

Preliminary Construction Environmental Management Plan



Abbey Quarter – Urban Park and Street

Kilkenny County Council



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Abbey Quarter – Urban Park and Street
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Contents

1	INTRODUCTION	1
1.1	Scope and Objective	2
1.2	Report Structure	3
2	DESCRIPTION OF THE PROPOSED DEVELOPMENT	4
2.1	Urban Park	4
2.2	The Street	5
2.3	Services	5
2.3.1	ESB/Power	6
2.3.2	Lighting	6
2.3.3	Gas Supply	6
2.3.4	Broadband/Telecommunications	6
2.3.5	Water Supply	6
2.3.6	Foul Water Drainage	6
2.3.7	Surface Water Drainage	7
3	CONSTRUCTION WORKS	11
3.1	Construction Management Plan	11
3.2	Construction Access	13
3.3	Hours of Work	13
3.4	Temporary Construction Compound and Storage Facilities	13
3.5	Security	13
3.6	Hoarding	13
4	ENVIRONMENTAL MANAGEMENT FRAMEWORK	14
4.1	Environmental Policy	14
4.2	Objectives and Targets	14
4.3	Structure and Responsibilities	14
4.4	Communication	15

5	ENVIRONMENTAL RISK ASSESSMENT	16
5.1	Risk Classification	16
5.2	Risk Identification	16
6	EMERGENCY MANAGEMENT PLAN.....	27
6.1	Incident Response	28
7	MONITORING AND IMