 metres should be maintained as a buffer between the proposed development and surrounding water courses. Fencing designs should provide unrestricted access to the site for the otters in an effort to allow otters to use their extended foraging grounds. This is with exception to the exclusion of the car park area during the construction phase to prevent injury to wildlife. A surface water management plan (Appendix 9-11) must be implemented prior to construction works to avoid potential impacts on the water courses and water quality.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Either a small culvert or small ledge structure must be worked into the bridge landing areas to allow otters free land access across the areas where the bridge makes contact with the banks of the River Foyle. These culverts or ledges will follow best practice guidance and meet current specifications for dimensions. These culverts/ledges must be of minimum 500mm x 600mm diameter and be at least 150mm above the highest water level and run the length of the bridge landing sites extending past the bridge landing to re-join the riverbank allowing the otters free unhindered access along the riverbanks out of the water. A compensatory planting scheme will have to be implemented following the construction phase in order to re-create foraging habitat which may be lost or damaged due to the proposed site plans. The re-planting scheme implemented must use native riverine species for the restoration of the bank habitats temporarily damaged and lost during the construction works. This should also include increasing the size of the thin corridor of reed and large sedge swamp habitat located along the riverine corridor. This type of habitat is highly vital to riverine ecosystems and based on the evidence found is used heavily by the otters within the area. Re-planting and restoring the temporarily lost habitat to help expand this area of reed and large sedge swamp habitat will help to compensate for the permanent loss of habitat experienced from the bridge landings and jetty.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Disturbance of badger sett	Annex Setts to be temporarily closed for duration of works under license from NIEA. Rotary CFA piling technique to be utilised during bridge construction/installation in order to minimise vibration impact on nearby (~40m) badger sett. Use of rock hammers and similar percussive devices for breaking up of car park surfacing etc (within 100m of badger sett) shall not be permitted. Vibration monitoring will be required during bridge and car park construction works to ensure disturbance impact at sett is insignificant.	Construction
	Disturbance of badger sett Impacts to habitat	Buffer planting to shield proximal areas of the sett from view and prevent access to sett by park users. Replanting of disturbed areas to minimise impact to foraging lands. Badger gates to be installed at regular intervals along eastern site boundary to allow access through to foraging lands beyond the site.	Operational
	Disturbance of Atlantic Salmon and Riverine Habitat	Use of single span bridge to avoid in-channel support pier. Temporary crane platform (in the river channel) and working platform (on the river bank) will need to be constructed in order to construct and install the bridge. Mitigation of temporary works platform to prevent silt release through design and control methods.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Seasonal restrictions implemented for bridge construction and associated works to minimise impact on migratory fish. Due to the embankment works close proximity to the River Foyle there is an increased risk of pollution from silt and debris disturbance, potential oil and hydrocarbon spills as well as vibration disturbances. As such, it is recommended that in order to reduce these potential risks all surface water contaminated by spoil during the embankments excavation works should be collected and treated before discharged in order to remove and potential contaminants. Spill kits and plant nappies must be readily available along# with the use of silt fencing and bunds in order to capture any potential silt, oil and hydrocarbon spills and leaks. Part of the process will involve compacting the freshly laid fill in order to achieve robust embankments. This poses a risk to aquatic species due to the potential risk of vibrations produced causing disturbance and disorientating migratory fish e.g: during the salmon run. Similar mitigation to what has been previously mentioned with regards to the bridge landing is required through the implementation of low vibration methods. Conventional vibratory rollers are only to be used with the vibration turned off allowing for a low impact method to ensure the fill can be appropriately compacted. Due to the location or the proposed carpark on the Strabane side of the site, within the old halting area located within the sites southern corner, there is a perceived risk of runoff water from the car park potentially introducing pollutants and hydrocarbons into	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		the water systems. Therefore, it has been recommended that the SUDS scheme developed to create an environmentally safe drainage system to protect the nearby riverine habitat from potential pollution through surface runoff. The SuDS Drainage scheme is detailed in the Sustainable Drainage Strategy (**Appendix 9-3**) but in summary comprises hardstanding incorporating areas of permeable surfacing which allows infiltration of runoff waters into a permeable substrate. The substrate will be hydraulically sealed from the underlying made ground (under the permeable substrate) using an impermeable membrane to prevent downward migration of runoff into the underlying groundwater system. This prevents any enhancement of mobilisation of any contamination in the made ground soils, and also prevents any oil spillage from entering the groundwater system. The infiltrated runoff within the substrate layer, which will provide SuDS source control for sediment and pollutants, is captured by a series of laterally-laid perforated pipes, directing the runoff to one of two suitably-sized Class 1 full retention interceptors, discharging to the Park Road Drain along the eastern site boundary. This drainage system will prevent the release of oil to the environment from worst case accidental spillages under all weather conditions.	
	Restriction of mammal movement within the site & lands beyond the site Otter Badger	Mammal gates proposed to be situated at intervals along peripheral fencing within the site to enable badgers and other mammals to move around the site and in and out of the site unrestricted, thereby not interfering with any foraging.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Exclusion fencing be installed around the perimeter of the halting area (car park development) and temporary construction compounds in order to prevent the badgers and otters from accessing the site during works in order to avoid accidental injury to badgers or otters. This should be removed following completion of construction. Either a small culvert or small ledge structure must be worked into the bridge landing areas to allow otters free land access across the areas where the bridge makes contact with the banks of the River Foyle. These culverts or ledges will follow best practice guidance and meet current specifications for dimensions. These culverts/ledges must be of minimum 500mm x 600mm diameter and be at least 150mm above the highest water level and run the length of the bridge landing sites extending past the bridge landing to re-join the riverbank allowing the otters free unhindered access along the riverbanks out of the water.	
	Disturbance of bats Construction Compound Operational Lighting Scheme	Light spill from the proposed development should be minimised as far as possible. No lighting should be directed towards existing mature vegetation i.e. mature trees or boundary hedgerows. All terrestrial lighting should be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Any external lighting around any buildings / structures (e.g. safety lights at the front and rear) should be fitted with motion sensors (timer of up to 60 seconds). The intensity of lighting should be kept to the minimum level required for safety. Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Adaptive lighting, presence and absence controls and seasonal lighting should be implemented where possible to minimise the length of time open areas are lit up during the hours of darkness. With respect to the bridge lighting, lights should be directed away from the river and the riverbanks so as to not directly land on the water surface or tress and vegetation on the banks. Lighting of roads, paths, car parks and temporary construction compounds to be ecologically-friendly and in accordance with relevant ecological guidance to strike a balance between safety needs and environmental protection of foraging habitat.	
	Spread of Invasive plant species.	An Invasive Species Management Plan has been prepared and will be implemented during the construction and operation of the Project. This is designed to manage invasive plant species through a combination of ex-situ treatment of key areas in direct conflict with the development and in-situ treatment of other areas within the site.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Installation of a root barrier membrane within areas of footpaths, roads, hardstandings, buildings etc. which are at risk from potential Japanese Knotweed encroachment. These areas at risk are where Japanese Knotweed remains in close proximity to the structures, or where the required excavation is not achievable.	
	Spread of Invasive bivalve species. Asian Clam	Biosecurity measures (washing facility at Construction Compound) which require measures to irradicate importation of invasive bivalves during the construction phase. Signage to be erected at slipway to advise users to follow Loughs Agency and NIEA Biosecurity Guidance.	Construction Operation
	Disturbance of fish species	Bridge designed to be a single span with no in- channel support structures so as not to disturb the riverbed and channel. Bridge lighting controlled to ensure that there is no direct lighting of the river and to be ecologically-friendly and in accordance with relevant ecological guidance to strike a balance between safety needs and environmental protection of the River Foyle SAC. Seasonal restrictions on bridge construction and piling works within the SAC have been implemented to avoid the most ecologically-sensitive period (salmon runs).	Construction & Operational
	Disturbance of Long Eared Owl	All construction works within 150m of owl nest must be undertaken outside the bird breeding season and under license from NIEA. It is also recommended that replacement raptor boxes be installed within 200m of the area as a compensatory/mitigation measure	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		to ensure the long-eared owl has appropriate replacement nesting. All works near the long-eared owl nesting site and installation of replacement raptor boxes must be carried out under supervision and installed by a suitably qualified ecologist via the presence of an ecological clerk of works. The use of rodenticides for any pest control are prohibited on site.	
	Disturbance of other potential nests	Any scrub or tree clearance should be kept to a minimum and undertaken outside of the breeding season 1st March – 31st August. (Seasonal Constraints of elements of construction works). Clearance of scrub/hedgerow's during the breeding season be required, this must be undertaken under the supervision of a qualified ecologist and appropriate surveys undertaken prior to any scrub clearance.	Construction
Lands, Soils and Waters	Land Contamination Hot spots of contaminated Shallow Soils	Two small areas of shallow contaminated soils were identified on former railways lands. Remediation by dig and ump technique is required to safeguard risk to huma health.	Construction & Operational
	Erosion of exposed soils/subsoils and entry of sediment laden run-off to nearby surface water.	A Construction Environmental Management Plan (CEMP), agreed by statutory consultees and implemented prior to commencement of construction works. A detailed copy of the oCEMP is presented in Appendix 3-1. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as Appendix 9-11. A	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Earthworks shall be carried out in a phased manner, limiting exposed areas and timed to avoid sensitive periods. Stockpiles of topsoil / soils will be covered/dampened during dry weather to prevent spreading of sediment / dust. Run-off from the site will pass through temporary settlement lagoons and / or sediment tanks prior to discharge to the site watercourse / drains. Top-soiling and landscaping of the works will take place as soon as finished levels are achieved. Silt fences will be erected adjacent to watercourses during construction. Matting may also be used to capture silt-laden runoff.	
	Excavations may act as barriers to runoff diverting surface water away from existing routes or cause flooding elsewhere	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to settlement lagoons or proprietary settlement tanks.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Unsecured loads during transport pose a potential risk to the water environment should there be an accidental leakage/ spillage of materials	Fine materials (e.g. sand and / or cementitious products) shall be covered and secured with heavy duty canvas / tarpaulin. Routine checks should be made for rips and tears and repaired immediately. For vehicles and plant leaving material deposition / stockpile areas, wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.	Construction
	Stockpiling of materials may pose a risk as they can be a ready source of loose material if not adequately protected from water and wind.	Avoid unnecessary stockpiling. Stockpiling areas should be appropriately lined and positioned away from watercourses (at least 10m away for all watercourses, and at least 100m for River Foyle SAC). An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as Appendix 9-11. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Stockpiles of topsoil / soils will be covered / dampened during dry weather to prevent spreading of sediment/dust. In advance of construction, silt fences and bunds shall be provided around the footprint of any stockpiles.	Construction
	Temporary compaction of soils caused by construction phase plant and site traffic	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to settlement lagoons or proprietary settlement tanks.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	movements, may increase the rate and volume of surface water runoff.		
	Works to existing surface watercourses (i.e. installation of a permanent bridge on the River Foyle) have the potential to cause an obstruction to flow and may alter conveyance capacities	The temporary crane pad shall be constructed, used and dismantled in a manner which shall protect the river from silt release. Temporary and permanent piles will be emplaced using techniques suitable for high-sensitivity sites. No permanent piles for crane pad. CEMP / Pollution Prevention Plan (PPP) including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as **Appendix 9-11**. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Concrete mixing and washing areas should be located at least 10m from water bodies (100m for River Foyle SAC) and have settlement and re-circulation systems for water reuse. Isolation of working area, protective sheeting to be utilised. Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and at least 10 m from any watercourse (100m for River Foyle SAC). The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		The oCEMP sets two types of environmental protection buffer zone, as follows:- • 15m Buffer to all watercourses / areas of standing water. • 100m Buffer to River Foyle SAC. Buffer zones must be clearly defined by marker tape and/or posts. Silt fencing must also be placed around the entire perimeter of each buffer zone (including the SAC buffer zone) at the 15m limit to prevent water-laden sediment flowing toward watercourses. Where appropriate, these boundary markers can also be used to restrict access to the buffer zones. Each buffer zone should be assigned a reference number which should be displayed at the buffer boundary limit for easily identification of which buffer works are being completed near or within. This will assist in record keeping and incident reporting. The following activities are routinely prohibited from being carried out within buffer zones:- • Oil storage, oil drums / cans and refuelling activities. • Chemical storage (including road salt). • Vehicle servicing / mechanical repairs.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		• Vehicle / machinery parking, Lay-up or washing down. • Concrete Mixing, washing out. • Storing of stockpiles of soil, clay, cement, vegetation or any wastes. • Placement of welfare units. • Vehicle movements, unless these cannot be avoided by using an alternative route. • Ground disturbance, excavations, vegetation stripping, application of chemicals* * Unless being carried out as part by trained personnel as part of the implementation of the Invasive species management system For these activities with buffer zones, the following mitigation measures will apply: • Where possible silt fencing shall be installed between the activity and any downslope watercourse at the maximum achievable buffer zone distance, or at an appropriate break in slope or natural containment feature if present. • Where installation of silt fending is not feasible, Installation of shallow (0.2m deep) elongate cut-off trench downslope of the	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		activity to catch sediment etc and prevent it reaching the watercourse. Reinstatement thereafter. • Silt traps must be deployed in any minor watercourses immediately downstream of the works and inspected on a daily basis with any captured debris / silt removed to the waste storage area at the construction compound. The silt traps must be removed following completion of works within the buffer zone. • Plant nappy style drip trays shall be deployed around all portable oil-containing equipment. These must be inspected on a daily basis and renewed as necessary with all contaminated materials removed from the site with 24 hours. • Double skinned fuel / oil bowsers only to be used. Bowsers to be locked at all times during transport, with access to the fuel controlled by the site manager. Bowsers shall be brought into to the buffer zone as and when required for refuelling of static plant only (cranes and piling rigs) and removed immediately to the construction compound thereafter. No fuel / oil bowsers shall be stored within the buffer zone. • It is permissible to undertake emergency repairs and essential maintenance of static plant, whilst positioned in the buffer zone,	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		provided all appropriate oil spill prevention and clean-up measures are in place, including deployment of plant nappies under any works and spill kits are available at close quarters within the buffer zone. • Non-putrescible wastes to be stored in covered skips or covered bins which must be removed to the construction compound for emptying on a twice weekly basis. No putrescible wastes permitted in buffer zones. • The following activities are not permitted within Buffer Zones:- o Chemical storage (including road salt). o Vehicle servicing / mechanical repairs (apart from undertaking emergency repairs to static plant – cranes and piling rigs). o Vehicle / machinery parking, Lay-up or washing down. o Concrete Mixing, washing out. o Storing of stockpiles of soil, clay, cement, vegetation or any wastes. o Placement of welfare units.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		• All works within buffer zones must be approved in advance by the site manager. All buffer zones shall be inspected in a daily basis by the Environmental Clerk of works and records kept of these inspections. The inspection must include assessment of the conditions of mitigation measures such as condition and status of silt traps, general site conditions, any evidence of increased pollution risk or spillages, with any significant findings reported immediately to the site manager for appropriate remedial actions to be undertaken if necessary.	
	Installation of culverts and drainage system outfalls can cause damage to bank side / riparian habitats, mobilising sediment and releasing material into the surface watercourse.	Outfall design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks.	Construction
	Potential leakage or spillage of cement or other potentially polluting substances resulting in surface water contamination.	CEMP / Pollution Prevention Plan (PPP) including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. A detailed oCEMP is presented in Appendix 3-1. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as Appendix 9-11. A programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Concrete mixing and washing areas should be located more than 10m from water bodies and have settlement and re-circulation systems for water reuse. Isolation of working area, protective sheeting to be utilised. Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and at least 10 m from any watercourse (100m from SAC). The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity. Spill kits to be retained on-site. For vehicles and plant leaving material deposition/ stockpile areas, wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.	
	Temporary compaction of soils caused by construction phase plant and site traffic movements, may increase the rate and volume of surface water runoff.	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to settlement lagoons or proprietary settlement tanks.	Construction
	Potential accidental leakage or spillage of hydrocarbons from vehicles/ machinery resulting in surface water contamination.	CEMP/ PPP including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. A detailed oCEMP is presented in Appendix 3-1. An Outline Surface Water Management Plan (SWMP) and Water Quality Monitoring Plan (WQMP) are provided as Appendix 9-11. A	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		programme of routine surface water and groundwater quality monitoring must be undertaken to ensure that no water pollution is caused during the construction phase. Stationary plant will be fitted with drip trays and emptied regularly, and plant machinery will be regularly inspected for leaks with maintenance as required. Spillage kits will be stored at key locations on-site, and all construction activities will comply with a Pollution Incident Control Plan to be prepared by the appointed Contractor prior to commencement of works. Only designated trained and competent operatives will be authorised to refuel plant and all refuelling will be undertaken at designated refuelling areas (e.g. on hardstanding, with spill kits available, and >10 m from water features) where practicable. Appropriate measures will be adopted to avoid spillages. Double-skinned fuel bowsers only to be used for delivery refuelling and limited to traverse areas >10m from a watercourse. Bowsers to be locked at all times.	
	The development will involve cut – fill operations. Imported materials have the potential to be contaminated, introducing new contamination sources to the site	Re-use of site-derived materials between jurisdictions is not permitted. Materials shall be imported subject to compliance with all Duty of Care and Waste Management legislative requirements. All materials derived from sites other than licensed quarries will be considered as waste.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Imported clean topsoil and clay must be imported by pre-movement agreement with regulator bodies will all permissions in place. Imported clean topsoil and clay must be imported by pre-movement agreement with regulator bodies will all permissions in place, including compliance with NIEA Regulatory Position Statement 'Guidance on the Regulation of Greenfield Excavated Materials in Construction and Development' and any other relevant guidance. All imported soils and clays shall be subject to appropriate human health screening assessment testing at a density of at least one sample per 1,000 m^3 of materials imported. All imported wastes, including clays, shall be subject to appropriate waste classification (WAC and WM3) testing at a density of at least one sample per 1,000 m^3 of materials imported. Proper records shall be kept by the contractor and made available for all topsoil, clay and wastes imported to the site to serve as make-up or fill. Records shall include including waste transfer notes, details of the volume and nature of imported materials, photographic records of the materials, the position and extent of deposits for each individual source, the exact source of the materials and date imported. No suspect contaminated materials or materials from other brownfield sites shall be imported to the site.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Potentially polluting substances such as hydrocarbons, heavy metals, and polycyclic aromatics hydrocarbons (PAHs) may be contained in runoff from roads and car parking areas.	Water quality risk management techniques shall be used to determine the appropriate stormwater management system required for the site. The approach shall utilise SuDS mitigation indices (i.e. those outlined in the SuDS Manual (C753) – Chapter 26) to inform the design of the stormwater management system. This SuDS Drainage scheme is fully detailed in the Sustainable Drainage Strategy (Appendix 9-3) but in summary comprises hardstanding incorporating areas of permeable surfacing which allows infiltration of runoff waters into a permeable substrate. The substrate will be hydraulically sealed from the underlying made ground (under the permeable substrate) using an impermeable membrane to prevent downward migration of runoff into the underlying groundwater system. This prevents any enhancement of mobilisation of any contamination in the made ground soils, and also prevents any oil spillage from entering the groundwater system. The infiltrated runoff within the substrate layer, which will provide SuDS source control for sediment and pollutants, is captured by a series of laterally-laid perforated pipes, directing the runoff to one of two suitably-sized Class 1 full retention interceptors, discharging to the Park Road Drain along the eastern site boundary. This drainage system will prevent the release of oil to the environment from worst case accidental spillages under all weather conditions. The SuDS drainage system including the car park surface substrate drainage pipework and interceptors must be regularly inspected and maintained to ensure ongoing performance and compliance with any statutory flow/quality consents deemed	Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		appropriate by regulatory bodies. Refer to Table 6-1 of the Sustainable Drainage Strategy (Appendix 9-3) for suitable maintenance schedule.	
	Potential to increase flood risk by reducing the area of permeable land cover compared to existing conditions (i.e., greenfield site).	The proposed drainage design will incorporate SuDS components to drain the site. These will be designed in accordance with industry good practice guidance and current planning standards and regulations. Final flows discharged from the site will be controlled to calculated greenfield run-off rates up to the 1 in 100 year plus allowance for climate change rainfall event.	Operational
	Works to existing surface watercourses have the potential to disrupt flow and sediment regime.	Outfall design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks.	Operational
Air and Climate	Poor communication leading to air quality/issued issues being unresolved	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. Display the head or regional office contact information.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Poor site management leading to adverse air quality/dust impacts	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. Make the complaints log available to the local authority when asked. Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	Construction
	Poor/lack of monitoring leading to adverse air quality/dust impacts	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	
	Poor preparation/maintenance of site leading to adverse air quality/dust impacts.	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period. Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. Cover, seed or fence stockpiles to prevent wind whipping.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Adverse air quality impacts from operating vehicles/machinery and travel	Ensure all vehicles switch off engines when stationary - no idling vehicles. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing.	Construction
	Adverse air quality/dust impacts from general construction operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Adverse air quality/dust impacts from construction waste management	Avoid bonfires and burning of waste materials.	Construction
	Adverse air quality/dust impacts from demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust. Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. Avoid explosive blasting, using appropriate manual or mechanical alternatives. Bag and remove any biological debris or damp down such material before demolition.	Construction
	Adverse air quality/dust impacts from construction	Avoid scabbling (roughening of concrete surfaces) if possible.	Construction
		Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	
	Adverse air quality/dust impacts from trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. Avoid dry sweeping of large areas. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. Access gates to be located at least 10 m from receptors where possible.	
Noise and Vibration	Disturbance of badger sett	Rotary piling technique to be utilised during construction of bridge abutments in order to minimise vibration impact on nearby (~40m) badger sett.	Construction
	Noise disturbance outside of regular working hours	Working hours during site construction operations will be restricted to daytime hours from 07:30 hours to 18:00 hours (Monday to Friday) and, as may be required, from 08:00 hours to 13:00 hours (Saturdays). Evening and night-time work is not expected to take place although it is possible that limited 24 hours working may be required to take place on occasion. This will only take place with the prior agreement of Derry & Strabane District Council and Donegal County Council. Night-time Working - If there are items of plant (e.g. dewatering pumps and similar) in use during night-time hours they will be chosen, sited and enclosed such that levels at the nearest properties do not exceed the measured background noise levels.	Construction
	Adverse noise impacts from construction vehicles and plant	An on-site speed limit will be enforced for all traffic. Drivers of vehicles will be advised of the speed limits through the erection of signs i.e. a typically recommended on site speed limit is 10 km/hr.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Where practicable, the use of quiet working methods and the most suitable plant will be selected for each activity having due regard to the need for noise control. Best practicable means will be employed to minimise noise emissions and will comply with the general recommendations of BS 5228. To this end operators will use "noise reduced" plant and/or will modify their construction methods so that noisy plant is unnecessary. By positioning potentially noisy plant as far as possible from noise sensitive receivers the transmission of sound can be minimised. Earth mounds and/or stockpiles of material or perimeter hoarding on site can be used as a physical barrier between the source and the receiver. Mechanical plant used on site will be fitted with effective exhaust silencers. Vehicle reverse alarms will be silenced appropriately in order to minimise noise breakout from the site while still maintaining their effectiveness. All plant will be maintained in good working order. Where practicable, machines will be operated at low speeds and will be shut down when not in use.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Compressors will be of the "noise reduced" variety and fitted with properly lined and sealed acoustic covers. In all cases engine and/or machinery covers will be closed whenever the machines or engines are in use. All pneumatic percussive tools will be fitted with mufflers or silencers as recommended by the equipment manufactures. Where practicable, all mechanical static plant will be enclosed by acoustic sheds or screens.	
	Lack of staff training leading to adverse noise impacts	Employees working on the site will be informed about the requirement to minimise noise and will undergo training on the following aspects: • The proper use and maintenance of tools and equipment. • The positioning of machinery on-site to reduce the emission of noise to the noise sensitive receivers. • Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment. The use and maintenance of sound reduction equipment fitted to power pressure tools and machines.	Construction
	Lack of monitoring leading to adverse noise impacts	Responsible Person –The Contractor will appoint a responsible and trained person who will be present on site and who will be willing to answer and act upon complaints and queries from the local public.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Where excessive noise levels are recorded, further mitigation measures will be employed which may include temporary wooden hoarding / acoustic screening to be installed to a height of no less than 2.5m around areas of construction where loud noise levels occur. Where deemed necessary due to excessive impact or complaints received, noise and vibration monitoring will be undertaken during construction works to determine noise and vibration levels at sensitive receivers. On the basis of the findings of such noise and vibration monitoring, appropriate noise and vibration mitigation measures will be implemented to reduce noise and vibration impacts.	
	Risk of cosmetic damage from vibration frequency	The contractor will ensure that the TII Guidelines which identify limits for protection against cosmetic damage as a function of vibration frequency are not exceeded through the use of the selected low vibration piling method.	Construction
	General disturbance from vibration	Agree working hours for piling activities for less sensitive time or days i.e during the day-time between 0700h and 1900h for Monday to Friday, avoiding weekends. Use of minimal vibration piling equipment i.e using a CFA drill. An alternative low vibration method for removal of the hardstand not involving the use of rock hammers or similar percussive methods must be deployed.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Carry out a baseline vibration survey to determine current ambient vibration levels at the proposed piling and vibration-sensitive receptor locations. The measurement location at the vibration-sensitive receptor should be close to, but far enough away so not to disturb i.e 10 m away. Identify vibration levels the vibration-sensitive receptors are currently exposed to, and assess the potential impact from CFA piling on the vibration-sensitive receptors. Determine action and limit values based on the baseline vibration survey and available guidance from international standards. Install continuous vibration monitoring equipment at the piling location and the vibration-sensitive receptor location measuring the vibration levels. Monitor the vibration levels and compare with the agreed action and/or limit values. It is recommended the PPV is measured and if possible, the weighted acceleration and hence the VDV could also be measured (and/or determined).	
Material Assets (including traffic)	Increase in dust and dirt from construction vehicles	During the construction phase the increase in dust and dirt will be minimised by effective site management. The construction routes will be discussed and agreed with respective roads departments and disruption will be mitigated. The construction routes and the phasing of the scheme will be agreed with respective roads departments.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Wheel washing facilities will be provided for all construction vehicles and construction areas will be fenced-off. Any impact will be ameliorated using best practice including damping down excavated material and haul roads when the roads are dry and covering loads of surplus material leaving and entering the site. Wheel washing will be provided on site.	
	Risk to built services during construction phase	A construction, including traffic, management plan should be implemented during the construction phase to protect local amenities and the integrity and operation of the local road network. Provision of utilities should be carried out in accordance with the recommendations of the relevant statutory bodies (NIE, NI Water, DfI Rivers etc.).) Water Metering should be included in each unit to record consumption.	Construction
	Poor pedestrian access to the Project due to lack of pedestrian crossings	A new toucan crossing will be introduced on the A5 Barnhill Road some 100m north of the ADSA Roundabout.	Operational
Cultural Heritage	Inadvertent damage during construction works to Bridge (IHR 00017:054:00)	This feature should be clearly fenced off during Construction Phase to prevent vehicular access to it. Should vegetation removal or subsequent conservation of this structure be required, this should be done in a careful and controlled manner and under advice from a conservation specialist.	Construction

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Possibility of encountering archaeological finds/remains or remains associated with the industrial heritage sites recorded in this area during ground reduction works	A programme of archaeological works taking the form of archaeological monitoring (watching brief) shall be undertaken by a suitably qualified archaeologist, during ground reduction works. The programme of archaeological monitoring shall occur during Construction Phase. Topsoil/overburden shall be removed by 360-degree tracked machines fitted with toothless buckets under constant archaeological supervision, down to the uppermost archaeological horizon, the level of the natural subsoil or formation level, whichever is encountered first. This shall be done under an archaeological licence from Historic Environment Division within the Department for Communities (HED:DfC). The watching brief shall include archaeological monitoring of soil removal or landscaping of the railway embankment (not a recorded feature of industrial heritage), should this occur. If archaeological material (including industrial heritage) is identified during archaeological monitoring, provisions will be made by the developer for its preservation *in situ* or if this is not feasible a fully programme of archaeological excavation and recording (preservation by record). Where archaeological excavations occur, this will be followed by an off-site phase of post-excavation analysis and reporting. The level of the analysis shall be commensurate with the level of archaeology excavated.	Construction
Landscape and Visual Impact	Negative visual impact from the Project	It is proposed to re-use earth material for landform rather than removal off site in order to reduce carbon emissions and landfill. The use of timber from sustainable sources will be considered.	Construction & Operational

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Use of site contours for new path networks to minimize site impact and the carbon footprint of new path infrastructure. Vehicular roads, main footpaths and cycle ways will use an asphalt surface, matching the specified surface on Strabane North Greenway for consistency. Secondary paths will use either reinforced grass or a bound path with local aggregate. Irish Limestone paving will be used around the Hub building. This will ensure that all the main areas of the park will be wheelchair accessible and that defined routes around the building will be DDA compliant. As much of the wetland habitat as possible will be retained. An elevated boardwalk will minimise disruption to existing habitats, planting and wildlife through routes during construction and use. Timber guarding will be incorporated where falls exceed 600mm and an assistance edge will be provided elsewhere. Conservation of the wetland areas with proactive biodiversity and environmental training programmes will encourage its enhancement and protection. Allocation of space for outdoor learning, interpretation and organised group activities will promote involvement and ownership by the community.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Invasive species on both sides are to be managed by the respective council and include a specific Invasive Species Management Plan. The Halting Site - the existing concrete base is to be removed and seeded with native wildflower/grass meadow mix. Additional native whip planting will be planted in areas that do not conflict with the proposed A5 and where it is agreed will be beneficial. The removal of trees to create entrance/egress to the car park is not quantified but a native hedgerow is proposed along the eastern edge of the entrance/egress road. The car park has asphalt parking spaces and is planted with a SUDs mix, wild flower mix (WF1), and native and ornamental trees. Riverside edge seed mix is proposed west of the car park in existing woodland on the north west border of the site. The majority of the centre of the site is wetland and marsh, which will be retained with some augmentation with wild flower seeding (WF1) and native tree planting. A native hedgerow is proposed for the northern boundary, which will give access to the Strabane North Greenway.	

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
	Construction of the bridge landing, paths and boardwalk.	The construction works are largely contained within the site and screened by the existing mature boundary trees and planting, particularly to the south of the site and by the mature trees lining Barnhill Road.	Construction
	Entrance/egress and car parking located on existing halting site	The existing access road from the roundabout to the halting site is to be repurposed and resurfaced and is screened by retained naturalised vegetation.	Construction
	Removal of vegetation to accommodate pedestrian paths including the Strabane North Greenway.	Existing vegetation is to be largely retained and protected where possible. Any removal will be compensated for by extensive new tree, shrub and wildflower planting to enhance existing habitats, create new ones and increase biodiversity. Existing tracks, contours and gradients will be used for new path networks to minimise site impact and the carbon footprint.	Construction
	New pedestrian bridge across River Foyle	Single span structure reduces the negative impact to river/riverbank. Construction Management Plans to minimise disturbance, with focussed, managed lighting to minimise light pollution in area.	Construction
	Management of the landscape, increasing access to more diverse habitats and improved biodiversity.	Landscape impact will be positive. Glimpses of the site from Lifford Road bridge and the Lifford side of the site will be positive.	Operation
	New pedestrian bridge across River Foyle	The pedestrian bridge has little visibility from the south west on Lifford Bridge due to the curve of the River Foyle. Further screening is provided by existing woodland north of the site and along Barnhill Road.	Operation

Environmental Topic	Potential Impacts (without Mitigation)	Mitigation Measures	Phase
		Single span structure to reduce potential negative impact to landscape and visual amenity. Visual association and reference to history and heritage of the area reinforces a sense of place and will be a feature linking communities.	
	Removal of vegetation including trees from Lifford/Strabane side.	Planting protection will be managed through BS5837:2012 to minimise loss and/or damage during construction. Existing areas of native planting will be increased and supplemented to improve biodiversity. Reference will be taken from the National Biodiversity Action Plan (NI) and the Biodiversity Species List for County Donegal (ROI). Replacement planting will be of a reasonable specification for immediate visual impact and amenity.	Construction and Operation
	Disturbance of wetland habitat	An elevated boardwalk and timber guarding will minimise disruption to existing habitats, planting and wildlife. Proposed development will include conservation of the wetland areas with proactive biodiversity and environmental training programmes to encourage its enhancement and protection.	Construction and operation
	Introduction of vehicular roads and pedestrian and cycle paths.	Hard surfaces have been kept to a minimum and confined to the asphalt entrance/egress road and parking, and main pathways. Secondary paths will use either reinforced grass or bound local aggregate. Irish Limestone paving will be used around the Hub building. Accessibility will be a key consideration and design focus for all areas to be accessible for all and limit stepped and ramped access where possible.	Construction and Operation

Appendix B

LEGEND

- Riverine Community Park Boundary (NI)
- Adjoining Proposed Riverine Community Park Boundary under Roi Jurisdiction
- Site Boundary - Application under Roads Act, Section 51(2)

Rev	Issue Date	Description	App
P02	26.01.2022	Reissued for Planning (amended car park location)	Dm
P01	13.09.2021	Issued for Planning	HB
P00	19.08.2021	Issued for Planning	HB

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Comhairle Chathair Dhoire & Cheantar an Ghoirtín Báin
Derry Cittie & Strabane Destrick Council

Project Status: STAGE 3 - PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: OVERALL LANDSCAPE LAYOUT (NI PLANNING)

Scale: 1:1250 @ A0

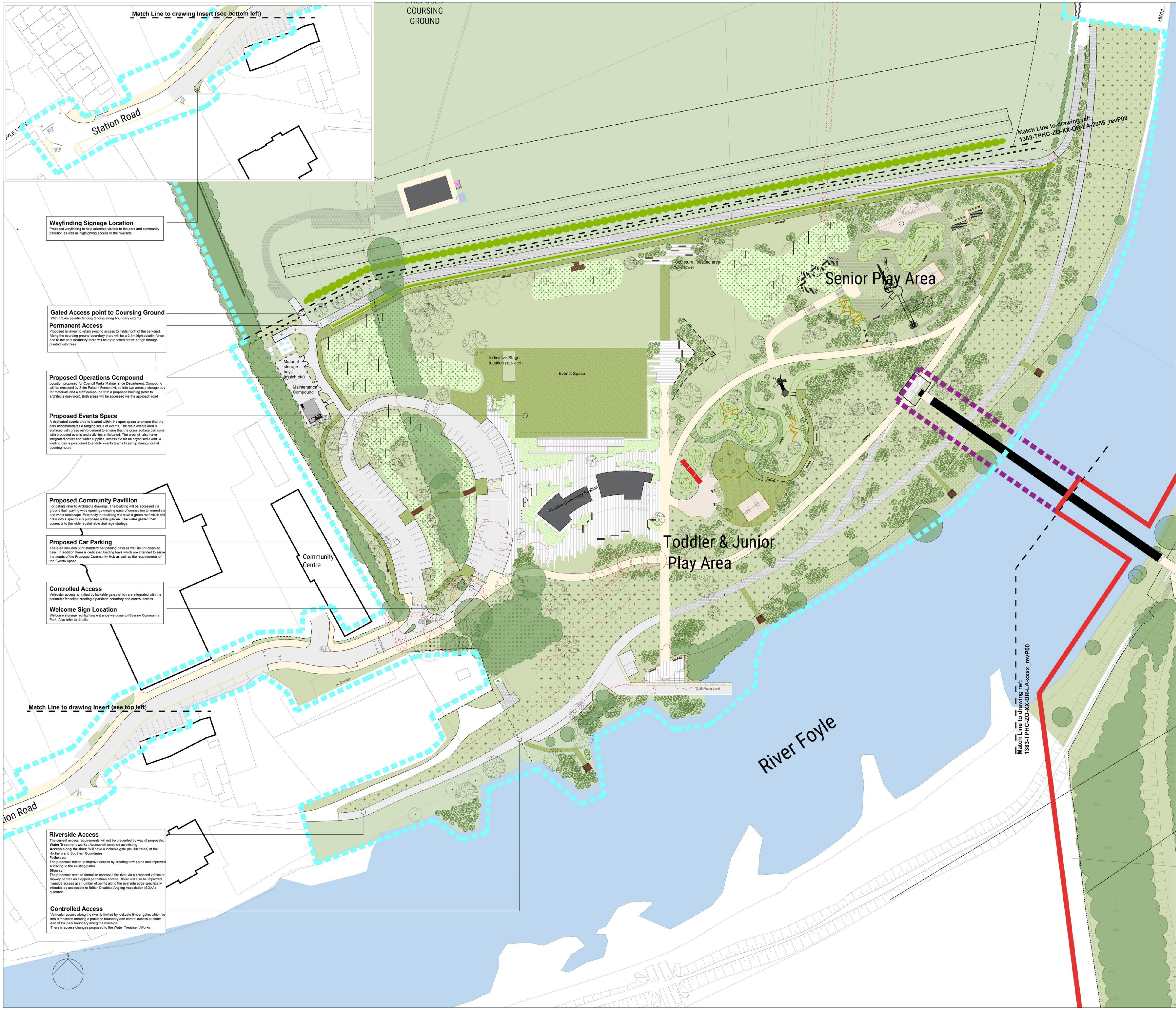
Drawn	Checked	Approved
HB	DM	DM
Date 12.02.2021	Date 12.02.2021	Date 19.08.2021

Project: RVCP - TPHC - ZO - XX - DR - LA - 2050

Revision: P02

Project Number: 1383

Status code & Description: ST2 Issued for Information



LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details
- Proposed Hedgerow planting — Refer to planting schedule and details
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower (WF1) — Refer to planting schedule
- Proposed Woodland Wildflower (WF2) — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.
- *Proposed Grass Mounding — Refer to planting schedule (Amenity Grassland)

SURFACES

- Proposed Asphalt — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — Vehicular. For detail refer to engineers drawing
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark. For detail refer to engineers drawing
- *Natural Stone Paving — Refer to detail
- Proposed Boardwalk — Refer to detail
- Reinforced Grass — Refer to detail
- Proposed Gravel Path — Refer to detail
- *Proposed Slipway Surface — Refer to detail also engineers drawings for detail.
- *Wetpour Safety Surfacing — Refer to detail
- *Reinforced Grass Safety Surfacing — Refer to detail
- *Play Bark Safety Surface — specifically for play areas
- Stone Clusters — Refer to detail

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail
- Stock Proof Fencing — Refer to detail
- Existing Fencing to be removed
- Steps and Terracing — Refer to detail
- Proposed Benches — Refer to detail
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavillion
- Proposed Metal Gates — Refer to detail
- Vehicular Upstand Kerb — 125mm upstand. Pre Cast Concrete
- Vehicular Flush Kerb — Pre Cast Concrete
- Pin Kerb — Pre Cast Concrete

MISCELLANEOUS

- Riverine Community Park Boundary (NI)
- Riverine Community Park Boundary (ROI)
- Site Boundary - Application under Roads Act, Section 51(2)
- Proposed Bridge
- Water

LEVELS

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will be accessible to the broadest range of abilities. In accordance to Countryside Access code

9. Riverside Access
Riverside access to be retained.

10. Planting
The general planting strategy is to use a primarily native planting palette introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and supplemented to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed.

11. Suds
Attenuation basin locations and extents shown indicatively. Basins will be planted with a mix of native wet woodland (indicated with trees) and marginal type planting (indicated with hatch) to highlight their location and integrate them as an attractive feature within the overall site context.

12. Bridge
Refer to engineers proposals

13. Invasive Weeds
Refer to invasive weed management plan

14. Topographic Survey Information
Planting
There are substantial areas of the Project boundary that remain unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detail of;

Planting Loss:
The extents of existing vegetation and wetland are shown indicatively. In this regard the amount of trees (shown within a group) identified as removed is unclear.

Guarding
is not identified on the layouts but will be located on pathways adjacent to an immediate level change of 600mm or greater or slopes steeper than 1:2. Guarding will be 1100mm high responding to building regulations and countryside access code. As an example please refer to Boardwalk drawing ref: 2072

15. Play Areas
The Play areas have been located next to the existing embankment making the most of connecting paths and using graded terracing to maximise accessibility through the play spaces. Play equipment within both the Junior / Senior play areas will also be considered to ensure broadest age range and ability is catered for. Also refer to the section drawing which illustrates section through the accessible High Tower in the Senior Play Area.

16. Legend
*All items with * are only relevant to Lifford*

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

Rev	Issue Date	Description	App
P01	13.09.2021	Issued for Planning	HB
P00	19.08.2021	Issued for Planning	HB

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European Regional Development Fund

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Donegal County Council
Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Stràbane Destrick Cooncil

Project Status: STAGE 3 - PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: LIFFORD RIVERINE COMMUNITY PARK LANDSCAPE LAYOUT (NI PLANNING)

Scale: 1:500 @ A0

Drawn	HB	Checked	DM	Approved	DM
Date	12.02.2021	Date	12.02.2021	Date	19.08.2021

Project	Organisation	Zone	Level	Type	Role	Number	Revision
1383	TPHC	Z0	XX	DR	LA	2052	P01

Project Number: 1383

Status code & Description: ST2 Issued for Information

River Foyle

Park Road

Barnhill Road

Access to Headwall / Flow Control
Existing access to Headwall flow control to be retained. Perimeter fence will be repaired as needed.

Strabane North Greenway
Will be progressed separately to Riverine Community Park but coordinated ensuring that connections are mutually considered and agreed.

Adjacent Site
No proposals within site, to remain as existing.

Pond
Existing planting retained to as much as possible. Native aquatic & marginal planting proposed to improve ecology.

Bridge Landing
At the bridge landing point. A seating area is proposed to ensure that there is an opportunity to appreciate the spectacular vantage point looking along the River Foyle, also overlooking the parkland on both sides.

Riverside Access
Existing riverside access will be retained

SUDs

Proposed Boardwalk
The existing landscape in Strabane has naturalised, having benefited from many years of neglect. In this respect it holds many important ecologically sensitive assets. To ensure that these can provide visitor experience anticipated the boardwalk enables elevated access ensuring that wildlife retains safe passage with minimal disturbance to ecology.

Invasive Weeds
There are a number of areas throughout the site which have stands of Invasive weeds. These will be managed in location where possible. Refer to Invasive Weed Management Plan for more detail.

Wildlife Passage Gates
Gates to be located at three points within proposed fenceline and hedging. These will provide safe access for specific wildlife to ensure access to their feeding ground to the east. The gates are designed to ensure that livestock cannot use Them (the access points) as a means of escape.

Existing Planting
The Strabane site is typified by a naturalised and overgrown landscape evolved from its former use as a railway yard. The site now represents an ecologically sensitive landscape that brings many benefits which contribute positively to the proposed parkland. Existing planting provides a unique and biodiverse habitat which is acknowledged within the proposals, through identification and protection. Access within these areas is limited and planting will be encouraged to continue to grow. Additional native whip planting will be planted to help reinforce benefit of this natural resource.

Tree Planting
New Tree Planting is proposed throughout the project area where opportunities for proposed planting.

Proposed Car Park
Located within the former halting site the proposed car park will be resurfaced with new drainage and lighting. It will provide 125 spaces and 11 disabled bays and provision for 2 coach parking bays.
Run off from the car parking will be managed by integrated sustainable drainage.

Entrance
It is proposed that the site will be accessed from the Barnhill Road roundabout for vehicles, cyclists and pedestrians.
Existing access to the agricultural lands to the west will be retained.

Match Line to drawing ref:
1383-TPHC-ZO-XX-DR-LA-xxxx_revP00

Match Line to drawing Insert (see right)

Match Line to drawing Insert (see left)

Drawing Insert
Scale 1:500 @ A0

LEGEND

SOFTWORKS

- Existing Trees & Planting — To be retained and protected during works in accordance with BS5837
- Existing Trees & Planting — To be removed. Groups identified in the absence of individual trees
- Proposed Native Trees — Refer to planting schedule
- Proposed Native Wetland Trees — Refer to planting schedule
- Proposed Specimen Trees — Refer to planting schedule and details
- Proposed Hedgerow planting — Refer to planting schedule and details
- Proposed Amenity Grassland — Refer to planting schedule
- Proposed Wildflower (WF1) — Refer to planting schedule
- Proposed Woodland Wildflower (WF2) — Refer to planting schedule
- Proposed Riverside Edge Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed SUDS Mix — Refer to planting schedule. To be pregrown and supplied as turf
- Proposed Native shrubs — Refer to planting schedule.
- Proposed Ornamental shrubs — Refer to planting schedule.

SURFACES

- **Proposed Asphalt** — To pedestrian and Cycleway. For detail refer to engineers drawing
- Proposed Asphalt — Vehicular. For detail refer to engineers drawing
- Strabane North Greenway — Progressed separately to this project
- Proposed High Friction Surface — To pedestrian crossing Strabane carpark. For detail refer to engineers drawing
- *Natural Stone Paving — Refer to detail
- Proposed Boardwalk — Refer to detail
- Reinforced Grass — Refer to detail
- Proposed Gravel Path — Refer to detail
- *Proposed Slipway Surface — Refer to detail also engineers drawings for detail.
- *Wetpour Safety Surfacing — Refer to detail
- *Reinforced Grass Safety Surfacing — Refer to detail
- *Play Bark Safety Surface — specifically for play areas
- Stone Clusters — Refer to detail

FEATURES

- Existing Walls — To be retained
- Existing Fencing — To be retained / replaced as required
- 2.4m Security Fencing — Paladin fencing
- Metal Estate Fencing — Refer to detail
- Stock Proof Fencing — Refer to detail
- Existing Fencing to be removed
- Steps and Terracing — Refer to detail
- Proposed Benches — Refer to detail
- Bicycle stand locations — Typical Sheffield stand
- Proposed Litter Bins — 100L Bins with single 300L recycled bin adjacent to Community Pavilion
- Proposed Metal Gates — Refer to detail
- **Vehicular Upstand Kerb** — 125mm upstand. Pre Cast Concrete
- **Vehicular Flush Kerb** — Pre Cast Concrete
- **Pin Kerb** — Pre Cast Concrete

MISCELLANEOUS

- Site Boundary - Application under Roads Act, Section 51(2)
- Adjoining Riverine Community Park Boundary (ROI)
- Riverine Community Park Boundary (NI)
- Proposed Bridge
- Water

N

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated

2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

3. All hatches are indicative and do not relate to the actual laying or planting pattern

4. Layout should be read in conjunction with all other drawing information and reports

5. All new kerbs adjacent to existing roads will require a 300mm reinstatement strip within the carriageway running the entire length

6. For proposed drainage refer to engineers layout

7. For lighting, electrical requirements refer to M&E drawings

8. Walking Routes & Connections
All main routes within the park boundary will be accessible to the broadest range of abilities. In accordance to Countryside Access code

9. Riverside Access
Existing riverside access to be retained

10. Planting
The general planting strategy is to use a primarily native planting palette, introducing some specimen trees within the new car park to add formality. Where possible existing areas of native planting will be increased and added to create diversity and improve ecological benefit. This planting will be suggested from the naturalised fauna surveyed.

11. Bridge
Refer to engineers proposals

12. Invasive Weeds
Refer to invasive weed management plan

13. Topographic Survey Information
Planting
There are substantial areas within the Project boundary that remain unsurveyed (due to poor access). In this respect assumptions have had to have been made with regard detail of;

Planting Loss:
The extents of existing vegetation and wetland are shown indicatively. In this regard the amount of trees (shown within a group) identified as removed is unclear.

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is not identified on the layouts but will be located on pathways adjacent to an immediate level change of 600mm or greater or slopes steeper than 1:2. Guarding will be 1100mm high responding to building regulations and countryside access code. As an example please refer to Boardwalk drawing ref: 2072

The revision cloud highlighted areas of the park which were inaccessible for the

This is a concept design that illustrates the main elements to be delivered within the park. The exact location, layout and smaller details of the park may change during the detailed design phase.

Rev	Issue Date	Description	App
P02	26.01.2022	Reissued for Planning (amended car park location)	Dm
P01	13.09.2021	Issued for Planning	HB
P00	19.08.2021	Issued for Planning	HB

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Derry City & Strabane District Council
Comhairle Chathair Dhoire agus Cheantar an Urrtha Bain
Derry Cittie & Strabane Destrick Council

Project Status: STAGE 3 - PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: STRABANE RIVERINE COMMUNITY PARK LANDSCAPE LAYOUT (NI PLANNING)

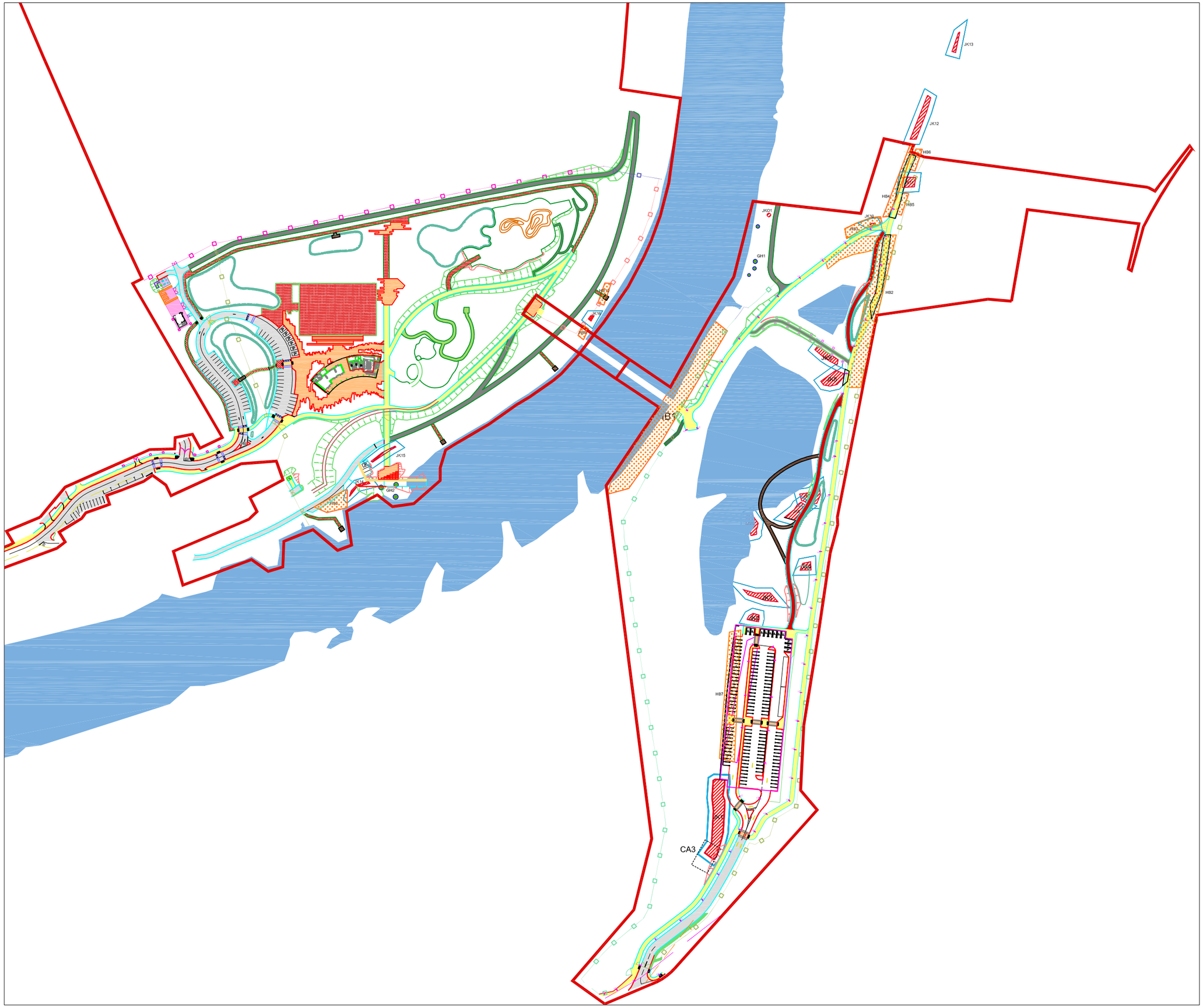
Scale: 1:500 @ A0

Drawn	Date	Checked	Date	Approved	Date
HB	12.02.2021	DM	12.02.2021	DM	19.08.2021

Project	Revision
RVCP - TPHC - Z0 - XX - DR - LA - 2051	P02

Project Number	Status code & Description
1383	ST2 Issued for Information

Appendix C



Key:

JK1 Japanese Knotweed ID & Location

Potential Rhizome Spread (3.5m)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

Note:
JK11, JK12 & JK13
HB2 Partial, HB3, HB4, HB5 & HB6
Will be controlled under an earlier development of the path by Strabane North Greenway

Riverine Lifford & Strabane

DWG.1

Invasive Species Location
(JUNE 2021)

Scale		Date
1;2500		21/01/22

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766

Key:

JK1 Japanese Knotweed ID & Location

Potential Rhizome Spread (3.5m)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

30m CA1 15m Containment Treatment Area (30m x 15m= 450m2)

Riverine Lifford & Strabane

DWG.2

Lifford
Invasive Species Location
with Containment Area

Scale		Date
1:2500		21/01/22

Multidisciplinary Environmental Consultants
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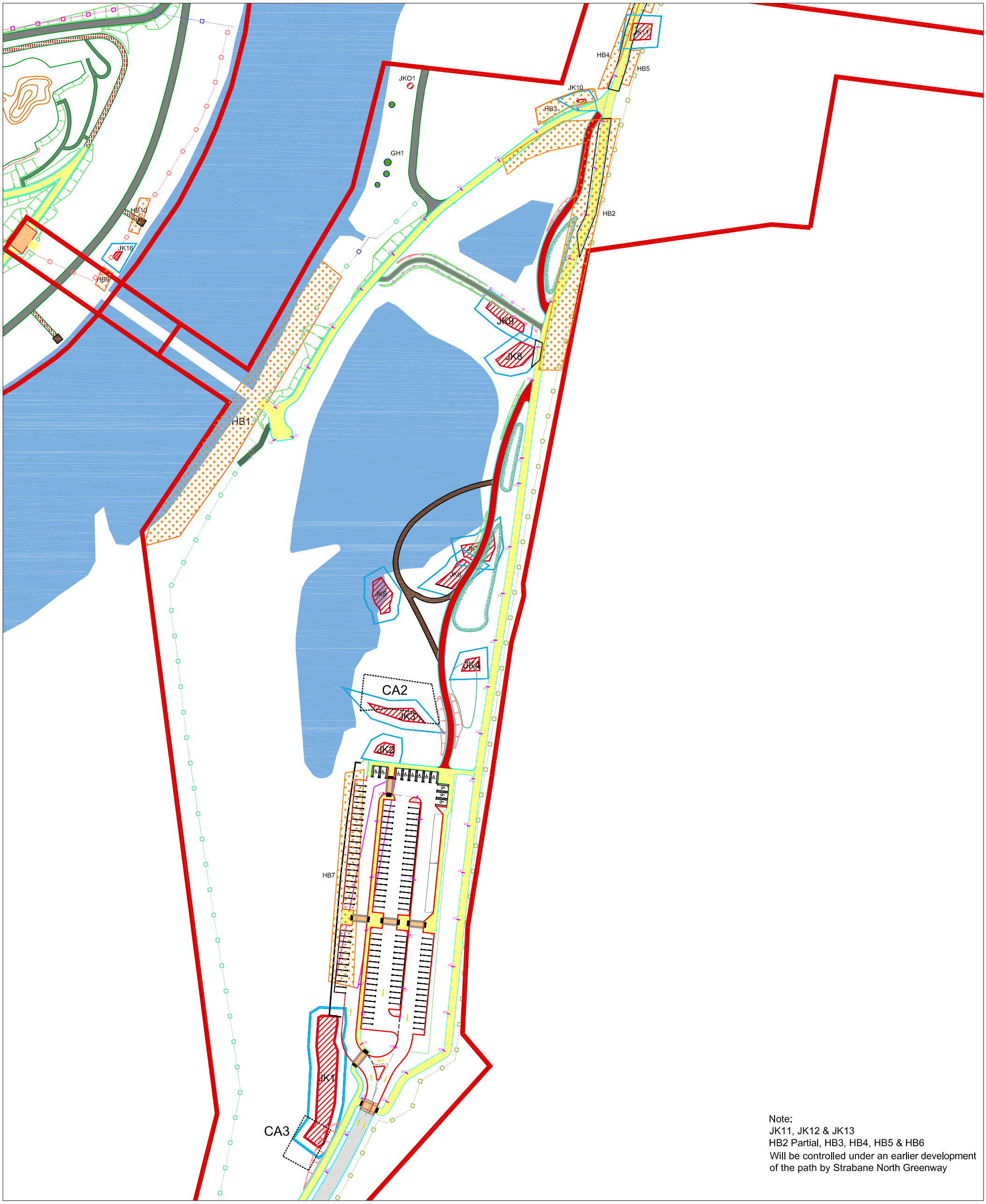
Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766



Note:
JK11, JK12 & JK13
HB2 Partial, HB3, HB4, HB5 & HB6
Will be controlled under an earlier development of the path by Strabane North Greenway

Key:

JK1 Japanese Knotweed ID & Location

CA2 (30 / 15.5) Containment Treatment Area (450m2)

Potential Rhizome Spread (3.5m)

CA3 (20 / 12.5) Containment Treatment Area (250m2)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

DWG.3	Riverine Lifford & Strabane	
Scale 1;500	Strabane Invasive Species Location with Containment Treatment Area (JUNE 2021)	
Date 25/01/22		

Multidisciplinary Environmental Consultants
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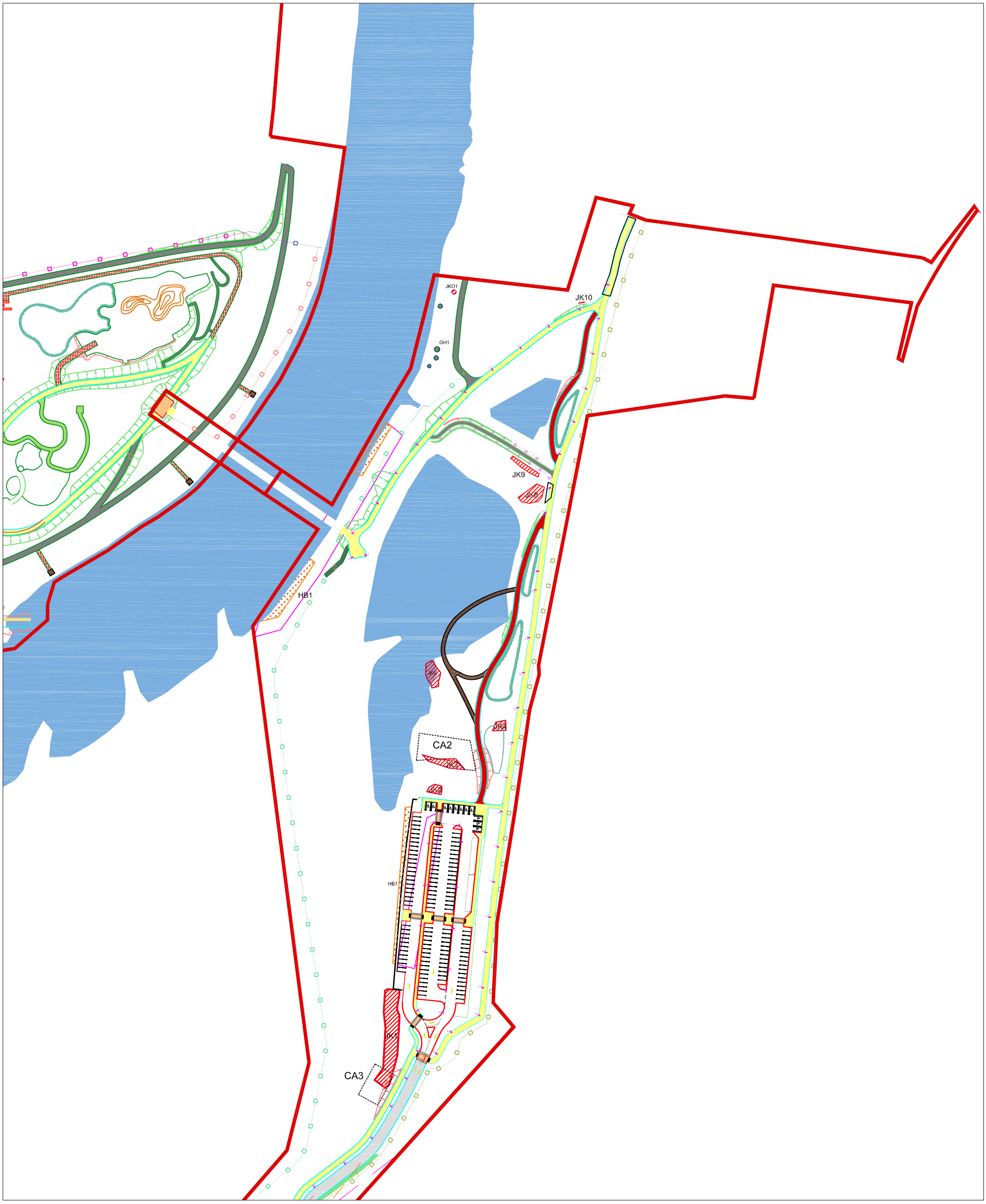

Key:

JK1 Japanese Knotweed ID & Location

CA2 (30 / 15.5) Containment Treatment Area (450m2)

Potential Rhizome Spread (3.5m)

CA3 (30 / 12.5) Containment Treatment Area (250m2)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

DWG.4	Riverine Lifford & Strabane	
Scale 1;1250	Strabane Invasive Species Locations after relocation with Containment Treatment Areas	
Date 25/01/22		

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Appendix D

APPENDIX 8-13

Invasive Species Assessment (Plants) and Invasive Species Management Plan

Riverine Community Park
Lifford-Strabane

Client: McAdam Design

Issued: January 2022

MCL Consulting Ltd
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CONTENTS

1.0 INTRODUCTION

1.1 REPORT INTRODUCTION

MCL Consulting Ltd (MCL) was appointed by McAdam Design to undertake an invasive Species Assessment and prepare an Invasive Species Management Plan for the Construction Phase and Operational Phase for the Riverine Community Park Development Scheme. The site straddles the River Foyle between the eastern side of Lifford Town, County Donegal, Republic of Ireland and the western side of the town of Strabane in County Tyrone, Northern Ireland. This assessment applies only to invasive plants. For an assessment of invasive bivalves (Asian Clam) refer to the Aquatic Ecology Assessment (Chapter 9, **Appendix 8-12**).

The project will comprise the creation of new community park infrastructure in excess of twenty-one hectares either side of the border connected through the creation of a new pedestrian and cycle bridge between Lifford and Strabane. The park on the Lifford site will be a designed landscape incorporating indoor and outdoor recreational features, smaller meeting & events spaces for programmed activity, complemented by the use of the naturalised flood plain environment on the Strabane site for informal recreation and environmental education/conservation activities.

1.2 INVASIVE PLANT SPECIES OVERVIEW

1.2.1 INVASIVE SPECIES LEGISLATION

Northern Ireland

Japanese knotweed, Giant Hogweed and Himalayan Balsam are listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985 as amended by the WANE Act in 2010. The Wildlife and Countryside Act 1981 / Wildlife (Northern Ireland) Order 1985 controls the spread of these invasive plants into wild habitats. Part I (WILDLIFE – Miscellaneous), Section 14, Clause 2 of the Act states:

> *"if any person plants or otherwise causes to grow in the wild any plant which is included in "Part II of Schedule 9, he shall be guilty of an offence."*

Under the Environmental Protection Act 1990, Duty of Care Regulations 1991, Invasive species material and soil containing rhizomes and seeds must be removed to an appropriate licensed landfill site for disposal, accompanied by appropriate Waste Transfer documentation.

N.B. The Responsibility for dealing with invasive weeds rests with individual landowners. Strategic, widespread control is currently not the sole responsibility of any statutory organisation.

The current Northern Ireland Environment Agency policy on disposal of Japanese knotweed, Giant Hogweed, and Himalayan Balsam material and contaminated soils follows the Environment Agency guidelines and thereby places a duty of care on all waste producers to ensure Japanese knotweed is disposed of at a suitable licensed landfill site and that the site operator is notified in advance.

Republic of Ireland

Japanese Himalayan, Giant Hogweed, and Himalayan balsam are all listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011.

Under the European Communities (Birds and Natural Habitats) Regulations 2011, Regulation 49 places restrictions on the introduction of any plant species listed in Part 1 of the Third Schedule. A person shall be guilty of an offence if they: plant, disperse, allow or cause to disperse, spread or cause to grow the plant in the Republic of Ireland.

To move soil in the Republic of Ireland that contains Japanese knotweed, Giant Hogweed and Himalayan Balsam material, rhizomes or seeds will require a license from National Parks and Wildlife Service (NPWS).47

1.3 JAPANESE KNOTWEED OVERVIEW

Japanese Knotweed (Fallopia japonica), is a non-native highly invasive plant species originally from Japan and was distributed throughout Europe in the 1800s as an ornamental plant. After being naturalised in the UK in the late 1800s, the species soon spread through the UK due to its invasive properties.

Reproduction is primarily by vegetative regeneration of rhizomes and fresh stems. The rhizome system may extend from a parent plant up to 7 metres laterally and to a depth of 2 - 3 metres. Very small fragments of rhizome (as little as 0.7 grams – about the size of a fingernail) can give rise to new plants.

Established Japanese knotweed with large reserves of stored energy contained within the rhizome system can be vigorous enough to penetrate hard surfaces such as bitumen, concrete and even foundations. The threat from Japanese Knotweed to buildings and property is real, making sites containing Japanese Knotweed difficult to sell as banks and lenders can often refuse mortgages.

1.3.1 JAPANESE KNOTWEED GROWING SEASON

Japanese knotweed will begin to shoot in spring (March- April) through the appearance of reddish, purple fleshy shoots that emerge from crimson buds at ground level.
These grow rapidly through the summer (May -July) and produce dense stands of tall bamboo like canes (up to 7ft), with heart shaped leaves up to 15cm in length.

Flowering occurs in late summer towards the end of the growing season (August-October), producing clusters of small, creamy-white flowers at the points where the leaves join the stem.

Towards the end of autumn, (November) leaves begin to turn a yellowy-brown and eventually drop. The hollow canes will turn brown and die off. The cycle will commence again in spring through new shoots

JAPANESE KNOTWEED GROWING SEASON	J	F	M	A	M	J	J	A	S	O	N	D

	Appearance of shoots
	Summer Growth Period
	Onset of Flowering
	Winter dieback (visible canes)

1.3.2 JAPANESE KNOTWEED TREATMENT

Japanese knotweed can be controlled using both physical, or chemical methods or a plan may include a hybrid technique of both.

Physical methods include the excavation (dig & dump, onsite burial, root barrier or soil screening.

Dig and Dump

The "dig and dump" method involves the excavation of Japanese Knotweed material and infected soils until the rhizomes are longer present which could be as deep as 3m.

All the contaminated material and soils are then transported to a licenced landfill via licenced haulage for disposal.

This is often the most expensive way of eradication and is only recommended if other options are not viable.

Onsite burial

Onsite burial method involves the excavation of Japanese Knotweed and infected soils until the rhizomes are longer present this could be as deep as 3m.

The contaminated material can then be buried onsite in which a depth of 5m cover is required, however this depth can be reduced if the contaminated soils and material are encapsulated with a cell membrane.

This is only viable in certain ground conditions where the required depths are achievable.

Root Barrier

A root barrier is a physical membrane that protects structures, hardstanding etc and stops encroachment of Japanese knotweed. It's often used along with other methods like herbicidal treatments, excavation, screening and sifting, helping to prevent the plant's spread. It is effectively a preventative measure not to be used as a standalone measure.

Soil Screening

The soil screening method involves the excavation of Japanese Knotweed material and infected soils. The soil is processed via an allu bucket or similar where Japanese Knotweed rhizome material is separated from the soil material.

The contaminated Japanese Knotweed material can then be removed from site at a vastly reduced amount with the "clean" soils being re-engineered into the site.
Although more cost effective than dig & dump, there are still sizeable costs involved.

The physical control of Japanese Knotweed can occur at any time of the year, after an initial survey detailing the location of the stands and possible spread of rhizomes.

Chemical control is through the application of herbicide (usually Glyphosate), this can be applied through foliar application by spraying or weed wiping. Herbicide can also be applied by stem injection, or by cut and filling the stems. Herbicide treatment can take up to three years treatment followed by two years monitoring for regrowth.

Glyphosate Treatment	J	F	M	A	M	J	J	A*	S*	O*	N	D

	Suitable for Use
*	Preferred period of Use

1.4 HIMALAYAN BALSAM OVERVIEW

Himalayan Balsam *(Impatiens glanduliferais*) a non-native invasive terrestrial plant species. Since it was introduced, it has spread to most parts of Ireland, and is listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985.

The species frequently grows along the banks of watercourses. It can also establish itself in damp woodland, flushes, mires and similar damp semi-shaded ground conditions. In Ireland It is the tallest annual species of plant (completes its life cycle in one year) due to its rapid growth, it shades out most of the native flora species.

Individual plants can reach 2m in height, the plant have translucent fleshy stems, pink-purple slipper-shaped flowers and large oval pointed leaves with obvious teeth around their edges. Each tooth carries a small globular 'gland' and produces large numbers of flowers which are followed by 'seed pods' about 25mm long. When mature and dry, the fruits split open explosively if touched, flinging the seeds a considerable distance (>7m) from the parent plant.

1.4.1 HIMALAYAN BALSAM SPREAD

Himalayan Balsam is spread via seed, each plant produces about 2,500 seeds which fall to the ground, and with several parent plants close together, seeds can occur at a density of between 5000-6000 seeds per square metre. The seeds float, making watercourses a prime route for dispersal of the species. Seeds can also begin to germinate in water on their way to new sites. Seeds may also be transported unintentionally by wildlife, machinery, grazing livestock and people using sites for recreation. Plants may still be grown for aesthetic purposes and can be easily spread in garden waste and soil.

1.4.2 HIMALAYAN BALSAM CONTROL METHODS

Himalayan Balsam can be controlled by using Physical or chemical methods, both treatment methods should aim to control flowering before seeds have developed and have had the chance to spread and are most effective before June.

TREATMENT	J	F	M	A	M	J	J	A	S	O	N	D
Glyphosate												
Mechanical												

	Optimal Treatment Time
	Suboptimal

1.4.3 HIMALAYAN BALSAM CHEMICAL CONTROL METHODS

Himalayan Balsam can be chemically controlled using a Glyphosate based herbicide. This can be through foliar spray or weed wiping in areas of mixed growth.

Herbicide treatment should be carried out in the springtime before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the spray. Only recommended approved Glyphosate can be used working near a watercourse.

1.4.4 HIMALAYAN BALSAM PHYSICAL CONTROL METHODS

Physical or mechanical control methods for Himalayan Balsam include repeated cutting or mowing, and regular grazing. Access to the sides of riverbanks can be difficult and inaccessible stands can quickly recolonise accessible cleared areas, so vigilance is needed if an area is to be effectively cleared.

Small infestation can easily be controlled by hand-pulling as the species is shallow rooted. Padded gloves should be worn to avoid risk of injury to hands. Seeds are not very robust and only survive for up to 18 months so a two-year control programme can be successful in eradicating this plant if there is not further infestation from upstream or adjacent sites.

To avoid additional spread do not disturb plants if seeds pods are visible (usually sometime after May). Programmes should be undertaken in April or early May. If hand pulling after this time, bag plant tops to prevent seed spread.

1.5 GIANT HOGWEED OVERVIEW

Giant hogweed *(Heracleum mantegazzianum),* is a non-native invasive terrestrial plant which is listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985. The species is a tall, cow parsley-like plant with thick bristly stems that are often purple-blotched.

The flowers are white and held in umbels, (flat-topped clusters, like those of carrots or cow parsley), with all the flowers in the umbel facing upwards. The flower heads can be as large as 60cm (2ft) across. It can reach a height of 3.5m (11.5ft) or more and has a spread of about 1-2m (3.5-7ft).

Giant hogweed is usually biennial, forming a rosette of jagged, lobed leaves in the first year before sending up a flower spike in the second year and then setting seed. True biennials only live for two years, dying after flowering, but giant hogweed does not always behave as a true biennial and in fact some are perennial, coming up year after year.

1.5.1 GIANT HOGWEED SPREAD

Giant Hogweed spread depends entirely on seed dispersal to spread. The majority of seeds fall within 4m of a parent plant (60-90%) resulting in densely populated localised and prolific patches. Seed dispersal is often exacerbated by other natural and human mechanisms: -

- Wetlands: Flowing water can spread Giant Hogweed seed, where it colonises bare and
- floodplain sediments downstream of the parent plant. Distance of dispersal can be increased by flood events. Some Sewage Treatment Works have also been the source of Hogweed seed.
- Transport Margins: Seeds produced by populations growing alongside roadside margins can be transported long distances by vehicle tyres
- Public site or grazing land: Seeds can be unintentionally transported by livestock / humans or when flowers are taken for aesthetic value. Some are planted deliberately in exotic gardens.
- Wind: Localised dispersal is frequently aided by wind, especially during the winter months.

1.5.2 GIANT HOGWEED CONTROL METHODS

Giant Hogweed can be controlled by using Physical or chemical methods.

Physical control may be preferred for small stands because chemical control creates open sites for the establishment of other invasive species, involves risks of contamination of nearby waters and can cause unwanted plant community changes. Treatment with chemicals can be regarded as a first step, followed by sowing grass mixtures and the use of manual methods or combined chemical and manual methods to re-establish a dense vegetation cover. Unfortunately, giant hogweed plants have a high regeneration ability which allows them to survive some manual control measures.

TREATMENT		F	M	A	M	J	J	A	S	O	N	D
Glyphosate												
Mechanical												

	Optimal Treatment Time
	Suboptimal

1.5.3 GIANT HOGWEED PHYSICAL CONTROL METHODS

Manual and mechanical control methods include root cutting, cutting the plant, covering the soil, mowing, ploughing and removing the umbels (flower heads). Except for root cutting, manual control will not cause immediate death of the plant. All other methods will need two to three treatments per year for several years to deplete the root reserves and kill the plants. All methods will need to occur for multiple years until no new plants grow from the seed bank. Monitor the site for at least three more years to make sure no new seedlings appear.

1.5.4 GIANT HOGWEED CHEMICAL CONTROL METHODS

Giant hogweed is susceptible to systemic herbicides, such as glyphosate and triclopyr, and the application of these herbicides is considered effective and cost efficient. Herbicide application can be used for controlling a single plant or large stands of giant hogweed. These systemic herbicides will be absorbed by the leaves and will move into the root to prevent regrowth. Triclopyr is a selective herbicide that acts only on broadleaf plants and

will not harm grasses in the area. Glyphosate is non-persistent in the soil but is also a non-selective herbicide. Areas sprayed with triclopyr can recolonize with grasses and other herbaceous species within the same growing season, this can help suppress Giant Hogweed recolonization.

Spray Giant Hogweed leaves with an herbicide containing triclopyr or glyphosate as the active ingredient. Use the recommended manufacturer's dose and follow label instructions. Apply the herbicide between late April and early June when hogweed leaves are green and actively growing. A follow-up treatment, in July or August, may be needed for the plants that did not die from the first herbicide application (e.g. seedlings, now leaf rosettes, which were once covered by leaves of the plants originally sprayed). During this follow-up treatment it is strongly recommended to remove any flower heads present to decrease next year's seed source. Giant hogweed plants can be sprayed through mid-October as long as they are still green and not dying back. It is easiest to spray before the plants grow overly tall. Options for dealing with tall plants are: spray them as they are, cut them down to ground level and spray the re-growth, or carefully cut the plants above waist height and spray remaining leaves. To be successful in eradicating giant hogweed, herbicide treatments (or another control method) will have to be repeated for multiple years, in order to kill the plants missed the prior year as well as the plants emerging from the seedbank.

Spray during dry and calm weather. Cover leaf surfaces thoroughly with spray droplets, but do not spray to the point that liquid is dripping off the leaves. Dye added to the herbicide can help see where has been already sprayed. Do not apply herbicide to non-target organisms as you want the other plants to live and revegetate the area. Do not cut or dig up the plant until the top growth has died back. If the leaves remain green several weeks or a month after the initial treatment, spray them with herbicide again.

1.5.5 GIANT HOGWEED DANGERS

Giant Hogweed can be dangerous to human health, wildlife, pets and livestock causing severe burns and blisters.

The sap of Giant Hogweed contains toxic chemicals known as furanocoumarins. When the sap comes into contact with the skin, and in the presence of sunlight, they cause a condition called Phyto-photodermatitis: a reddening of the skin, often followed by severe burns and blistering. The burns can last for several months and even once they have died down the skin can remain sensitive to light for many years.

2.0 SURVEY DESCRIPTION

For the purpose of this report the findings will record Lifford and Strabane in separate sections (Lifford in Section 3 and Strabane in Section 4).

2.1 SURVEY LIMITATIONS

The findings from this survey are the result of a visual inspection only and should not be taken as a guarantee that invasive plant species are not present on the property or neighbouring properties.

Invasive plants can sometimes be concealed by landowners or occupants deliberately or by accident. This includes the physical removal of the plants stems and crowns, mowing lawns or covering the suspect area with turf, hard standing, landscape fabric, ornamental gravel, bark mulch etc.

Invasive species which have undergone herbicide treatment may not be visible at the time of survey.

During winter, some invasive plant species like Japanese Knotweed can lay temporary dormant, which leaves no viable material above ground. Larger, more mature stands, dead canes can remain in place and provide a clear visual marker of the plant's location. However, on young or disturbed growth, canes can fall over and be blown away, leaving no indication of knotweed whatsoever. For these reasons, we recommend conducting surveys during the growing season of Invasive plant species (wherever possible), where plant growth presence is much more evident.

Some highly invasive species like Himalayan Balsam may also encroach to a significantly larger area from the beginning to the end of the season so may look quite different from when it was originally surveyed.

The survey conducted at Riverine has taken place at an optimal time during the growing season.

2.2 SITE LOCATION / DESCRIPTION LIFFORD & STRABANE

The subject site (**Figure 1**) straddles the border between Strabane, Northern Ireland (NI) and Lifford, Republic of Ireland (ROI) with the River Foyle flowing between the two towns. The site measures approximately 21.6 hectares in total, with approximately 14.8 hectares on the Lifford side and 6.7 hectares on the Strabane side.

On the Strabane side, the site is accessed via a small access road exiting from a roundabout which connects Lifford Road, Barnhill Road, Railway Street, and Bradley Way.
The access road leads to the former halt site, with the rest of the site consisting of overgrown woodland with a laneway through the site along the Eastern Boundary.

There is a clearing just North of the former halt site which consists of grassland.
An access lane runs towards the river through the woodland in the Northern portion of the site.

On the Lifford side, the site is accessed via a small access road which egresses on to Station Road.
The subject site on this side consists mostly of open grassed land, with a sports pitch located to the north east and a band of woodland running in a north-south line to the west of the site.

Figure 1. Site red line boundary

2.3 SURVEY METHOD LIFFORD & STRABANE

A comprehensive site walkover / survey was undertaken was on the 21st June 2021 to establish the presence, location and extent of any Invasive plant species.

The survey was undertaken by an Ecologist & Invasive species PCA qualified from MCL Consulting. The survey included checking all borders, boundaries, hedgerows, overgrown areas, woodland, lane ways, pathways, riverbanks, watercourses, fields and associated lands for Invasive plant species.

The location and extent of the Invasive species was photographed, a description recorded, and location was mapped out with GNNS survey equipment.

The walkover and approximate extent of the survey of all lands is shown in the blue boundary in **Figure 2**.

Figure 2. Site Survey area

There were invasive plant species observed during an extensive site walkover. This includes Japanese Knotweed, Giant Hogweed, and Himalayan Balsam which were all observed on both Lifford and Strabane sites.

The locations and extents of all invasives plants as surveyed are presented in site drawings as DWG.2 (Lifford) and DWG.3 (Strabane) at the back of the report.

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3.0 LIFFORD SURVEY FINDINGS

The locations and extents of all invasives plants as surveyed are presented in site drawing DWG.2 (Lifford) at the back of the report. Invasive Species was observed to be present on the Lifford side this include:

- Japanese Knotweed at 3 No. locations (JK14, JK15, JK16)
- Giant Hogweed at 1 No. locations (GH2)
- Himalayan Balsam at 3 No. locations (HB8, HB9, HB10)

3.1 JAPANESE KNOTWEED

Japanese Knotweed occurrences in the Lifford site are described in the text within this section and are summarised in **Table 1**.

JK 14 was observed on the southern side of the existing riverside path. The approximate area of the stand was 30m^2 which was in a linear formation along the path. The stand had undergone some herbicide treatment as the Japanese Knotweed was experiencing die back. The canes of JK14 had dried and were brown/ black in colour, no leaves were apparent in the stand not exceeding heights 1.5m.Likely rhizome spread of the stand would cover an area of approximately 195m^2.

JK 15 was observed on the Northern side of the existing riverside path approximately 15m North East of JK14. The approximate area of the stand was 35m^2. The stand had undergone herbicide treatment as the Japanese Knotweed was experiencing die back. At the time of the survey the canes of JK15 had dried and were brown / black in colour, no leaves were apparent in the stand. Likely rhizome spread of the stand would cover an area of approximately 225m^2.

JK16 was observed on the bank of the River Foyle east of the riverside path close to the proposed bridge landing site. The stand covered an area of approximately 12m^2. The stand had under-gone herbicide treatment with the stand experiencing dieback. There was regrowth noted closer to the water's edge the growth was stunted and leaves were discoloured and disfigured. Likely rhizome spread of the JK16 could cover as much as 80m^2.

Table 1 Japanese Knotweed, Lifford

JK	PROXIMITY TO WATER (>12m)	PLANT HEIGHT (m)	VISABLE AREA (m^2)	PLANT VISIBLE ONSITE	DISTANCE FROM BOUNDARY >7M
14	NO	1.5-2.0m	$30m^2$	YES	NO
15	NO	1.5-2.0m	$35m^2$	YES	NO
16	YES	1.5-2.0m	$12m^2$	YES	NO

3.2 GIANT HOGWEED

Giant Hogweed was located at No.1 location GH2 along the bank of the River Foyle at the proposed slipway site. The plants were spread out over an area of approximately $40m^2$. At the time of the survey, it was apparent that the Giant Hogweed GH2 had been treated with herbicide as there were signs of dead plant material.

3.3 HIMALAYAN BALSAM

Himalayan Balsam was noted in 3 locations at the time of the survey HB8, HB9, HB10.

HB8 was noted along the banks of the River Foyle it covered an area of approximately $1300m^2$. The Himalayan Balsam had reached heights of approximately 1m and was in good health. Some plants had begun to flower but seeding had not occurred at this stage.

HB9 is located just south of JK16 was along the banks of the River Foyle at the proposed bridge landing site it covered an area of approximately $270m^2$. The Himalayan Balsam had reached heights of approximately 1m and was in good health. Some plants had begun to flower but seeding had not occurred at this stage.

HB10 is located just to the North of JK16 along the banks of the River Foyle it covered an area of approximately $100m^2$. The Himalayan Balsam had reached heights of approximately 1m and was in good health. Some plants had begun to flower but seeding had not occurred at this stage.

4.0 STRABANE SURVEY FINDINGS

The locations and extents of all invasives plants as surveyed are presented in site drawing DWG.3 (Strabane) at the back of the report. Invasive Species was observed to be present on the Strabane side this include:

- Japanese Knotweed at 13 No. locations (JK1-JK13)
- Giant Hogweed at 1 No. location (GH1)
- Himalayan Balsam at 7 No. locations (HB1-HB8)

4.1 JAPANESE KNOTWEED

Japanese Knotweed occurrences are described in the text within this section and are summarised in **Table 2**.

JK 1 was observed on the southern portion of the halt site along the western side of the concrete hardstanding area. This was the most significant infestation noted on site with an approximate area of 425m^2 which ran in a linear formation along the edge of the existing hardstanding.

The dimensions of the stand JK1 is approximately 55m long by 9m depth the stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour.
Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant.
Total rhizome spread of JK1 could cover as much as 900m^2.

JK 2 is located to the north of the concrete hardstanding area with an approximate area of 35m^2.
The dimensions of the stand JK1 is approximately 8m long by 5m depth the stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant It is likely that total rhizome spread of the infestation could cover approximately 150m^2.

JK 3 was observed in a wooded area north of the concrete hardstanding area with an approximate area of 80m^2. The dimensions of the stand JK1 is approximately 25m long by 7.5m wide. The stand

was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 340m^2.

JK 4 was observed growing within a clay bund next to the path/lane way with an approximate area of 35m^2. The dimensions of the stand JK 4 is approximately 7.5 long by 6m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant.
It is likely that total rhizome spread of the infestation could cover approximately 170m^2.

JK 5 was observed growing north west of the clearing beside a utilities pole on the edge of the main wetland which covers an area of approximately 85m^2. The dimensions of the stand JK 4 is approximately 7.5 long by 6m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m with an average thickness of stems around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 280m^2.

JK 6 was observed growing north west of the clearing next to the lane way covering an area of approximately 75m^2 in close proximity to JK7. The dimensions of the stand JK 6 is approximately 16m long by 5m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 270m^2.

JK 7 was observed growing north west of the clearing next to the lane way covering an area of approximately 105m^2 near JK6. The dimensions of the stand JK 7 is approximately 14m long by 14m wide at the widest points. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing

plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 310m^2.

JK 8 was observed growing along the southern side the Nancy burn just of the lane way approximately 100m^2. The dimensions of the stand JK 6 is approximately 13m long by 8.5m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 290m^2.

JK 9 was observed growing along the northern side of the Nancy burn across from JK8 just of the lane way covering approximately 75m^2. The dimensions of the stand JK 9 is approximately 20m long by 4m wide. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 2.5m-3m and average thickness of the stems were around 2cm-3cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 270m^2.

JK 10 was observed growing where the eastern path meets the old railway embankment covering an area of approximately 10m^2. The dimensions of the stand JK 9 is approximately 5m long by 2m wide. The stand had experienced die back, canes had dried and were discoloured with no leaves, this is most likely from herbicide treatment but there was some minimal regrowth that had occurred. It is likely that total rhizome spread of the infestation could cover approximately 70m^2.

JK 11 was observed along the lane way just north east from JK10 in the proposed carpark covering approximately 45m^2. The dimensions of the stand JK 11 is approximately 7m long by 7m wide. The stand had experienced die back, canes had dried and discoloured with no leaves, this is It is likely that total rhizome spread of the infestation could cover approximately 200m^2.

JK 12 was observed along the lane way just North from JK11 (outside red line boundary) covering an area of approximately 120m^2. The stand had experienced some die back in patches, these canes had dried and discoloured with no leaves. There was a mixture of regrowth throughout the stand which had achieved Heights of 1m, at the time of the survey. It is likely that total rhizome spread of the infestation could cover approximately 400m^2.

JK 13 was observed along the lane way just North from JK12 (outside the red line boundary) covering an area of approximately 40m^2. The stand was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 1m-1.5m and average thickness of the stems were around 2cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant. It is likely that total rhizome spread of the infestation could cover approximately 200m^2.

JKO1 was observed along the path next to the river at the North of the site as an outlaying plant. This was a single plant which cover an area of >1m. The plant was observed growing in a good healthy condition, the plants were leafy, and of typical colour. Typical height of the growth in this area was 1m-1.5m and average thickness of the stems were around 2cm, the leaves were around 5-7cm wide and growing plentiful for the size of the plant.

Note: (JK11-JK13) will be eradicated/controlled under an earlier development of the path by the Strabane North Greenway team and will be not considered in this Management Plan.
The Japanese Knotweed infestations of JK1-JK10 will be controlled / eradicated as part of this Management Plan.

Table 2, Japanese Knotweed Strabane

JK	PROXIMITY TO WATER (>12m)	PLANT HEIGHT (m)	VISABLE AREA (m²)	PLANT VISIBLE ONSITE	DISTANCE FROM BOUNDARY >7M
1	NO	2.5-3.0m	425	YES	NO
2	NO	2.5-3.0m	35	YES	NO
3	NO	2.5-3.0m	80	YES	NO
4	NO	2.5-3.0m	35	YES	NO
5	YES	2.5-3.0m	85	YES	NO
6	No	2.5-3.0m	75	YES	NO
7	YES	2.5-3.0m	105	YES	NO
8	YES	2.5-3.0m	100	YES	NO
9	YES	2.5-3.0m	70	YES	NO
10	NO	1m	10	YES	NO
11	NO	1m	45	YES	YES
12	NO	1m	120	YES	YES

13	NO	1.5m-2m	40	YES	YES
JKO1	YES	1.5-2m	>1m	YES	YES

Note: JK11-JK13 (highlighted) controlled under the path development by the Strabane North Greenway team

4.2 GIANT HOGWEED

Giant Hogweed was located at No.1 location (GH1) along the bank of the River Foyle under a tree. The Giant Hogweed plants were spread out over an area of approximately 40m^2. At the time of the survey The Giant Hogweed had reach heights in excess of 2m, with some small plants towards the edge of the infestation. The plants were observed in good health and of typical colour flowering had begun in some plants, but seed dispersal had not yet occurred.

4.3 HIMALAYAN BALSAM

Himalayan Balsam was noted at No.7 locations at the time of the survey HB1- HB7. HB1 was noted along the banks of the River Foyle and down along the east side of the old railway embankment, the infestation also extended along the railway embankment around to where the badger setts were located. The plants were generally 1m -1.5m at the but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.
The footprint of the infestation was in excess of 1500m^2.

HB2 was observed along the lane way which continues North along the old railway embankment. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred. The footprint of the infestation was in excess of 2500m^2.

HB3 was observed along the lane way which accesses the river. The infestation surrounds JK10 with an area of around 150m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB4 was observed along the lane way just North of HB3 and covers an area of around 200m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB5 was observed along the lane way just opposite HB4 in the proposed car park and covers an area of around 70m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

HB6 was observed along the lane way just to the North of JK11 and covers an area of around 70m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.
HB7 was observed the edge of the concrete hardstanding area and covers an area of around 2000m^2. The Himalayan Balsam plants were generally 1m -1.5m but some had exceeded these heights. At the time of the survey plants were beginning to flower but seed dispersal had not yet occurred.

Note: (HB2, HB4-HB6) will be eradicated/controlled under an earlier development of the path by the Strabane North Greenway team and will be not considered in this Management Plan.
The Himalayan Balsam infestation of HB1, HB3 and HB7 will be controlled eradicated as part of this Management Plan.

5.0 REMEDIATION

5.1 INVASIVE SPECIES MANAGEMENT PLAN / RECOMMENDATIONS

From the findings in Section 2. and Section 3 the following Invasive Management plan was developed to control / eradicate Japanese Knotweed, Giant Hogweed, and Himalayan Balsam for the lands on the Lifford Side Section 5.2 and Strabane.

The location of and extent of the Invasive species, with potential rhizome spread are shown in DWG1.

6.0 INVASIVE SPECIES MANAGEMENT PLAN LIFFORD

6.1 JAPANESE KNOTWEED

The proposed plan is to feature two main objectives to deal with the Japanese Knotweed (JK14, JK15 & JK16):

- The in-situ herbicide treatment of the Japanese Knotweed. (JK16).
- The excavation of Japanese Knotweed contaminated material which lies in areas critical to the development and relocated to a set aside containment area for continued herbicide treatment. (JK14 & JK15).

Table 3 summarises the management plan approach for each stand of Japanese Knotweed for the construction and operational phases.

Table 3 Management Measures, Japanese Knotweed, Lifford

JK	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
14	YES	Excavate & Relocate to CA1	Monitored
15	YES	Excavate & Relocate to CA1	Herbicide applied & monitored
16	NO	Fenced off & Herbicide applied	Herbicide applied & monitored

6.1.1 JAPANESE KNOTWEED INSITU HERBICIDE TREATMENT

In situ Herbicide treatment of JK16

It is recommended to treat the Japanese Knotweed stand JK16 in situ as it is situated in an area that is not critical to the development which will not be disturbed during construction.

The herbicide treatment can be applied through various methods depending on the size of plants at the time of treatment. This would be through foliar application via Knapsack spot spraying or weed wiping and stem injection if the plants stems are large enough.

It is likely that application via Knapsack spot spraying would be used in this instance. The herbicide applied will be Glyphosate based (Round up Proactive or similar) as it is approved for use in both forestry and aquatic environments, the product is also rain safe in 1hr. The herbicide will be applied in accordance with the manufacturer's instructions, at the recommended dosage during suitable conditions by fully certified Technician/s (PCA accredited and PA 6 and PA 6W certified).

Any treatment will be recorded in accordance with the Control of Pesticides Regulations 1986. It is proposed to treat the Japanese Knotweed when it is actively growing, twice per season for a minimum of three years, with the treatment beginning August of Year 1 with a follow up treatment applied in late August – October Year 1. The treatment will recommence the following season Year 2 with an herbicide application in June- August in Year 2 with a follow up application treatment later in the season August -October of Year 2.

The treatment will follow the same pattern for the following season in Year 3 with an herbicide application in June-August of Year 3 with a follow up application treatment later in the season August -October of Year 3.
After the scheduled treatment plan has finished (End of Year 3) the area will be continued to be monitored for any sign of regrowth for a period of at least two further years (Years 4 & 5).

If any regrowth appears it will be re-treated using the same method as before via herbicide application.

6.1.2 JAPANESE KNOTWEED TO BE RELOCATED

Japanese Knotweed stands of JK 14 & JK15

The areas affected by Japanese Knotweed of JK14 and JK15 will be excavated along with the infected soils and relocated to a set aside area CA1 (shown in DWG.1) for continued herbicide treatment.
The areas lay within an area which are going to be developed therefore it is recommended to relocate the stands and subsequent infected materials.
The infected areas will be excavated out until there are no more visible signs of the rhizome which could be as deep as 3m, but are most likely around 1.5-2m.

This material will be selected by the onsite supervisor who will decide the extent of the excavation footprint and depth based on visual inspections. This material selected by the onsite supervisor will then be moved either by excavator or dump truck to the containment area for on-going treatment. It is recommended that the onsite supervisor is adequately trained (PCA) or similar.

6.1.3 MATERIAL TO BE RELOCATED

The potential rhizome spread is most likely to be around 3m-3.5m from the edge of the visible growing plant base on the size and maturity of the stand.
This has been assumed at 3.5m to base the potential rhizome spread.

There would be two significant areas that would contain Japanese Knotweed rhizomes JK14 and JK15 for relocation.

JK14 with a potential Rhizome spread of 200m^2 X 2m Depth = **400m^3.**
JK15 with a potential Rhizome spread of 200m^2 X 2m Depth = **400m^3.**

Total amount to be relocated to treatment area **800m^3.**

6.1.4 CONTAINMENT TREATMENT AREA, LIFFORD

A containment area, comprising a fenced off area with exclusion signage, is to be created to hold ex-situ invasive species for on-going ex-situ treatment. This is to be located outside the SAC and within the confines of the site for the construction and operational phases of the site for as long as treatment is necessary.

The set aside treatment area (suggested location CA1, DWG 4) needs to be large enough to hold around 950m^3 of infected material (800m^3 of Japanese Knotweed infected material & 150m^3 Himalayan Balsam of Infected Material), the location is shown in DWG.4 with dimensions of 30m X 15m covering a footprint of approximately 450m^2. The height of the treatment area will be approximately 2.1m in height.

The containment area (suggested location CA1, DWG 4) is based on what is excavated from the No.2 Japanese Knotweed Stands JK14 & JK15 and the stripped Himalayan Balsam infected soils, therefore the size and scale of the containment area will be reduced if there is significantly less contaminated material which has been excavated.

6.1.5 THE RELOCATION OF JAPANESE KNOTWEED INFECTED SOILS

The soils and material that have been selected for relocation can then be placed in the containment area (CA1) via dump truck or by excavator. There will be a designated haul route to and from the containment area to ensure greater biosecurity, by reducing the chance of further spread to other areas. This haul route will be monitored via visual inspections to ensure no infected material is has fell on to the haul route during transportation.

Site management of the relocation to the containment area includes making sure the dump trucks are not overfilled, while transporting infected material.

During excavation adequate membrane will be laid beside the excavation while excavators are loading infected material on to dump trucks. So that any material falling from the excavators' bucket can be caught in the membrane and reduce spread.

6.2 HIMALAYAN BALSAM

The proposed plan is to feature two main objectives to eradicate/control the Himalayan Balsam (HB8-HB10):

- The stripping of lands that contain Himalayan Balsam which lie in areas critical to the development are to be relocated to a set aside containment area for continued herbicide treatment and monitoring. (HB8, HB9 & HB10).

- The in-situ herbicide treatment of the Himalayan Balsam which may remain close to the waters edge from HB8, HB9 & HB10.

It is necessary to strip the lands in development critical areas that contain Himalayan Balsam as this is best suited to timescale of the project. In situ herbicide application is not a viable option in the development critical areas as this requires a two-year treatment plan, therefore the stripping of these lands and relocation of material is the preferred treatment option. **Table 4** summarises the management plan approach for each area of the Himalayan Balsam for the construction and operational phases.

Table 4 Management Measures, Himalayan Balsam, Lifford

HB	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
HB8	PARTIAL	Strip & Relocate to CA1/ Apply herbicide what remains in situ	Herbicide applied & monitored
HB9	YES	Strip & Relocate to CA1/ Apply herbicide what remains in situ	Herbicide applied & monitored
HB10	PARTIAL	Strip & Relocate to CA1/ Apply herbicide what remains in situ	Herbicide applied & monitored

6.2.1 HERBICIDE TREAMENT

It is proposed to treat the remaining areas of Himalayan Balsam infestations of HB8, and HB10 in situ via herbicide application during periods of active growth. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians. A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.

The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species. Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying.

Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard. Long lance sprayers may be used in areas that are hard to reach or inaccessible.

6.2.2 TIMING

Herbicide application should be carried out during periods of active growth, before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the herbicide (50+ cm would be suitable).

The initial application should ideally be carried out in May/June with subsequent treatments/monitoring likely being required in July/August. (via the treatment process in 6.2.1).

The 2nd season would follow the same course followed by two years of monitoring.

6.2.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

6.2.4 STRIPPING OF HIMALAYAN BALSAM

This involves the stripping of ground critical to the development and moved to a set aside non-critical part of the site for continued herbicide treatment. A midi or standard excavator with a wide grading/ Ditching bucket will be used to scrip the infected soils from the site and transport the material to a bunded treatment area via dumper.

The areas will be stripped to a depth of 150mm, the extent of the areas will be confirmed by the supervisor during excavation. Based on the survey estimated that approximately an area of as much as 1000m^2 would need to be stripped as part of this process.

This would result in (1000m^2 x 150mm =150$m^{3)}$ 150m^3 of material being moved from critical development area to the set aside treatment area (CA1).

The removal of the infected soil will be supervised by a suitable qualified Invasive species technician/surveyor who will designate the area and extent for removal to the required depth.

This will be inspected visually so that no there are no visible signs of invasive species plant material or seeds in areas that are to be developed. The Invasive species in the treatment area will be treated for at least 2 seasons and will be continued to be monitored for regrowth.

The remaining infestations of Invasive Species which are not proposed to be stripped will be fenced off and treated in situ via herbicide application also for at least two seasons and monitored for regrowth.

6.3 GIANT HOGWEED

6.3.1 HERBICIDE TREAMENT

The Giant Hogweed on located on site has already undergone herbicide treatment it is proposed to continue this process and treat the Giant Hogweed (GH2) in situ. The herbicide treatment process, the most efficient way is via foliar application through knapsack spot spraying by certified technicians.

A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species.

Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying. Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard.

6.3.2 TIMING

It is recommended to treat the Giant Hogweed twice per season for a period of at least two years. The 1st foliar spraying for Giant Hogweed commencing between late April and June (if possible) before seeding and flowering, also Giant Hogweed can become less accessible later in the season due to increasing heights.

A follow up treatment later in the season should be applied for any late germinating plants before seed set. The 2nd season would follow the same course followed by two years of monitoring.

6.3.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

6.4 BIOSECURITY

To ensure biosecurity on site and reduce the spread of the invasive species throughout the site and on to other sites the following measures are to be implemented:

- Erect fencing around the invasive species (Japanese Knotweed & Giant Hogweed) and place relevant signage
- Erect Fencing around Containment Treatment Area and relevant signage.

The general Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invertebrate species is as follows:-

Invasive Species (Plants and Bivalves) Construction Phase

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.) is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high risk machinery that has recently involved in in-river works.
- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows:-

    - On arrival at or departure from the site, **ALL** construction machinery, and delivery vehicles travelling beyond the Construction Compound / delivery bays

should be visually inspected and disinfected in the self-contained biosecurity washing area of the Construction Compounds.

- The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.
- The machinery should then be power-hosed with water of 60 ^{o}C + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.
- The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.
- Sludge from the self-contained biosecurity facility shall be routinely (on at least a weekly basis) removed from the washing area and transferred to a water-tight covered skip for storage, awaiting off-site disposal to an appropriately licensed landfill site for deep burial. This is necessary, rather than on-site treatment at the proposed invasive species treatment areas due to the potential for the machinery washings to contain other residual contaminants such as oils.

Mitigation Measures Invasive Species (Plants only) Construction Phase

- The Invasive Species Clerk of Works and Ecological Clerk or Works shall be jointly responsible for the monitoring of biosecurity onsite. These responsibilities include site management, restrict personal and movement to designated areas, restrict access to site, clean maintain PPE, equipment and plant machinery.
- Plant Machinery are to restrict to in movement around the site, and within given work areas and haul routes to from containment areas.
- Plant machinery will remain on site in restricted area until excavation, and replacement to the containment area have been completed.
- Recommend the use of rubber tyre plant wherever possible rather than tracked plant.

- Plant machinery to be thoroughly cleaned down upon completion of works including tracks, tyres, buckets, trailers etc and material place in the containment area.
- PPE especially boots to be deep clean and any material placed in containment area.
- Cleaning of Plant Machinery and PPE will be overseen and undertaken by onsite Invasive Species supervisor who will instruct if the plant and personal are safe to leave.
- Installation of a root barrier membrane under the footpath: where the Japanese Knotweed remains in close proximity to the path or where required excavated is not achievable.

6.5 UPDATE SURVEY

It is recommended that before any of the excavation or stripping elements of the treatment strategies to update the Invasive Species survey and management plan if required.
This is due to the nature of site along situated along the River Foyle which the lands are at risk from further spread of invasive species and the nature of such species in particular Himalayan Balsam.

Himalayan Balsam infestations can change significantly from season to season due its ability to rapidly spread from seed dispersal.

7.0 INVASIVE SPECIES MANAGEMENT PLAN STRABANE

7.1 JAPANESE KNOTWEED

The proposed plan is to feature three main objectives to eradicate/control with the Japanese Knotweed (JK1-JK10):

Note: JK11-JK13 will be eradicated/controlled under an earlier development of the path by the Strabane North Greenway team and is not considered in this Management Plan.

- The in-situ herbicide treatment of the Japanese Knotweed. (JK1, JK2, JK3, JK4, JK5, JK01 & remainder of JK8, JK9 & JK10)
- The excavation of Japanese Knotweed contaminated material which lies in areas critical to the development and relocated to a set aside containment area for continued herbicide treatment. (JK4, JK6, JK8, JK9, JK10)
- The installation of root barrier membrane in areas that are in close proximity to hard standing. (JK1, JK8, JK9 & JK10)

Table 5 summarises the management plan approach for each stand of Japanese Knotweed for the construction and operational phases.

Table 5 Management Measures, Japanese Knotweed, Strabane

JK	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
JK1	NO	Fenced off & Herbicide applied Membrane Installed	Herbicide applied & monitored
JK2	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK3	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK4	NO	Fenced off & Herbicide applied	Monitored
JK5	NO	Fenced off & Herbicide applied	Herbicide applied & monitored
JK6	YES	Excavate & Relocate to Containment Area	Monitored
JK7	YES	Excavate & Relocate	Monitored

		to Containment Area	
JK8	PARTIAL	Excavate & Relocate to CA2 Membrane Installed Fenced off & Herbicide applied	Herbicide applied & Monitored
JK9	PARTIAL	Excavate & Relocate to Containment Area Membrane Installed Fenced off & Herbicide applied	Herbicide applied & Monitored
JK10	PARTIAL	Excavate & Relocate to Containment Area Membrane Installed Fenced off & Herbicide applied	Herbicide applied & Monitored

7.1.1 JAPANESE KNOTWEED INSITU HERBICIDE TREATMENT

In situ Herbicide treatment of JK1, JK2, JK3, JK4, JK5, JKO1 & remainder of JK 8, JK9 & JK10

It is recommended to treat the Japanese Knotweed stands JK1, JK2, JK3, JK4, JK5 and JKO1 in situ as they are located areas that are not critical to the development which will not be disturbed during construction.

The herbicide treatment can be applied through various methods depending on the size of plants at the time of treatment. This would be through foliar application via Knapsack spot spraying, weed wiping and also stem injection if the plants stems are large enough. It is likely that application via Knapsack spot spraying would be used in this instance.

The herbicide applied will be Glyphosate based (Round up Proactive or similar) as it is approved for use in both forestry and aquatic environments, the product is also rain safe in 1hr. The herbicide will be applied in accordance with the manufacturer's instructions, at the recommended dosage during suitable conditions by fully certified Technician/s (PCA accredited and PA 6 and PA 6W certified).

Any treatment will be recorded in accordance with the Control of Pesticides Regulations 1986. It is proposed to treat the Japanese Knotweed when it is actively growing, twice per season for a minimum of three years, with the treatment beginning in August of Year 1 with a follow up treatment applied August – October of Year 1.

The treatment will recommence the following season Year 2 with an herbicide application in June-August of Year 2 with a follow up application treatment later in the season August -October of Year 2. The treatment will follow the same pattern for the following season in Year 3 with an herbicide application in June- August of Year 3 with a follow up application treatment later in the season August -October of Year 3.

After the scheduled treatment plan has finished (End of Year 3) the area will be continued to be monitored for any sign of regrowth for a period of at least two further years (Years 4 & 5).

If any regrowth appears it will be re-treated using the same method as before via herbicide application.

7.1.2 JAPANESE KNOTWEED TO BE RELOCATED

Japanese Knotweed stands of JK6, JK7, and partial stands of JK8, JK9 & JK10.

The areas affected by Japanese Knotweed along with the infected soils will be excavated and relocated to a set aside area CA2 & CA3 for continued treated shown in DWG.3. The areas are within lands which are going to be developed therefore it is recommended to relocate the stands and subsequent infected materials.

The infected areas will be excavated out until there is no more visible signs of the rhizome which could be as deep as 3m, but most likely around 2m.

This material will be selected by the onsite supervisor who will decide the extent of the excavation footprint and depth based on visual inspections. This material selected by the onsite supervisor will then be moved either by excavator or dump truck to the containment areas (CA2 & CA3) for burial. It is recommended that the onsite supervisor is adequately trained (PCA) or similar.

7.1.3 MATERIAL TO BE RELOCATED

The potential Rhizome spread is most likely to be around 3m-3.5m from the edge of the visible growing plant base on the size and maturity of the stand. This has been assumed at 3.5m to base the potential Rhizome spread.

There are 5 stands of Japanese Knotweed and infected material JK6, JK7, JK8, JK9, JK10, for total or partial relocation:-

- JK6 & JK7 (Total Removal) with a potential Rhizome spread of 500m^2 X 2m Depth = **1000m^3**.
- JK8 & JK9 (Partial Removal) with a potential Rhizome spread of 130m^2 X 2m Depth = **260m^3.**
- JK10 (Partial Removal) with a potential Rhizome spread of 25m^2 X 2m Depth = **50m^3.**

Total amount to be relocated to treatment area **1310m^3.**

7.1.4 CONTAINMENT TREATMENT AREA

The set aside treatment areas (suggested location CA2 and CA3, DWG. 4) needs to be large enough to hold around 1515m^3 of infected material (1310m^3 of Japanese Knotweed infected material & 255m^3 Himalayan Balsam of infected material), the locations of CA2 and CA3 is shown in DWG.4.

CA2 is proposed to be located just North of the proposed carpark with an irregular shape and dimensions of 30m X 15.5m covering a footprint of approximately 450m^2 holding approximately 1012m^3 (450m^2 x 2.25m)

CA3 is proposed to the west of the proposed carpark in a rectangular shape and dimensions of 20m X 12.5m covering a footprint of approximately 250m^2 holding approximately 562m^3 (250m^2 x 2.25m)

The maximum height of the treatment area will be approximately 2.25m in height.

Both CA2 and CA3 combined can hold up to 1575m^3 if required.

The containment areas (suggested location CA2 & CA3, DWG. 4) is based on what is excavated from the No.5 Japanese Knotweed Stands JK6-JK10 and the stripped Himalayan Balsam infected soils, therefore the size and scale of the containment areas will be reduced if there is significantly less contaminated material which has been excavated.

7.1.5 THE RELOCATION OF JAPANESE KNOTWEED INFECTED SOILS

The soils and material that have been selected for onsite burial can then be placed in the constructed lined containment cell via dump truck or by excavator. There will be a designated haul route to and from the containment area to ensure greater biosecurity, by reducing the chance of further spread to other areas. This haul route will be monitored via visual inspections to ensure no infected material is has fell on to the haul route during transportation.

Site management of the relocation to the containment cell includes making sure the dump trucks are not overfilled, while transporting infected material.

During excavation adequate membrane will be laid beside the excavation while excavators are loading infected material on to dump trucks. So that any material falling from the excavators' bucket can be caught in the membrane and reduce spread.

7.2 HIMALAYAN BALSAM

The proposed plan is to feature two main objectives to eradicate/control the Himalayan Balsam (HB1, HB2 partial, HB3 & HB7):

Note: (HB2 Partial, HB4-HB6) will be eradicated/controlled under an earlier development of the path by the Strabane North Greenway team and is not considered in this Management Plan.

- The in-situ herbicide treatment of the Himalayan Balsam. (HB1 Partial, HB2 Partial, HB3 Partial, HB7 Partial).
- The stripping of lands that contain Himalayan Balsam which lie in areas critical to the development are to be relocated to a set aside containment area for continued herbicide treatment and monitoring. (HB1 Partial, HB2 Partial HB3 Partial HB7 Partial).

It is necessary to strip the lands in development critical areas that contain Himalayan Balsam as this is best suited to timescale of the project.

In situ herbicide application is not a viable option in the development critical areas as this requires a two-year treatment plan, therefore the stripping of these lands and relocation of material is the preferred treatment option.

Table 6 summarises the management plan approach for each area of the Himalayan Balsam for the construction and operational phases.

Table 6 Management Measures, Himalayan Balsam, Strabane

HB	CRITICAL TO DEVELOPMENT	CONSTRUCTION PHASE	OPERATIONAL PHASE
HB1	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ	Herbicide applied & monitored

HB2 PARTIAL	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ	Herbicide applied & monitored
HB3	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ	Herbicide applied & monitored
HB7	PARTIAL	Strip & Relocate/ Apply herbicide what remains in situ	Herbicide applied & monitored

7.2.1 HERBICIDE TREAMENT

It is proposed to treat the Himalayan Balsam infestations (the remainder of HB1, HB3 and HB7 after being partially stripped) in situ via herbicide application during periods of active growth. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians. A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.

The herbicide will be applied in accordance to the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species. Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying. Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard. Long lance sprayers may be used in areas that are hard to reach or inaccessible.

7.2.2 TIMING

Herbicide application should be carried out during periods of active growth, before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the herbicide (50+ cm would be suitable).

The initial application should ideally be carried out in May/June with subsequent treatments/monitoring likely being required in July/August. (via the treatment process in 6.21).
The 2nd season would follow the same course followed by two years of monitoring.

7.2.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

7.2.4 STRIPPING OF HIMALAYAN BALSAM

This involves the stripping of ground critical to the development and moved to a set aside non-critical part of the site for continued herbicide treatment. A midi or standard excavator with a wide grading/ Ditching bucket will be used to scrip the infected soils from the site and transport the material to a bunded treatment area via dumper.

The areas will be stripped to a depth of 150mm, the extent of the areas will be confirmed by the supervisor during excavation.
Based on the survey it is estimated that approximately an area of as much as 1700m^2 (HB1 1000m^2, HB7 700$m^{2)}$ would need to be stripped as part of this process. This would result in (1700m^2 x 150mm =255$m^{3)}$ 255m^3 of material being moved from critical development areas to the set aside treatment areas (CA2 or CA3).

The removal of the infected soil will be supervised by a suitable qualified Invasive species technician/surveyor who will designate the area and extent for removal to the required depth. This will be inspected visually so that no there are no visible signs of invasive species plant material or seeds in areas that are to be developed.
The Invasive species in the treatment area will be treated for at least 2 seasons and will be continued to be monitored for regrowth.

The remaining infestations of Himalayan Balsam (HB1, HB2, HB3 & HB7) which are not stripped will be fenced off and treated in situ via herbicide application also for at least 2 seasons and monitored for regrowth.

7.3 GIANT HOGWEED

7.3.1 HERBICIDE TREAMENT

It is proposed to treat the Giant Hogweed (GH1) in situ via herbicide application. The herbicide treatment process, the most efficient way is via foliar application through Knap sack spot spraying by certified technicians. A glyphosate-based Herbicide (Round up Proactive) will be used as it is approved in both forestry and aquatic environments, the product is also rain safe in 1hr.

The herbicide will be applied in accordance with the manufacturers' recommendations to the recommended dosage for the treatment of each Invasive Species. Appropriate PPE, including Coverall, Face shield, gloves, and rubber boots, will be worn while the carrying out of the spraying. Spraying will only be carried out only in suitable weather conditions, to reduce spray drift. The Knap sacks used will be calibrated, and the relevant details of spraying will be recorded as industry standard.

7.3.2 TIMING

It is recommended to treat the Giant Hogweed twice per season for a period of at least two years. The 1st foliar spraying for Giant Hogweed commencing between late April and June (if possible) before seeding and flowering, also Giant Hogweed can become less accessible later in the season due to increasing heights.

A follow up treatment later in the season should be applied for any late germinating plants before seed set. The 2nd season would follow the same course followed by two years of monitoring.

7.3.3 MONITORING

The site will be continued to be monitored for a minimum of two years for any signs of regrowth upon completion of two years herbicide treatment. Any regrowth will be treated with herbicide using the same techniques used previously on site.

Due to the location of the site on the banks of the River Foyle, further recolonisation may occur from seed dispersal from the river especially on the riverbank.

7.4 BIOSECURITY

To ensure biosecurity on site and reduce the spread of the invasive species throughout the site and on to other sites the following measures are to be implemented:

- Erect fencing around the invasive species (Japanese Knotweed & Giant Hogweed) and place relevant signage
- Erect Fencing around Containment Treatment Area and relevant signage.

Invasive Species (Plants and Bivalves) Construction Phase

- Before any piece of construction 'machinery' including crane or mobile machinery / plant, (excavators, rollers, dumpers, tele-handlers etc.) is delivered to the site, the invasive species Clerk of Works shall be provided documentation providing details of all sites close to or involving works in water that the machinery has been working on or stored on in the last 60 days.
- The invasive species Clerk of Works may consider the need for additional biosecurity measures, such as quarantining or pre-delivery disinfection, for any high risk machinery that has recently involved in in-river works.
- Biosecurity Process for machinery arriving or leaving the site during the construction phase with regard to invasive plant and invasive bivalve species is as follows:-

    - On arrival at or departure from the site, **ALL** construction machinery should be visually inspected and disinfected in the self-contained biosecurity washing area of the Construction Compounds.
    - The disinfection process shall involve dosing of the exterior of the machinery with a diluted solution of 1% Vircon Aquatic solution or an approved alternative.
    - The machinery should then be power-hosed with water of 60 °C + to remove disinfection solutions and any invasive species debris and any residual treated clams / eggs which may be present, followed by a final off-site visual inspection.
    - The treatment and inspection of machinery shall be overseen and approved by a qualified ecological Clerk of Works, including verification records to confirm completion of the disinfection for each piece of machinery, including any

replacement / standby units intended to be used on the project. Records shall be retained for inspection by the client's representatives.

- Sludge from the self-contained biosecurity facility shall be routinely (on at least a weekly basis) removed from the washing area and transferred to a water-tight covered skip for storage, awaiting off-site disposal to an appropriately licensed landfill site for deep burial. This is necessary, rather than on-site treatment at the proposed invasive species treatment areas due to the potential for the machinery washings to contain other residual contaminants such as oils.

Mitigation Measures Invasive Species (Plants only) Construction Phase

- The Invasive Species Clerk of Works and Ecological Clerk or Works shall be jointly responsible for the monitoring of biosecurity onsite. These responsibilities include site management, restrict personal and movement to designated areas, restrict access to site, clean maintain PPE, equipment and plant machinery.
- Plant Machinery are to restrict to in movement around the site, and within given work areas and haul routes to from containment areas.
- Plant machinery will remain on site in restricted area until excavation, and replacement to the containment area have been completed.
- Recommend the use of rubber tyre plant wherever possible rather than tracked plant.
- Plant machinery to be thoroughly cleaned down upon completion of works including tracks, tyres, buckets, trailers etc and material place in the containment area.
- PPE especially boots to be deep clean and any material placed in containment area.
- Cleaning of Plant Machinery and PPE will be overseen and undertaken by onsite Invasive Species supervisor who will instruct if the plant and personal are safe to leave.
- Installation of a root barrier membrane under the footpath: where the Japanese Knotweed remains in close proximity to the path, or where required excavated is not achievable.

The following seasonality restrictions will apply to the development, and this details the periods for invasive species treatment:-

Seasonal Constraints for Construction and Associated Works

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
In-River Piling, Bridge Construction, In-river works, riverbank Works and piling within SAC												
Tree and Shrub Clearance, works within 150m of owl nest												
JK Treatment								Opt	Opt	Opt		
Balsam Treatment				Opt	Opt							
Hogweed Treatment				Opt	Opt	Opt						

Opt : Optimal Period **Red: Exclusion Period** **Green: Approved Period**

7.5 UPDATE SURVEY

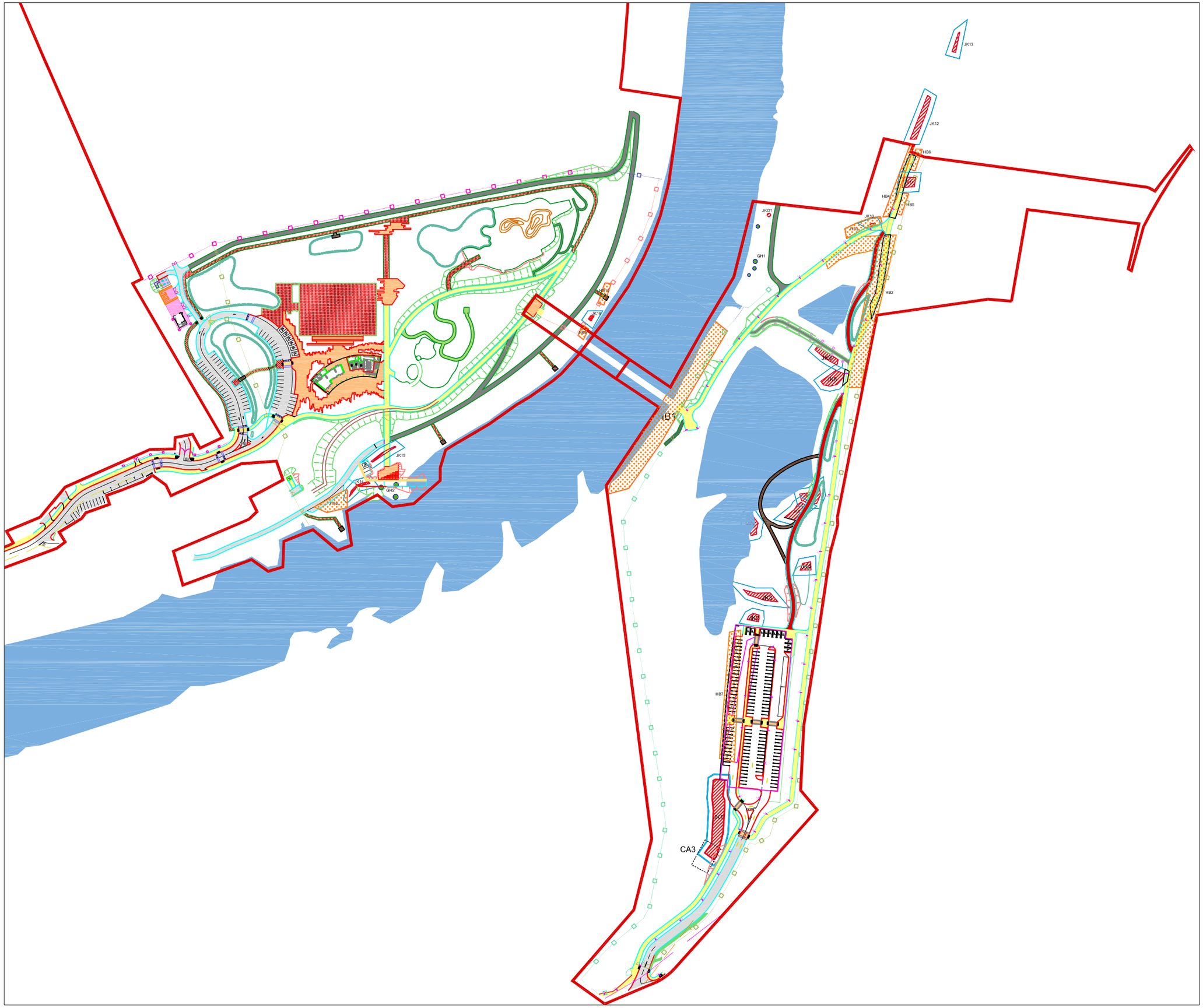
It is recommended before that before any of the excavation or stripping elements of the treatment strategies to update the Invasive Species survey and management plan if required.

This is due to the nature of site along situated along the River Foyle which the lands are at risk from further spread of invasive species and the nature of such species in particular Himalayan Balsam.

Himalayan Balsam infestations can change significantly from season to season due its ability to rapidly spread from seed dispersal.

8.0 APPENDICES

DWG



Key:

JK1 Japanese Knotweed ID & Location

Potential Rhizome Spread (3.5m)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

Note:
JK11, JK12 & JK13
HB2 Partial, HB3, HB4, HB5 & HB6
Will be controlled under an earlier development of the path by Strabane North Greenway

Riverine Lifford & Strabane

DWG.1

Invasive Species Location
(JUNE 2021)

Scale		Date
1;2500		21/01/22

Multidisciplinary Environmental Consultants
MCL CONSULTING

Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766

Key:

JK1 Japanese Knotweed ID & Location

Potential Rhizome Spread (3.5m)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

30m CA1 15m Containment Treatment Area (30m x 15m= 450m2)

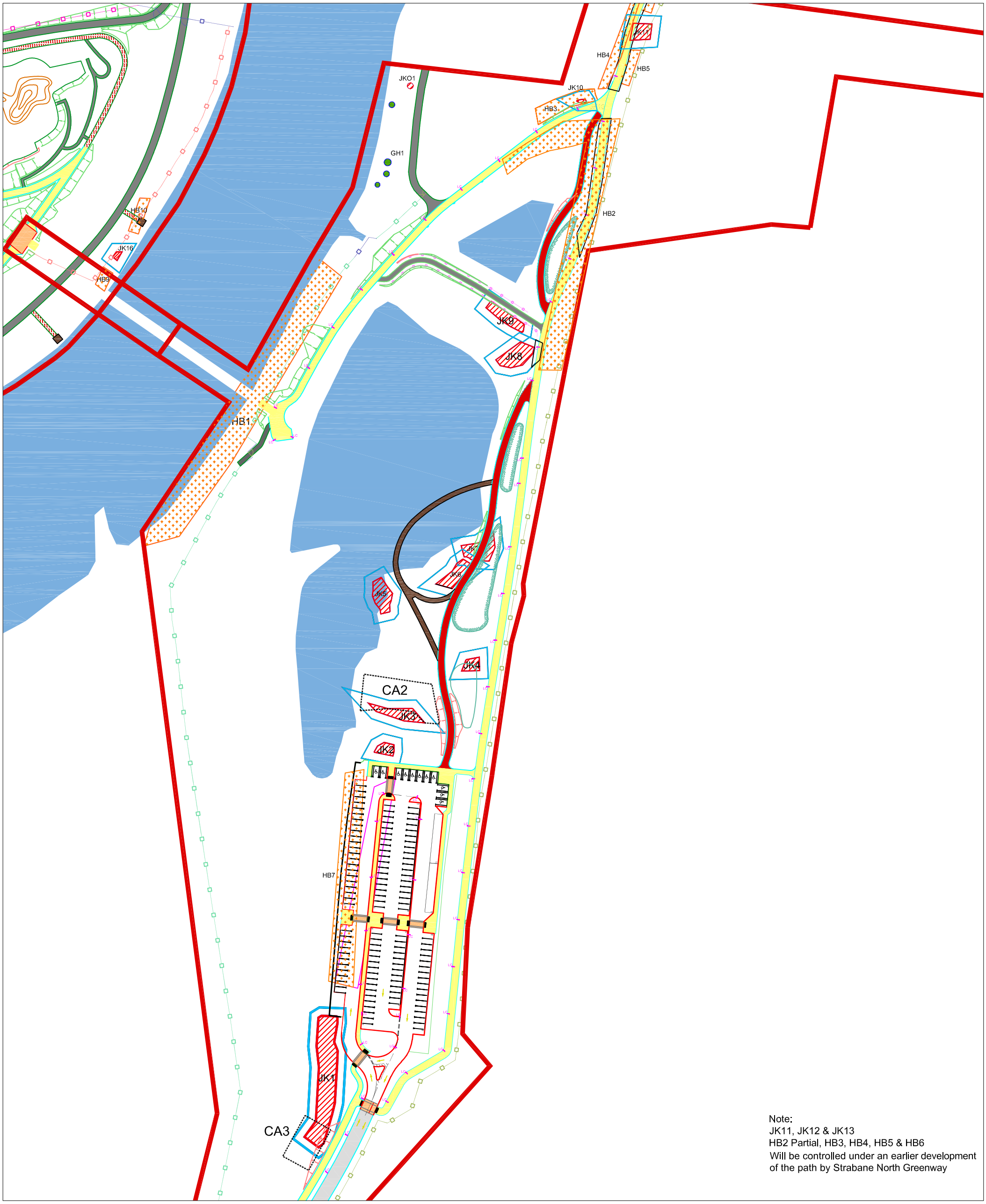
Riverine Lifford & Strabane

DWG.2

Lifford
Invasive Species Location
with Containment Area

Scale		Date
1:2500		21/01/22

Multidisciplinary Environmental Consultants
MCL CONSULTING
Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766



Note:
JK11, JK12 & JK13
HB2 Partial, HB3, HB4, HB5 & HB6
Will be controlled under an earlier development of the path by Strabane North Greenway

Key:

JK1 Japanese Knotweed ID & Location

CA2 (30 / 15.5) Containment Treatment Area (450m2)

Potential Rhizome Spread (3.5m)

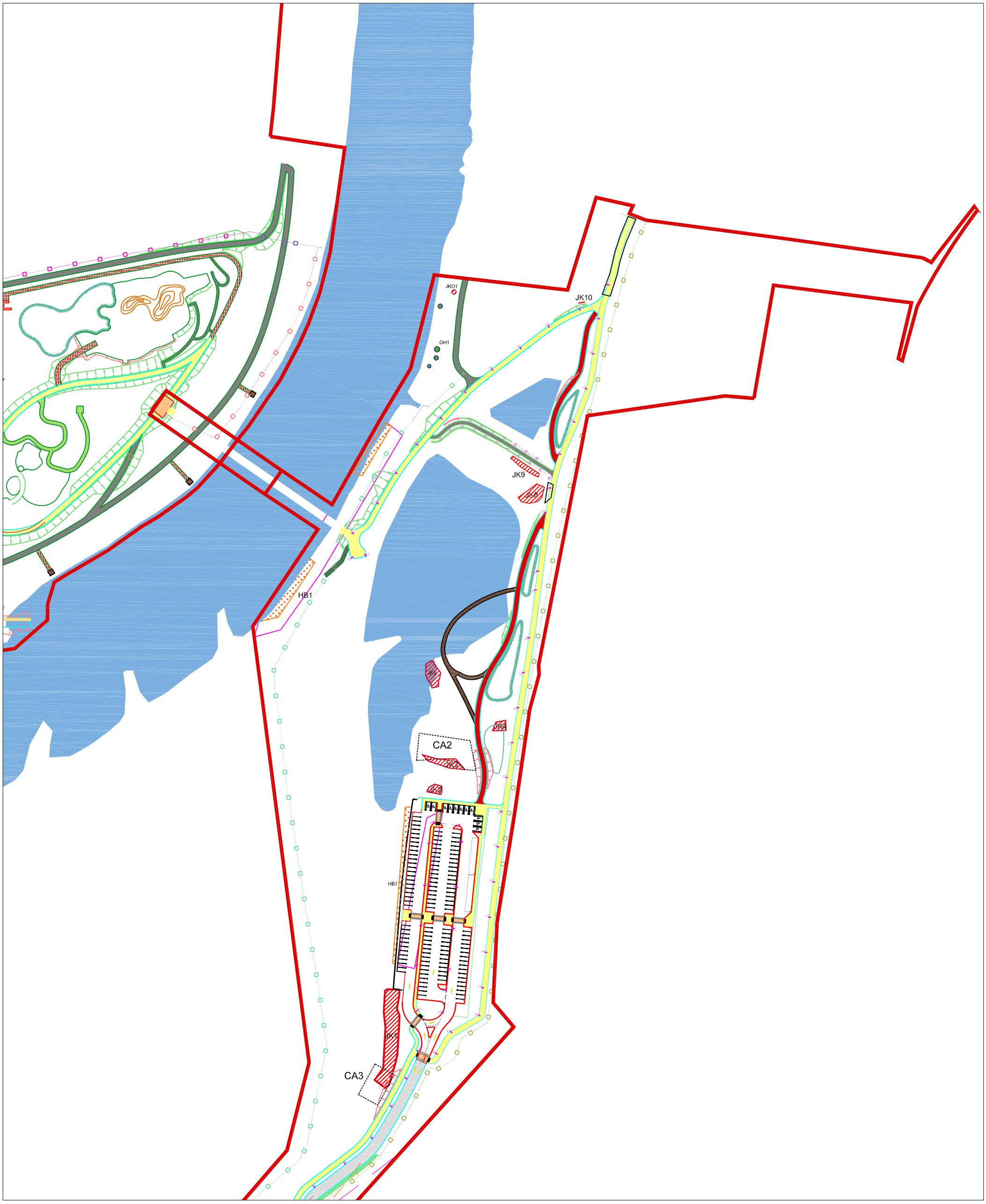
CA3 (20 / 12.5) Containment Treatment Area (250m2)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

DWG.3	Riverine Lifford & Strabane	
Scale 1;500	Strabane Invasive Species Location with Containment Treatment Area (JUNE 2021)	
Date 25/01/22		

Multidisciplinary Environmental Consultants
MCL CONSULTING
Unit 5, Forty Eight North, Duncrue Street, Belfast
BT3 9BJ
Tel: 028 9074 7766



Key:

JK1 Japanese Knotweed ID & Location

CA2 (30 / 15.5) Containment Treatment Area (450m2)

Potential Rhizome Spread (3.5m)

CA3 (30 / 12.5) Containment Treatment Area (250m2)

HB1 Himalayan Balsam ID & Location

GH1 Giant Hogweed ID & Location

DWG.4	Riverine Lifford & Strabane	
Scale 1;1250	Strabane Invasive Species Locations after relocation with Containment Treatment Areas	
Date 25/01/22		

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PHOTOS FROM SURVEY 22/06/21

Photos from survey 22nd June 2021- Lifford

Plate.1 JK14 growing along pathway

Plate.2 JK15 growing along pathway

Photos from survey 22nd June 2021- Lifford

Plate.3 JK16 growing along riverbank.

Plate.4 Himalayan Balsam along the River Bank. (HB8)

Photos from survey 22nd June 2021- Lifford

Plate.5 Himalayan Balsam along lane way (HB8)

Plate.6 Himalayan Balsam rivers edge (HB9)

Photos from survey 22nd June 2021- Lifford

Plate.7 Himalayan Balsam along lane way (HB8)

Photos from survey 22nd June 2021- Strabane

Plate.1 JK1 growing along disused carpark.

Plate.2 JK2 growing along the north edge of disused carpark.

Photos from survey 22nd June 2021- Strabane

Plate.3 JK3 growing in overgrown area North of the disused carpark.

Plate.4 JK5 growing near to pond next to utilities pole.

Photos from survey 22nd June 2021- Strabane

Plate.5 JK6 & JK7

Plate.6 JK8 & JK9 Growing along the drain

Photos from survey 22nd June 2021- Strabane

Plate.7 JK10 growing along the access lane

Plate.8 JK11 growing along the access lane

Photos from survey 22nd June 2021- Strabane

Plate.9 JK12 growing along the access lane

Plate.10 JK13 growing along the access lane

Photos from survey 22nd June 2021- Strabane

Plate.11 JKO1 growing along path along river side.

Plate.12 GH1 beside the path along river side.

Photos from survey 22nd June 2021- Strabane

Plate.13 GH1 along path along river side

Plate.12 HB1 near to the badger sets

Photos from survey 22nd June 2021- Strabane

Plate.13 HB2 along the lane way

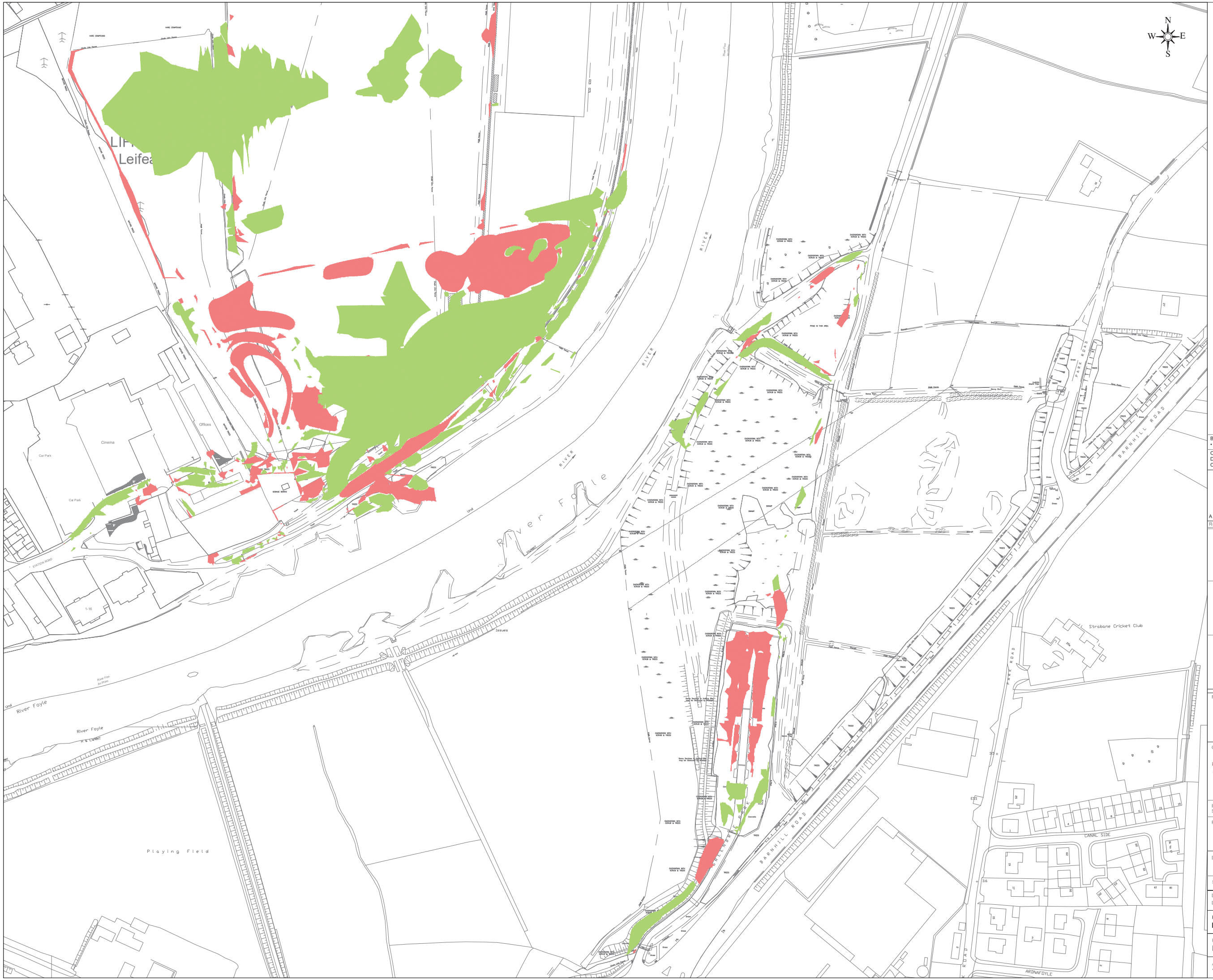
Plate.14 HB3 along the access lane

Photos from survey 22nd June 2021- Strabane

Plate.15 HB along the laneway

Plate.15 HB5 along the laneway

Appendix E



NOTES

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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

LEGEND

CUT

FILL

CUT / FILL STATISTICS

Area	Cut Vol ** ******	Fill Vol ** ******	Balance ** ******
Accommodation Works	566	7,480	6,914 [fill]
Lifford Riverine	5,997	20,136	14,139 [fill]
Strabane Riverine	1,046	1,159	113 [fill]
Overall	7,609	28,775	21,166 [fill]

Rev	Issue Date	Description	App
A	04.02.22	Amended Lifford Accom. Works & Strabane layouts	DSA

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Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Bán
Derry Cittie & Strábane Destrick Cooncil

Project Status: STAGE 3 - DEVELOPED DESIGN

Project: RIVERINE COMMUNITY PARK

Drawing: CUT / FILL ANALYSIS

Scale: 1:1250 @ A1

Drawn	Checked	Approved
DSA	CM	KOS
Date 06.08.21	Date 06.08.21	Date 06.08.21

Project - Organisation - Zone - Level - Type - Role - Number: E2256 - - - - - - SK-142

Revision: A

Project Number: E2256

Status code & Description: - -

All dimensions are in metres. Figured dimensions to be taken in preference to scaled

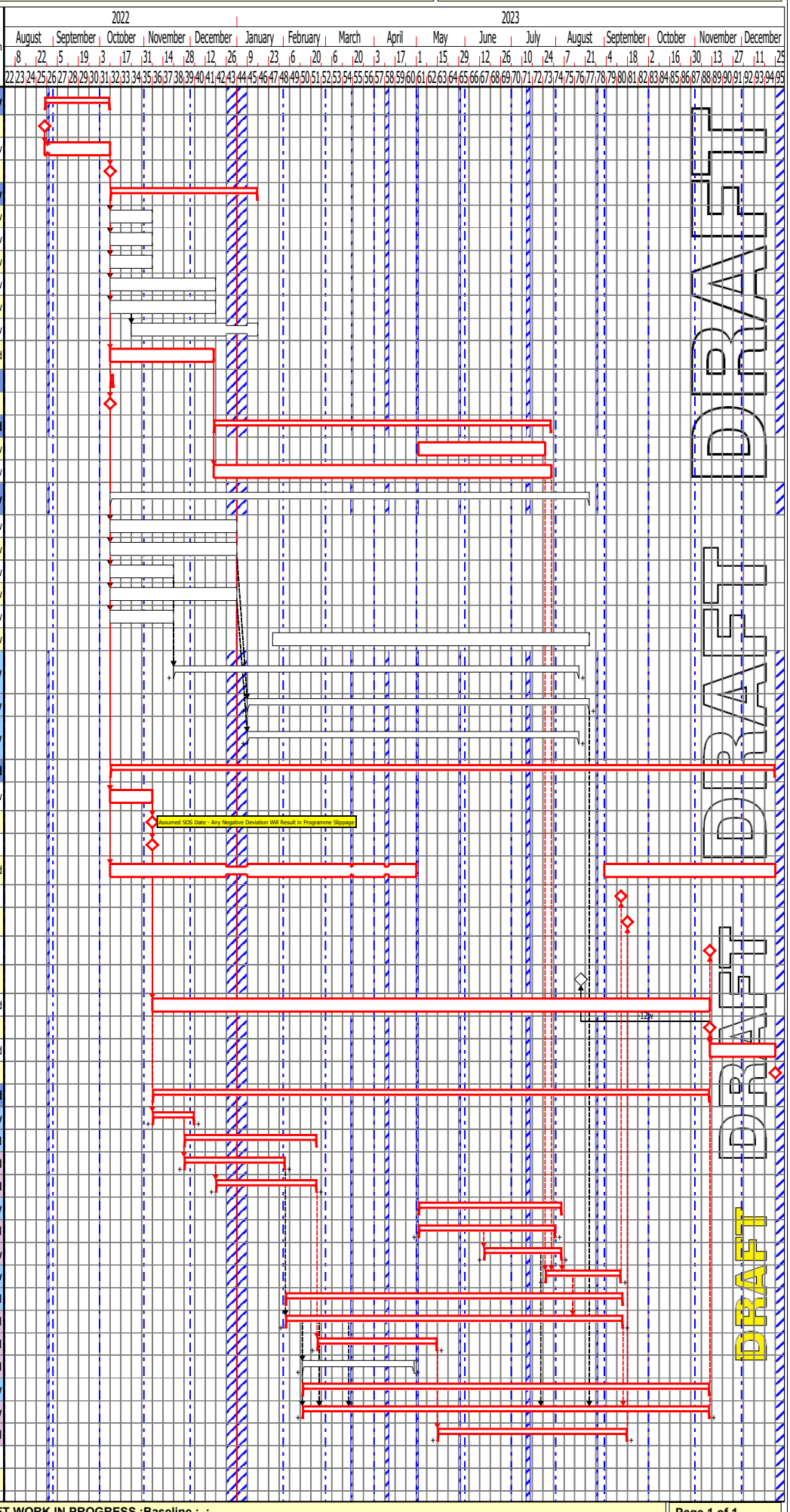
Appendix F

DRAFT
Work in Progress

Riverine
Indicative Works Programme

Programme No: TP00.01 :
Revision No: Rev # : DRAFT
Date of Issue: 14/04/2022

Line	Name	Start	Finish	Duration
1	**Tender Stage**	**25/08/2022**	**10/10/2022**	**6w**
2	Tender Return	25/08/2022	25/08/2022	
3	Tender Evaluation	26/08/2022	07/10/2022	6w
4	Contract Award (Assumed)	10/10/2022	10/10/2022	
5	**Design Development**	**10/10/2022**	**13/01/2023**	**12w**
6	Piling Platform	10/10/2022	04/11/2022	4w
7	Pile Design	10/10/2022	04/11/2022	4w
8	Crane Platform	10/10/2022	04/11/2022	4w
9	Structural	10/10/2022	16/12/2022	10w
10	Civils	10/10/2022	16/12/2022	10w
11	M & E	24/10/2022	13/01/2023	10w
12	Steel Bridge - Final Drawings for Approval	10/10/2022	15/12/2022	9w 4d
13	**Planning**	**10/10/2022**	**10/10/2022**	
14	Planning Assumed Approved	10/10/2022	10/10/2022	
15	**Procurement**	**16/12/2022**	**27/07/2023**	**28w 3d**
16	Crane Lead-in Time	02/05/2023	24/07/2023	12w
17	Bridge Lead-in Time	16/12/2022	27/07/2023	32w
18	**Ultilities Interface / Design**	**10/10/2022**	**23/08/2023**	**42w**
19	BT / Telecomms	10/10/2022	30/12/2022	12w
20	Gas	10/10/2022	30/12/2022	12w
21	NIE	10/10/2022	18/11/2022	6w
22	NIW	10/10/2022	30/12/2022	12w
23	ESB	10/10/2022	18/11/2022	6w
24	Fibre Optic Lead-in Time	25/01/2023	22/08/2023	30w
25	**Electrical Power On - LV Connection & Substation Procurement**	**21/11/2022**	**15/08/2023**	**35w**
26	**New Gas Connection**	**09/01/2023**	**23/08/2023**	**31w**
27	**New Mains Water Connection (Mains Water or Fire)**	**09/01/2023**	**16/08/2023**	**30w**
28	**Key Dates**	**10/10/2022**	**22/12/2023**	**59w 2d**
29	Contractor Mobilisation Period	10/10/2022	04/11/2022	4w
30	SOS Date	07/11/2022	07/11/2022	
31	Site Access Date	07/11/2022	07/11/2022	
32	Seasonal Constraint - In River Works	10/10/2022	22/12/2023	42w 3d
33	Bridge Complete	13/09/2023	13/09/2023	
34	Strabane Public Realm Works Complete	18/09/2023	18/09/2023	
35	Lifford Public Realm Works Complete	09/11/2023	09/11/2023	
36	Finishing Programme issued to Client	17/08/2023	17/08/2023	
37	Works Period	07/11/2022	09/11/2023	52w 4d
38	Planned Completion Date	09/11/2023	09/11/2023	
39	CTTRA	10/11/2023	22/12/2023	6w 1d
40	Contract Completion Date	22/12/2023	22/12/2023	
41	**Construction Programme**	**07/11/2022**	**09/11/2023**	**49w 1d**
42	**Site Set-up**	**07/11/2022**	**02/12/2022**	**4w**
43	**Enabling Works**	**28/11/2022**	**22/02/2023**	**10w 3d**
44	**Lifford**	**28/11/2022**	**01/02/2023**	**7w 3d**
45	**Strabane**	**19/12/2022**	**22/02/2023**	**7w 3d**
46	**RC Abutments and Piers**	**02/05/2023**	**04/08/2023**	**13w**
47	**Lifford**	**02/05/2023**	**31/07/2023**	**12w 2d**
48	**Strabane**	**14/06/2023**	**04/08/2023**	**7w**
49	**Steel Bridge**	**25/07/2023**	**12/09/2023**	**7w**
50	**Internal Roads**	**02/02/2023**	**13/09/2023**	**30w 2d**
51	**Lifford**	**02/02/2023**	**13/09/2023**	**30w 2d**
52	**Strabane**	**23/02/2023**	**12/05/2023**	**10w 3d**
53	**Drainage**	**14/02/2023**	**28/04/2023**	**10w 1d**
54	**Public Realm**	**14/02/2023**	**09/11/2023**	**37w**
55	**Lifford**	**14/02/2023**	**09/11/2023**	**37w**
56	**Strabane**	**15/05/2023**	**15/09/2023**	**17w 1d**



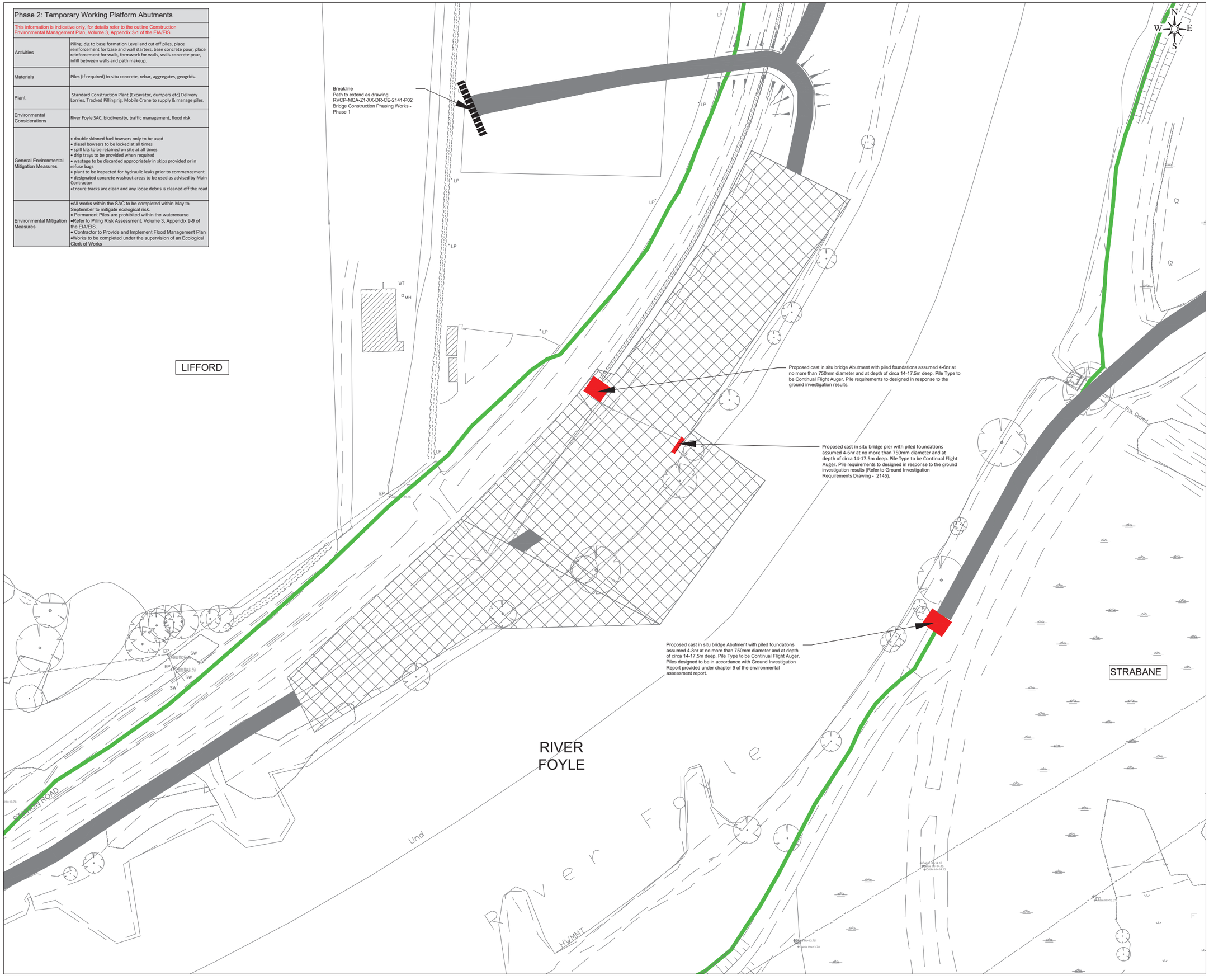
Appendix G

Phase 2: Temporary Working Platform Abutments

This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS

Activities	Piling, dig to base formation Level and cut off piles, place reinforcement for base and wall starters, base concrete pour, place reinforcement for walls, formwork for walls, walls concrete pour, infill between walls and path makeup.
Materials	Piles (If required) in-situ concrete, rebar, aggregates, geogrids.
Plant	Standard Construction Plant (Excavator, dumpers etc) Delivery Lorries, Tracked Pilling rig. Mobile Crane to supply & manage piles.
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor •Ensure tracks are clean and any loose debris is cleaned off the road
Environmental Mitigation Measures	•All works within the SAC to be completed within May to September to mitigate ecological risk. • Permanent Piles are prohibited within the watercourse •Refer to Piling Risk Assessment, Volume 3, Appendix 9-9 of the EIA/EIS. • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works

LIFFORD



NOTES

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SAC Boundary
Proposed Access Road
Crane & Bridge Assembly Working Area
Proposed Bridge Abutment/Pier

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform Area Increased	P McM

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Derry Cittie & Strábane Destrick Coincil

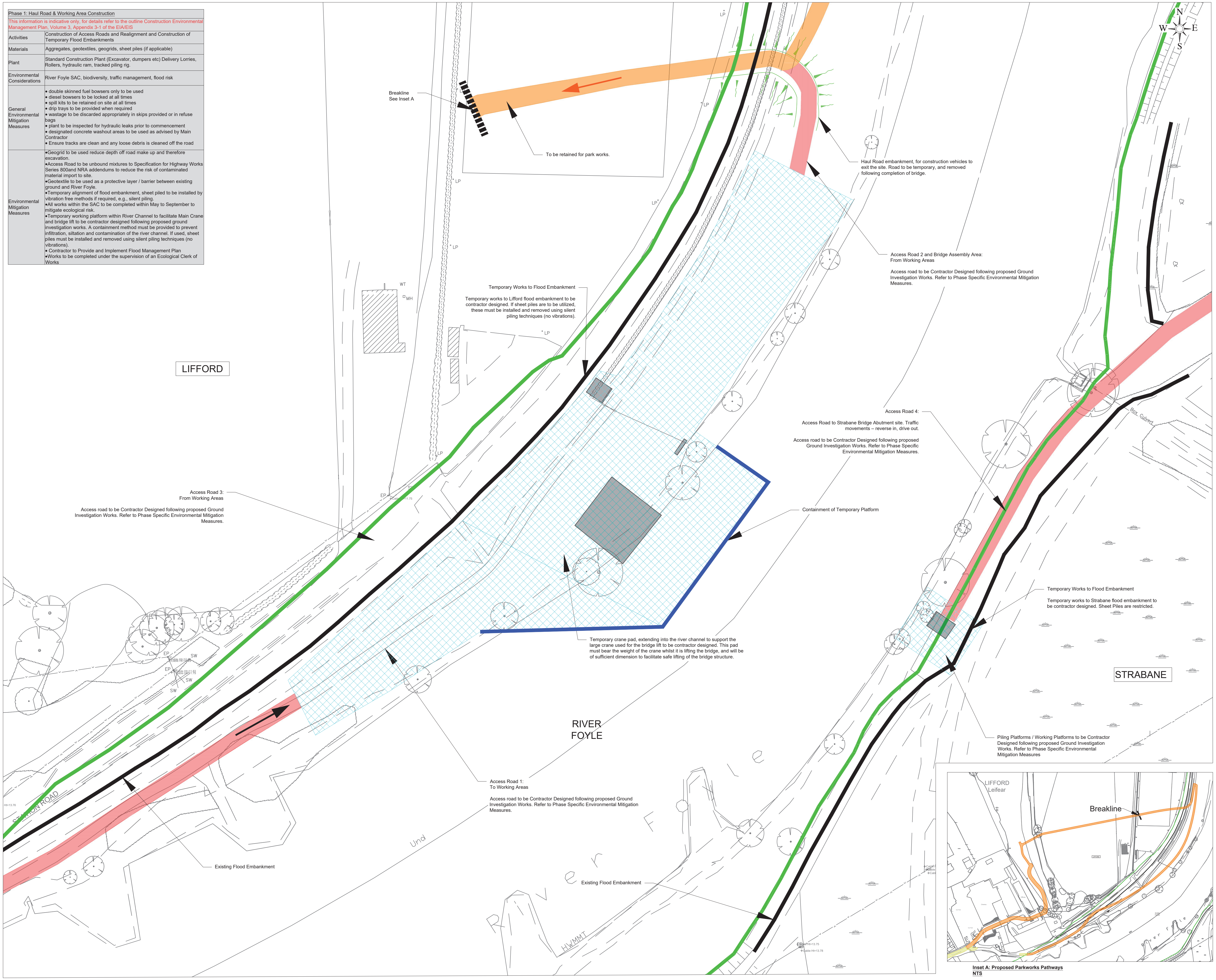
Project Status	STAGE 3 - PLANNING
Project	RIVERINE COMMUNITY PARK
Drawing	BRIDGE CONSTRUCTION PHASING WORKS - PHASE 2
Scale	1:500 @ A1

Drawn	CR	Checked	DA	Approved	CM
Date	25/08/21	Date	25/08/21	Date	25/08/21

Project - Organisation - Zone - Level - Type - Role - Number	Revision
RVCP - MCA - Z1 - XX - DR - CE - 2142	P02

Project Number	Status code & Description
E2256	S2 - For Information

Phase 1: Haul Road & Working Area Construction	
This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS	
Activities	Construction of Access Roads and Realignment and Construction of Temporary Flood Embankments
Materials	Aggregates, geotextiles, geogrids, sheet piles (if applicable)
Plant	Standard Construction Plant (Excavator, dumpers etc) Delivery Lorries, Rollers, hydraulic ram, tracked piling rig.
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor • Ensure tracks are clean and any loose debris is cleaned off the road
Environmental Mitigation Measures	•Geogrid to be used reduce depth off road make up and therefore excavation. •Access Road to be unbound mixtures to Specification for Highway Works Series 800and NRA addendums to reduce the risk of contaminated material import to site. •Geotextile to be used as a protective layer / barrier between existing ground and River Foyle. •Temporary alignment of flood embankment, sheet piled to be installed by vibration free methods if required, e.g., silent piling. •All works within the SAC to be completed within May to September to mitigate ecological risk. •Temporary working platform within River Channel to facilitate Main Crane and bridge lift to be contractor designed following proposed ground investigation works. A containment method must be provided to prevent infiltration, siltation and contamination of the river channel. If used, sheet piles must be installed and removed using silent piling techniques (no vibrations). • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works



Inset A: Proposed Parkworks Pathways
NTS

NOTES

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LEGEND

- Crane & Bridge Assembly Working Area
- Proposed Access Road to be moved prior to Main Works
- Proposed Access Road to be retained for Main Works
- Temporary Works to Flood Embankment
- Existing Flood Embankment
- Containment of Temporary Platform
- SAC Boundary

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform area increased	P McM

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Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Stràbane Destrick Cooncil

Project Status: STAGE 3 - PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: BRIDGE CONSTRUCTION PHASING WORKS - PHASE 1

Scale: 1:500 @ A1

Drawn	CR	Checked	DA	Approved	CM
Date	25/08/21	Date	25/08/21	Date	25/08/21

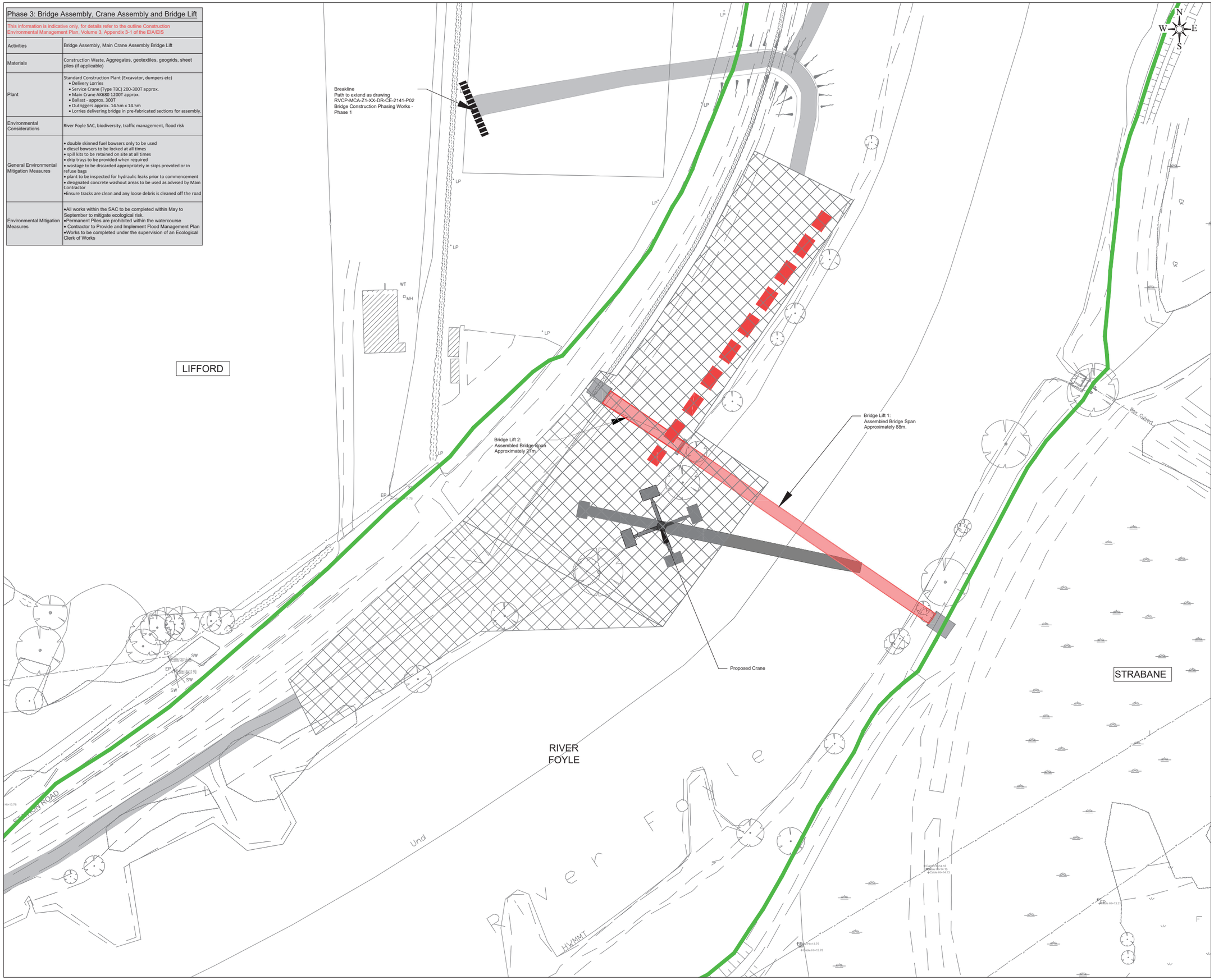
Project	Organisation	Zone	Level	Type	Role	Number	Revision
RVCP	MCA	Z1	XX	DR	CE	2141	P02

Project Number	Status code & Description
E2256	S2 - For Information

Phase 3: Bridge Assembly, Crane Assembly and Bridge Lift

This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS

Activities	Bridge Assembly, Main Crane Assembly Bridge Lift
Materials	Construction Waste, Aggregates, geotextiles, geogrids, sheet piles (if applicable)
Plant	Standard Construction Plant (Excavator, dumpers etc) • Delivery Lorries • Service Crane (Type TBC) 200-300T approx. • Main Crane AK680 1200T approx. • Ballast - approx. 300T • Outriggers approx. 14.5m x 14.5m • Lorries delivering bridge in pre-fabricated sections for assembly.
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor •Ensure tracks are clean and any loose debris is cleaned off the road
Environmental Mitigation Measures	•All works within the SAC to be completed within May to September to mitigate ecological risk. •Permanent Piles are prohibited within the watercourse • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works



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LEGEND

- Crane & Bridge Assembly Working Area
- Proposed Crane
- Proposed Access Road
- Bridge Sections for Assembly on Site
- Assembled Bridge
- SAC Boundary

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform Area Amended	P McM

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Derry Cittie & Strábane Destrick Cooncil

Project Status	STAGE 3 - PLANNING
Project	RIVERINE COMMUNITY PARK
Drawing	BRIDGE CONSTRUCTION PHASING WORKS - PHASE 3
Scale	1:500 @ A1

Drawn	Checked	Approved
CR	DA	CM
Date 25/08/21	Date 25/08/21	Date 25/08/21

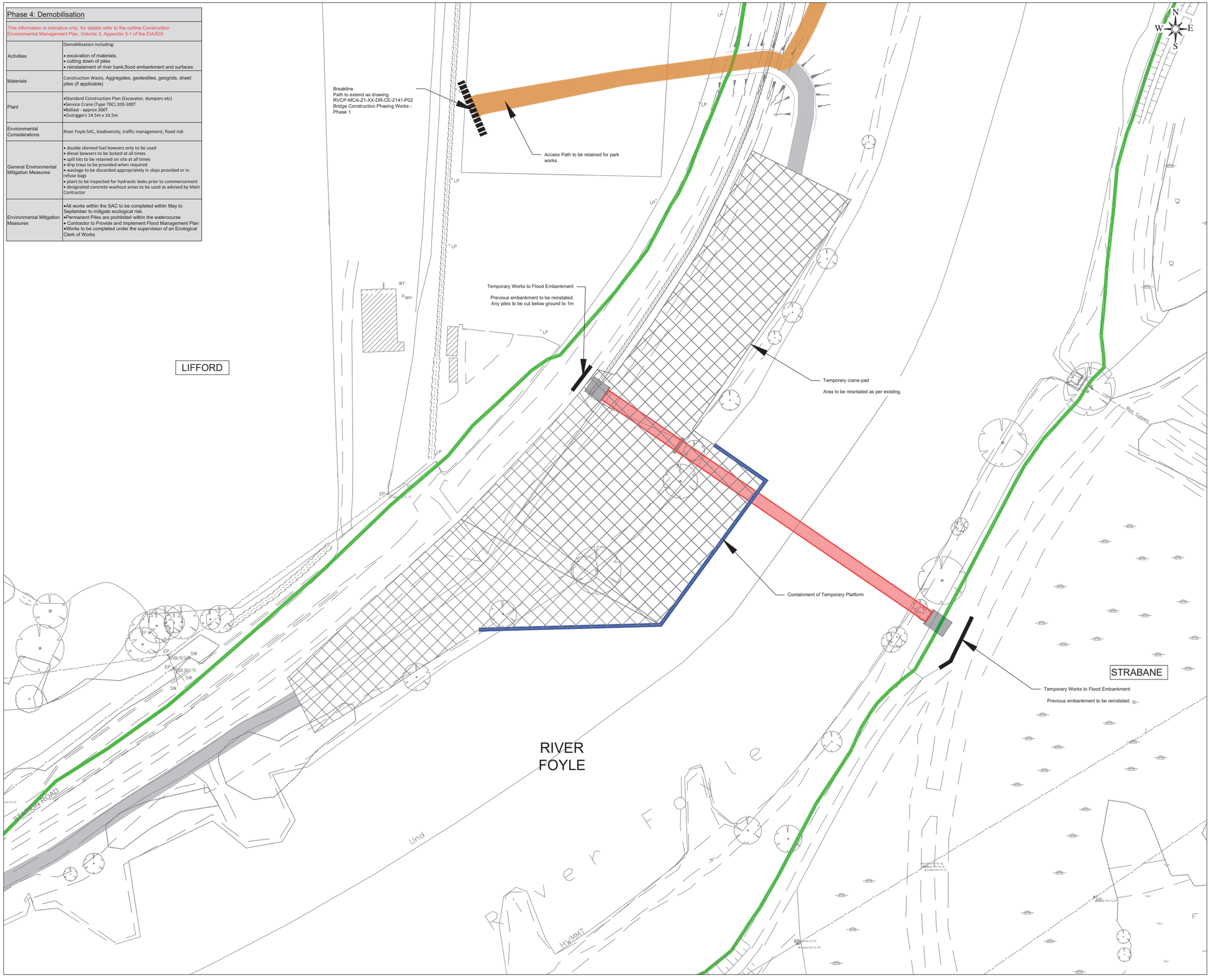
Project	Revision
RVCP - MCA - Z1 - XX - DR - CE - 2143	P02

Project Number	Status code & Description
E2256	S2 - For Information

Phase 4: Demobilisation

This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS

Activities	Demobilisation including: • excavation of materials, • cutting down of piles • reinstatement of river bank,flood embankment and surfaces
Materials	Construction Waste, Aggregates, geotextiles, geogrids, sheet piles (if applicable)
Plant	•Standard Construction Plan (Excavator, dumpers etc) •Service Crane (Type TBC) 200-300T •Ballast - approx 300T •Outriggers 14.5m x 14.5m
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor
Environmental Mitigation Measures	•All works within the SAC to be completed within May to September to mitigate ecological risk. •Permanent Piles are prohibited within the watercourse • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works



NOTES

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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

LEGEND

- Access Road to be excavated and removed
- Access Road to be retained as sub-base to proposed pathway infrastructure
- Proposed Bridge
- Temporary Crane Pad to be excavated and removed and rive bank made good
- Temporary Works to Existing Flood Embankment to be removed and original alignment to be reinstated
- Temporary Containment Measures to be removed
- SAC Boundary

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform area increased	P McM

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Derry Cittie & Strábane Destrick Cooncil

Project Status	STAGE 3 - PLANNING
Project	RIVERINE COMMUNITY PARK
Drawing	BRIDGE CONSTRUCTION PHASING WORKS - PHASE 4
Scale	1:500 @ A1

Drawn	Checked	Approved
CR	DA	CM
Date 25/08/21	Date 25/08/21	Date 25/08/21

Project	Revision
RVCP - MCA - Z1 - XX - DR - CE - 2144	P02

Project Number	Status code & Description
E2256	S2 - For Information

Appendix H

Environmental / Pollution Incident/Near Miss Reporting Form

Filling in this form

- Part A of this form is to be completed and signed by the person reporting the event.
- Once Part A is complete;
    - Send a copy to the Site Manager
    - Send a copy of the form to the EcOW and ECoW
    - Retain a copy for your records.
- Part B is to be completed by the person responsible for the corrective and preventative actions and signed off by the Environment and Sustainability Coordinator.
- Part C is to be completed by the Site Manager

Part A – Incident Report (*To be completed by person witnessing or reporting the incident or near miss)*

What is your full name?		
What is your job title?		
Were you directly involved in this event? *(please circle)*	YES	NO
If no, state capacity in completing this form		
On what date did the event occur?		
At what time did the event happen?		
Brief description of the location of the event (Describe Buffer reference if incident occurred inside a buffer zone)		
What was the nature of the event? *(please circle)*	Incident	Near Miss
nearest Buffer Zone/s relevant to the event		

What was the nature of the incident?

- ☐ Spillage, leakage or uncontrolled discharge of substance
- ☐ Spillage of special, hazardous or restricted substances e.g. oil detergent, paint
- ☐ Emission to air of gas, dust, fumes or other pollutants

☐ Pollution of water courses, surface water drains, foul water sewers
☐ Contamination of land, flora, fauna
☐ Damage to archaeology, listed building, local heritage
☐ Noise, Litter, light, odour, vibration or other nuisance
☐ Other risk (Please describe below

…….

Please describe what happened.
Give as much detail as you can. For instance, the names of any substance involved, what happened leading up to the event, the part played by any people including third parties, the names of any witnesses, any action taken at the time of the event.

Signature Date

Part B – Corrective and Preventative Action *(for completion by area responsible for the incident or near miss)*

Corrective action taken at the time of the incident:

Ref no:
(Office use only)

Person Responsible for the Corrective action/s *(Print name):*

Date completed:

Signature *(of above person)*

Position:

Root Cause and Preventative action to be taken to reduce the risk of the incident happening again or the near miss becoming an incident:

Root cause:

Preventative action:

Course of action approved by Site Manager:

(Print name and Signature)

Agreed date of implementation:

Person Responsible:

(Print name and Signature)

Part C – Follow up and Varification – (*To be completed by Site Manager*

Verification that corrective actions have been completed/implemented and is effective:

Signed off by*(Print name)*

Signature *(of the above person)*

Position

Date of Closure

Appendix I

The Method of Works Statements references in this appendix is based on advice and guidance contained in Guidance for Pollution Prevention Works and maintenance in or near water: GPP 5 Version 1.2 February 2018

What should a Method Statement include?

There is no universal format for the contents of a method statement as every job is different and therefore all method statements should be job or site specific. This Method Statement is presented in this appendix and main points are highlighted on these introductory pages and also references other measures set out in other appendices.

Basic Contract/Job Information

Site of Proposed Development: The extent of the site area is shown on the enclosed proposed site plan in **Appendix A** of this OCEMP.
Description of Proposed Development: Proposed intercommunity development

Contract/Job Details

Required Information	**Details**
The name and address of the company undertaking the works	
The intended start date on site	
Details of the nature of the work that is to be undertaken	To be completed with updated info from detailed design baaed on details presented in Appendix A of this OCEMP
The number of operatives/workers who will be involved in the works	
The name (s) of the supervisor(s) or person(s) responsible for health and safety	
The anticipated date for completion of the works	

Method of Work

Information Required	**Details**
A description of how the works are to be carried out in relation to the task and site-specific hazards	
A schedule of the works and a sequence of the operations/tasks	
Details of where the work is to take place and whether this designated area requires segregation.	Appendix A details the site location
Where applicable the inclusion of details regarding other subcontractors who may affect your works or details of how you will affect the works of other subcontractors	
For high risk works provide a detailed description of intended emergency procedures	
A description of how the works are to be carried out in relation to the task and site-specific hazards	

Site Specific Risk Assessment

R.A. No 01

General Risk Assessment			
Created by:		Full Address and OS Reference	
Tel:			
Job Ref:			
Start Date and Time			
End Date and Time			

Emergency	
Designated Meeting Place:	
Nearest Access Point:	
Means of Access (4x4, On Foot, etc:)	
Suitable for Helicopter Operations:	
Nearest Hospital and Tel:	

Description of Work Environment and Activity Undertaken

Select Hazards Likely to be Encountered			
Working at Height [ ]	Slips Trips Falls [ ]	Manual Handling [ ]	Entanglement in Rotating Plant [ ]
Impact Injury [ ]	High Pressure Injection [ ]	Hot Surface / Liquid [ ]	Electricity [ ]
Cutting Grinding [ ]	Hazardous Atmosphere [ ]	Access / Egress [ ]	Ingestion of Hazardous Chemicals [ ]
Asphyxiation [ ]	Noise [ ]	Entrapment [ ]	Wells Disease [ ]
Contact with Chemicals [ ]	Exposure to Biological Dangerous Agents [ ]	Fire [ ]	Explosion
Adverse Weather [ ]	Crushing [ ]	Leakage / Spills [ ]	Safety Equipment Failure [ ]
Collapsed Structure [ ]	Environmental Contamination [ ]	Vibration [ ]	Aggressive Behaviours [ ]
Water / Drowning [ ]	Plant / Vehicle movement [ ]	Stress [ ]	Hot Works [ ]
Aggressive Animals [ ]	Confined Space Entry [ ]	Compressed Gases [ ]	Working at Night [ ]
Lifting / Slinging [ ]	Falling Objects [ ]	Lone Working [ ]	Other [ ]
If Other Specify:			

Site Specific Risk Assessment

R.A. No 01

Risk Register			
Key	**Low Risk**	**Medium Risk**	**High Risk**

Identify Hazard	Associated Risk	Control Measure	Risk Rating

Site Specific Risk Assessment

R.A. No 01

Attach Rescue Plan if Required

N/A

Permission to Work

I agree to work within the conditions indicated on this permit and accept the responsibility as the person directly in charge of the work. I declare that all work at height will be carried out in accordance with the requirements published in the most current version of Health and Safety at Work (Northern Ireland) Order 1978 and in consideration of the SMS that applies to my workplace.

Performing Authority	**Name**		
	Signature		**Date**

I hereby declare that the person identified on this permit is authorised to carry out the work at height subject to the terms and conditions of this permit

Area Authority	**Name**		
	Signature		**Date**

Job Completion / Cancellation

All work associated with this permit has been completed. All equipment associated with this permit has been returned in serviceable condition and the job site is clear of any hazards associated with this work.

Performing Authority	**Name**		
	Signature		**Date**

Work completed and area inspected and satisfactory.

Area Authority	**Name**		
	Signature		**Date**

Were there any incidents or near misses associated with this work?

[ ] No [ ] Yes (Near Miss report to be completed if so)

Appendix J

Spill Response Procedure

If the spill cannot be safely contained or if the spill is causing a threat to life, evacuate the area and call 999 from a safe location

IF SAFE TO DO SO

STOP > CONTAIN > NOTIFY > CLEAN-UP

STOP

- Stop work immediately
- Stop the leak or elimimate the source of the spill
- Eliminate ignition sources and provide natural ventilation

CONTAIN

- Use pollution control equipment (e.g. spill kits, drip trays, bunds of earth and sand) to contain the spill
- Check the spill has not reched any drains, water courses or other sensitive areas
- Cover all drains / manholes to prevent the spill from entering the drainage system

NOTIFY

- Once the spill has been contained notify your emergency contact. Details at the bottom of the page:.

CLEAN-UP

- Attempt to soak up the spill using absorbent material
- Always follow your Duty of Care for waste when disposing of contaminated materials including spill kit/equipment.

EMERGENCY CONTACT DETAILS (Complete with your business details)

NAME	TELEPHONE	NEAREST SPILL KIT

Appendix A: Example Risk Assessment

Hazard *What has the potential to cause harm?*	**Source** *Source(s) of hazard*	**Pathway** *How can the hazard reach the receptor?*	**Receptor(s)** *What/who is at risk?*	**Risk management actions** *What measures will be taken to reduce the risk?*	**Exposure probability** *How likely is this to happen?*	**Consequence** *What harm can be caused?*	**Overall Risk** *What is the risk?*
Fuel/ chemicals/ oil leak	Fuel oil storage areas Refuelling areas Site plant/ machinery	Land, groundwater and air	Ground Surface water/ groundwater Local school to the north of the site Local residents (located in the residential area to the north west of the site)	Follow refuelling protocol at all times Only use suitable containers to store fuel/oil and store these according to the oil storage regulations and away from sensitive receptors Store solvents, chemicals and pants in accordance with the COSSH data sheets Bulk fuel storage should be integrally bunded or kept within a bunded area Use drip trays/plant nappies for plant / machinery Implement and follow procedures for storage, use, delivery, inspection and monitoring of polluting substances	Possible	Water pollution Contaminated ground Odour nuisance	Low if the risk management techniques are applied
Dust / Particles	Site surfaces (dry and windy weather) Soil stockpiles Earthworks using mobile plant	Air	Site personnel/ visitors Local school Local residents	Damp down earthworks during dry weather Locate stockpiles out of the wind (or if necessary provide wind breaks) Vegetate soil stockpiles Minimise the height of fall of materials during earthworks	Likely – esp. during summer months	Dust nuisance	Low if the risk management techniques are applied

Hazard *What has the potential to cause harm?*	**Source** *Source(s) of hazard*	**Pathway** *How can the hazard reach the receptor?*	**Receptor(s)** *What/who is at risk?*	**Risk management actions** *What measures will be taken to reduce the risk?*	**Exposure probability** *How likely is this to happen?*	**Consequence** *What harm can be caused?*	**Overall Risk** *What is the risk?*
Odours	Biodegradable waste on site	Air	Site personnel/ visitors Local school Local residents	Store waste away from site boundary, main access roads and downwind of sensitive receptors Use covered containers for organic waste (e.g. food, weeds and other vegetation) and remove wastes frequently	Likely	Odour nuisance	Low if the risk management techniques are applied
Leachate	Stored wastes	Ground	Surface water/ groundwater	Use covered containers suitable for their contents Ensure waste storage containers are in good order i.e. not corroded or worn out Store waste away from sensitive receptors i.e. water environment, drains. Store waste in areas away from vehicle movements to minimise the risk of impact	Possible	Water pollution	Low if the risk management techniques are applied

Appendix K

Emergency service		Hospital	
PSNI (local station)		Fire Station	
Environmental Emergency Response		Emergency Response time	
Person in charge during an emergency		Contact no.	
Health & Safety Manager		Contact no.	
Health & Safety Representative		Contact no.	
First Aiders on site		Contact no.	
Fire Warden on site		Contact no.	
Quality & Environmental Manager		Contact no.	
Local Pollution Officer		Contact no.	

NIEA's Pollution Prevention Hotline Number
0800 80 70 60

Responsibilities & Duties of Personnel during an emergency

Identification of Potential Accidents/ Incident & Emergencies	**Duty of Individual first on scene**	**Duties of First Aiders/ Fire Wardens**	**Duties of Site Agent**	**Duties of all individual on site**	**Location of drawings, Plant layout, Procedures etc**	**Protection of vital records and equipment**	**Comments**
Fire and/or explosion	Raise the alarm and cut power supply to the area	Clear area	Contact Fire Brigade Clear access for Fire Brigade Check all individual have been evacuated Contact H/O	Go to nearest fire point and follow instructions	Site Office	N/A	
Serious Accident	Raise the alarm	Assess and make comfortable	Contact ambulance, Clear access for ambulance. Contact H/O	Make area safe	Site Office	N/A	
Collapse of Structures/	Raise the alarm and assess the	Check for injured persons	If no injured persons	Assist in site investigations	N/A	N/A	

Excavation collapse	area for further failures		reported, clear area and establish potential causes. Make area safe. Contact H/O				
Oil Spillage	Contain the spill. Inform site agent. Clear up immediately using appropriate equipment	N/A	Clear up immediately using appropriate equipment	Assist in site investigations	N/A	N/A	
Uncontrolled silt discharge	Contain the spill/ Inform site agent/ Clear up immediately using appropriate equipment	N/A	Clear up immediately using appropriate equipment	Assist in site investigations	N/A	N/A	
Electrocution	Raise the alarm and cut power supply to area	Clear area	Contact ambulance, Clear access for ambulance. Contact H/O	Make area safe	Site Office	N/A	

Polluting/Hazardous Materials			Emergency Action/Disposal	
Material	**Hazard**	**Storage**	**Emergency Action Required**	**Disposal**
Oil	Fire & Pollution	Oil drums	Emergency spill kit	Waste Oil and Absorbants to waste contractor
Petrol	Fire & Pollution	Metal jerry can	Smother with sand/blanket	Empty storage containers placed in skip for removal by waste contractor
Gas	Explosion	Metal cylinder	Isolate, spray with water, evacuate immediate area	
Solvent/Paints	Fire & Pollution	Metal tins	Familiarise with guidance on side of tin	Sub-contractor to remove all tins off site
Sewage			Smother with sand/blanket, Emergency spill kit	Regularly emptied by local disposal contractor
Silty Water			Follow PPGs	Discharge or pump over grassland or soakaway. Contractor disposal or license to discharge

Incident response plan KEY POINTS (from GPP 21: Pollution Incident Response Plans)

Procedure	Included?
Clearly define when you will activate the plan.This will depend on the nature of your site and the type of the incident.	
Ensure all relevant staff know how and when to contact other emergency responders; emergency services; environmental regulator, local authority, sewage undertaker and others identified in your plan	
Agree contact procedures, if possible, with nearby properties, downstream abstractors, agricultural land or environmentally sensitive sites that could be affected by an incident on your site.	
Put in place staff evacuation procedures – your local authority emergency planning department will help you with these	
Identify any special methods you need with substances posing particular health or environmental risk	
Train your staff in the use of spill kits, drain blockers and other pollution control equipment and the operation of pollution control devices	
Identify procedures for recovering spilled product and the safe handling and legal disposal of any waste associated with the incident Have staff available who are trained to deal with media enquiries	

Appendix L

	Example Complaints Forms
1	Have any complaints been received? If so, please detail:
2	The name and contact details of the complainant
3.	Date and time of the complain
4	Nature of complaint
5	Action taken to resolve issues
6	Date of complaint handover
7	Name of person addressing the complaint Company Signature

Appendix 3-2

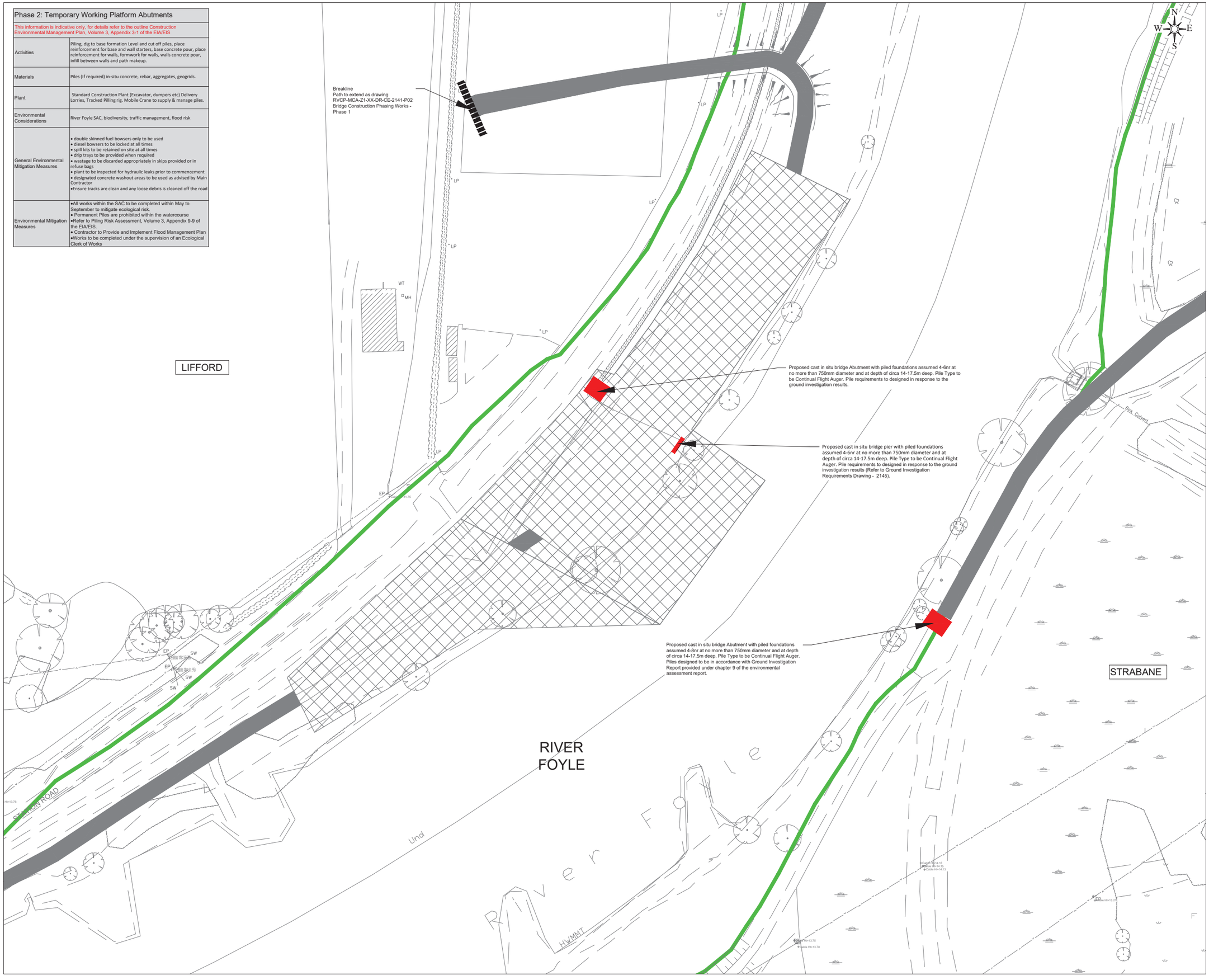
Bridge Construction Phasing Works

Phase 2: Temporary Working Platform Abutments

This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS

Activities	Piling, dig to base formation Level and cut off piles, place reinforcement for base and wall starters, base concrete pour, place reinforcement for walls, formwork for walls, walls concrete pour, infill between walls and path makeup.
Materials	Piles (If required) in-situ concrete, rebar, aggregates, geogrids.
Plant	Standard Construction Plant (Excavator, dumpers etc) Delivery Lorries, Tracked Pilling rig. Mobile Crane to supply & manage piles.
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor •Ensure tracks are clean and any loose debris is cleaned off the road
Environmental Mitigation Measures	•All works within the SAC to be completed within May to September to mitigate ecological risk. • Permanent Piles are prohibited within the watercourse •Refer to Piling Risk Assessment, Volume 3, Appendix 9-9 of the EIA/EIS. • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works

LIFFORD



NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated
2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

SAC Boundary
Proposed Access Road
Crane & Bridge Assembly Working Area
Proposed Bridge Abutment/Pier

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform Area Increased	P McM

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Derry Cittie & Strábane Destrick Coincil

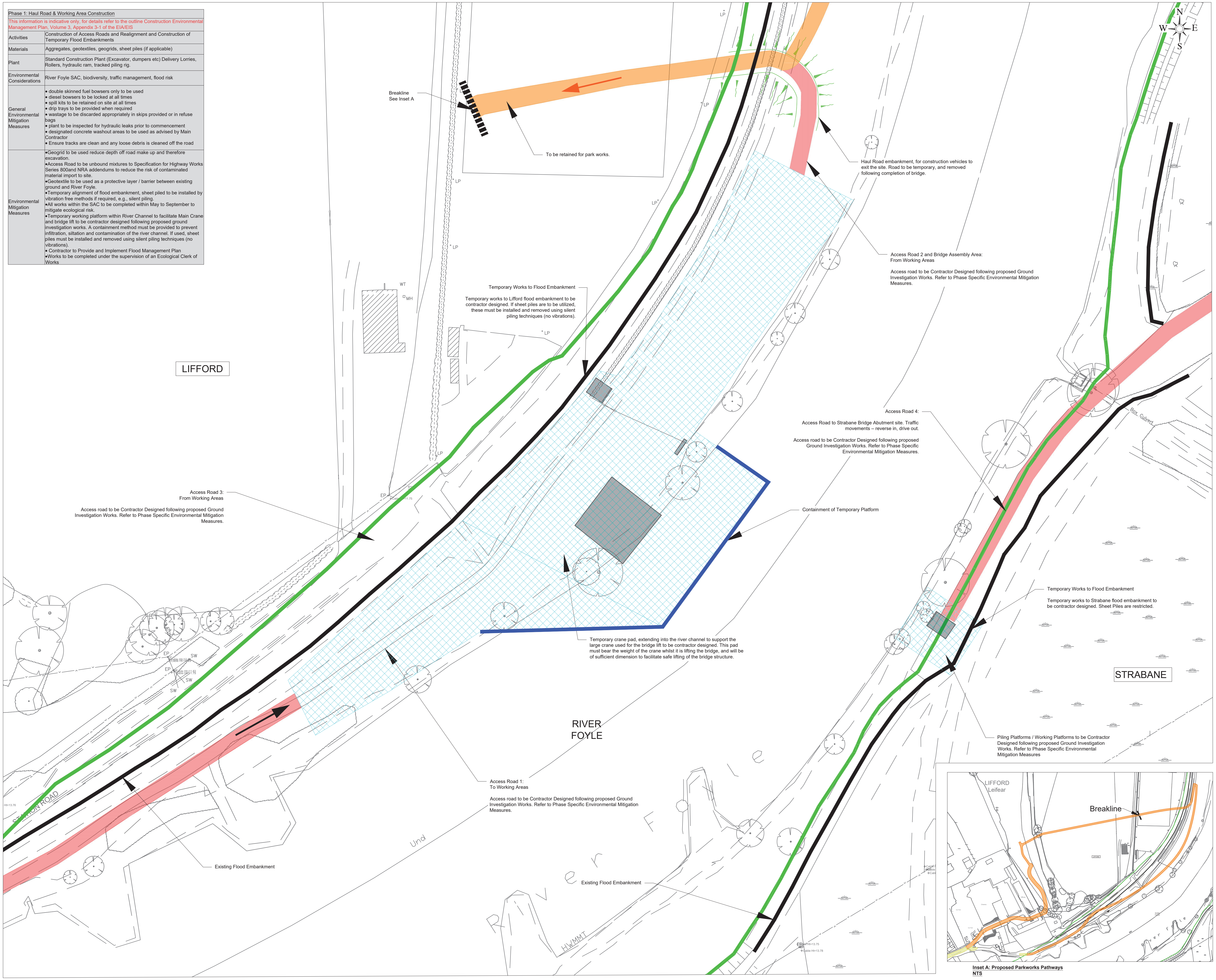
Project Status	STAGE 3 - PLANNING
Project	RIVERINE COMMUNITY PARK
Drawing	BRIDGE CONSTRUCTION PHASING WORKS - PHASE 2
Scale	1:500 @ A1

Drawn	CR	Checked	DA	Approved	CM
Date	25/08/21	Date	25/08/21	Date	25/08/21

Project - Organisation - Zone - Level - Type - Role - Number	Revision
RVCP - MCA - Z1 - XX - DR - CE - 2142	P02

Project Number	Status code & Description
E2256	S2 - For Information

Phase 1: Haul Road & Working Area Construction	
This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS	
Activities	Construction of Access Roads and Realignment and Construction of Temporary Flood Embankments
Materials	Aggregates, geotextiles, geogrids, sheet piles (if applicable)
Plant	Standard Construction Plant (Excavator, dumpers etc) Delivery Lorries, Rollers, hydraulic ram, tracked piling rig.
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor • Ensure tracks are clean and any loose debris is cleaned off the road
Environmental Mitigation Measures	•Geogrid to be used reduce depth off road make up and therefore excavation. •Access Road to be unbound mixtures to Specification for Highway Works Series 800and NRA addendums to reduce the risk of contaminated material import to site. •Geotextile to be used as a protective layer / barrier between existing ground and River Foyle. •Temporary alignment of flood embankment, sheet piled to be installed by vibration free methods if required, e.g., silent piling. •All works within the SAC to be completed within May to September to mitigate ecological risk. •Temporary working platform within River Channel to facilitate Main Crane and bridge lift to be contractor designed following proposed ground investigation works. A containment method must be provided to prevent infiltration, siltation and contamination of the river channel. If used, sheet piles must be installed and removed using silent piling techniques (no vibrations). • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works



Inset A: Proposed Parkworks Pathways
NTS

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated
2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

LEGEND

- Crane & Bridge Assembly Working Area
- Proposed Access Road to be moved prior to Main Works
- Proposed Access Road to be retained for Main Works
- Temporary Works to Flood Embankment
- Existing Flood Embankment
- Containment of Temporary Platform
- SAC Boundary

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform area increased	P McM

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Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Stràbane Destrick Cooncil

Project Status: STAGE 3 - PLANNING

Project: RIVERINE COMMUNITY PARK

Drawing: BRIDGE CONSTRUCTION PHASING WORKS - PHASE 1

Scale: 1:500 @ A1

Drawn	CR	Checked	DA	Approved	CM
Date	25/08/21	Date	25/08/21	Date	25/08/21

Project	Organisation	Zone	Level	Type	Role	Number	Revision
RVCP	MCA	Z1	XX	DR	CE	2141	P02

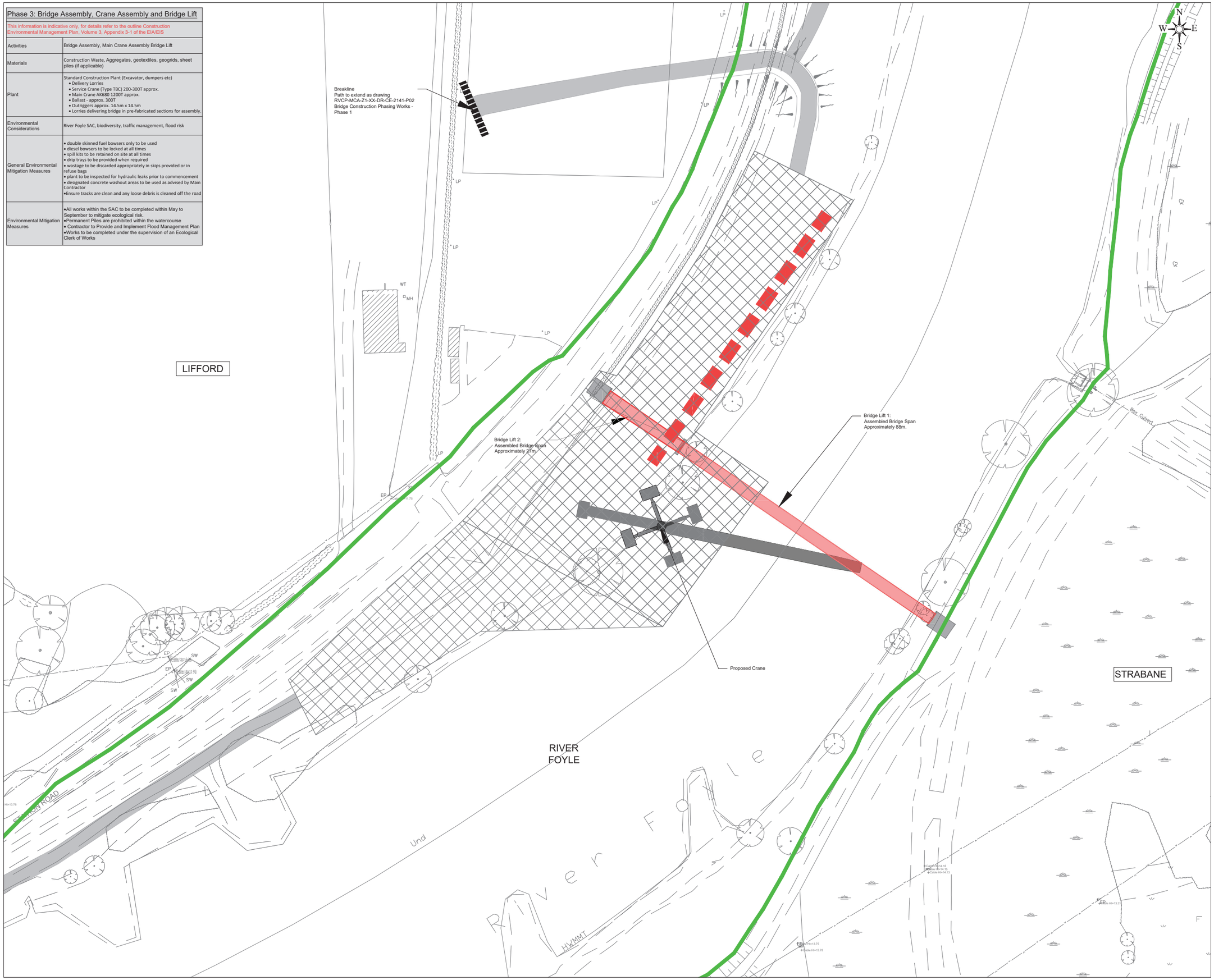
Project Number: E2256

Status code & Description: S2 - For Information

Phase 3: Bridge Assembly, Crane Assembly and Bridge Lift

This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS

Activities	Bridge Assembly, Main Crane Assembly Bridge Lift
Materials	Construction Waste, Aggregates, geotextiles, geogrids, sheet piles (if applicable)
Plant	Standard Construction Plant (Excavator, dumpers etc) • Delivery Lorries • Service Crane (Type TBC) 200-300T approx. • Main Crane AK680 1200T approx. • Ballast - approx. 300T • Outriggers approx. 14.5m x 14.5m • Lorries delivering bridge in pre-fabricated sections for assembly.
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor •Ensure tracks are clean and any loose debris is cleaned off the road
Environmental Mitigation Measures	•All works within the SAC to be completed within May to September to mitigate ecological risk. •Permanent Piles are prohibited within the watercourse • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works



NOTES

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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

LEGEND

- Crane & Bridge Assembly Working Area
- Proposed Crane
- Proposed Access Road
- Bridge Sections for Assembly on Site
- Assembled Bridge
- SAC Boundary

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform Area Amended	P McM

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Project Status	STAGE 3 - PLANNING
Project	RIVERINE COMMUNITY PARK
Drawing	BRIDGE CONSTRUCTION PHASING WORKS - PHASE 3
Scale	1:500 @ A1

Drawn	Checked	Approved
CR	DA	CM
Date 25/08/21	Date 25/08/21	Date 25/08/21

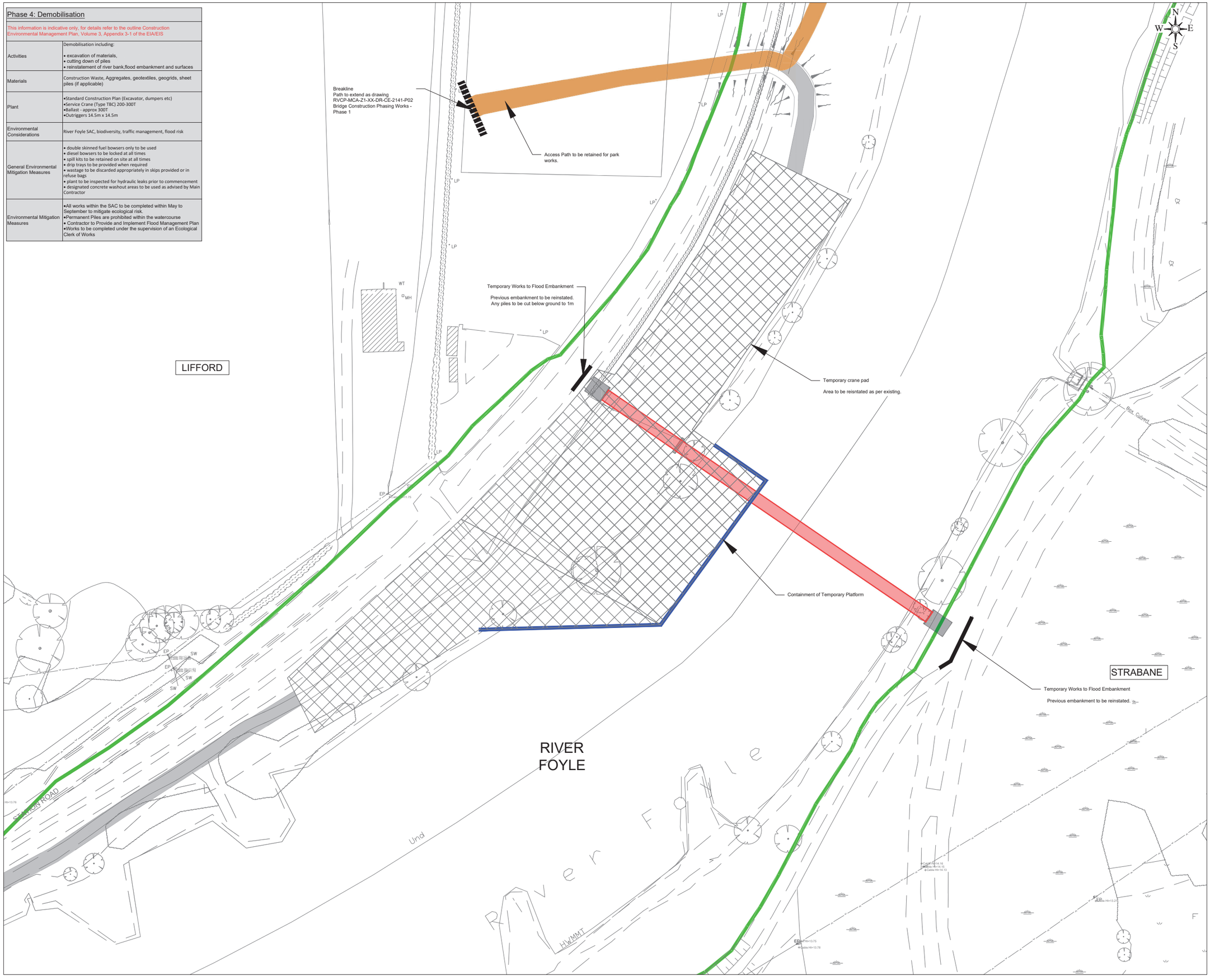
Project	Revision
RVCP - MCA - Z1 - XX - DR - CE - 2143	P02

Project Number	Status code & Description
E2256	S2 - For Information

Phase 4: Demobilisation

This information is indicative only, for details refer to the outline Construction Environmental Management Plan, Volume 3, Appendix 3-1 of the EIA/EIS

Activities	Demobilisation including: • excavation of materials, • cutting down of piles • reinstatement of river bank,flood embankment and surfaces
Materials	Construction Waste, Aggregates, geotextiles, geogrids, sheet piles (if applicable)
Plant	•Standard Construction Plan (Excavator, dumpers etc) •Service Crane (Type TBC) 200-300T •Ballast - approx 300T •Outriggers 14.5m x 14.5m
Environmental Considerations	River Foyle SAC, biodiversity, traffic management, flood risk
General Environmental Mitigation Measures	• double skinned fuel bowsers only to be used • diesel bowsers to be locked at all times • spill kits to be retained on site at all times • drip trays to be provided when required • wastage to be discarded appropriately in skips provided or in refuse bags • plant to be inspected for hydraulic leaks prior to commencement • designated concrete washout areas to be used as advised by Main Contractor
Environmental Mitigation Measures	•All works within the SAC to be completed within May to September to mitigate ecological risk. •Permanent Piles are prohibited within the watercourse • Contractor to Provide and Implement Flood Management Plan •Works to be completed under the supervision of an Ecological Clerk of Works



NOTES

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2. All Coordinates are to Irish Grid (TM65), unless otherwise noted.

LEGEND

- Access Road to be excavated and removed
- Access Road to be retained as sub-base to proposed pathway infrastructure
- Proposed Bridge
- Temporary Crane Pad to be excavated and removed and rive bank made good
- Temporary Works to Existing Flood Embankment to be removed and original alignment to be reinstated
- Temporary Containment Measures to be removed
- SAC Boundary

Rev	Issue Date	Description	App
P02	21/04/2022	ABPFI Platform area increased	P McM

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Derry Cittie & Strábane Destrick Cooncil

Project Status	STAGE 3 - PLANNING
Project	RIVERINE COMMUNITY PARK
Drawing	BRIDGE CONSTRUCTION PHASING WORKS - PHASE 4
Scale	1:500 @ A1

Drawn	Checked	Approved
CR	DA	CM
Date 25/08/21	Date 25/08/21	Date 25/08/21

Project	Revision
RVCP - MCA - Z1 - XX - DR - CE - 2144	P02

Project Number	Status code & Description
E2256	S2 - For Information

Appendix 3-3

The Paul Hogarth Company Climate and Biodiversity Action Plan

No amendments and therefore not provided within Addendum EIAR

Please refer to originally submitted document

Appendix 3-4

Indicative Works Programme

DRAFT
Work in Progress

Riverine
Indicative Works Programme

Programme No: TP00.01 :
Revision No: Rev # : DRAFT
Date of Issue: 14/04/2022

Line	Name	Start	Finish	Duration
1	**Tender Stage**	**25/08/2022**	**10/10/2022**	**6w**
2	Tender Return	25/08/2022	25/08/2022	
3	Tender Evaluation	26/08/2022	07/10/2022	6w
4	Contract Award (Assumed)	10/10/2022	10/10/2022	
5	**Design Development**	**10/10/2022**	**13/01/2023**	**12w**
6	Piling Platform	10/10/2022	04/11/2022	4w
7	Pile Design	10/10/2022	04/11/2022	4w
8	Crane Platform	10/10/2022	04/11/2022	4w
9	Structural	10/10/2022	16/12/2022	10w
10	Civils	10/10/2022	16/12/2022	10w
11	M & E	24/10/2022	13/01/2023	10w
12	Steel Bridge - Final Drawings for Approval	10/10/2022	15/12/2022	9w 4d
13	**Planning**	**10/10/2022**	**10/10/2022**	
14	Planning Assumed Approved	10/10/2022	10/10/2022	
15	**Procurement**	**16/12/2022**	**27/07/2023**	**28w 3d**
16	Crane Lead-in Time	02/05/2023	24/07/2023	12w
17	Bridge Lead-in Time	16/12/2022	27/07/2023	32w
18	**Ultilities Interface / Design**	**10/10/2022**	**23/08/2023**	**42w**
19	BT / Telecomms	10/10/2022	30/12/2022	12w
20	Gas	10/10/2022	30/12/2022	12w
21	NIE	10/10/2022	18/11/2022	6w
22	NIW	10/10/2022	30/12/2022	12w
23	ESB	10/10/2022	18/11/2022	6w
24	Fibre Optic Lead-in Time	25/01/2023	22/08/2023	30w
25	**Electrical Power On - LV Connection & Substation Procurement**	**21/11/2022**	**15/08/2023**	**35w**
26	**New Gas Connection**	**09/01/2023**	**23/08/2023**	**31w**
27	**New Mains Water Connection (Mains Water or Fire)**	**09/01/2023**	**16/08/2023**	**30w**
28	**Key Dates**	**10/10/2022**	**22/12/2023**	**59w 2d**
29	Contractor Mobilisation Period	10/10/2022	04/11/2022	4w
30	SOS Date	07/11/2022	07/11/2022	
31	Site Access Date	07/11/2022	07/11/2022	
32	Seasonal Constraint - In River Works	10/10/2022	22/12/2023	42w 3d
33	Bridge Complete	13/09/2023	13/09/2023	
34	Strabane Public Realm Works Complete	18/09/2023	18/09/2023	
35	Lifford Public Realm Works Complete	09/11/2023	09/11/2023	
36	Finishing Programme issued to Client	17/08/2023	17/08/2023	
37	Works Period	07/11/2022	09/11/2023	52w 4d
38	Planned Completion Date	09/11/2023	09/11/2023	
39	CTTRA	10/11/2023	22/12/2023	6w 1d
40	Contract Completion Date	22/12/2023	22/12/2023	
41	**Construction Programme**	**07/11/2022**	**09/11/2023**	**49w 1d**
42	**Site Set-up**	**07/11/2022**	**02/12/2022**	**4w**
43	**Enabling Works**	**28/11/2022**	**22/02/2023**	**10w 3d**
44	**Lifford**	**28/11/2022**	**01/02/2023**	**7w 3d**
45	**Strabane**	**19/12/2022**	**22/02/2023**	**7w 3d**
46	**RC Abutments and Piers**	**02/05/2023**	**04/08/2023**	**13w**
47	**Lifford**	**02/05/2023**	**31/07/2023**	**12w 2d**
48	**Strabane**	**14/06/2023**	**04/08/2023**	**7w**
49	**Steel Bridge**	**25/07/2023**	**12/09/2023**	**7w**
50	**Internal Roads**	**02/02/2023**	**13/09/2023**	**30w 2d**
51	**Lifford**	**02/02/2023**	**13/09/2023**	**30w 2d**
52	**Strabane**	**23/02/2023**	**12/05/2023**	**10w 3d**
53	**Drainage**	**14/02/2023**	**28/04/2023**	**10w 1d**
54	**Public Realm**	**14/02/2023**	**09/11/2023**	**37w**
55	**Lifford**	**14/02/2023**	**09/11/2023**	**37w**
56	**Strabane**	**15/05/2023**	**15/09/2023**	**17w 1d**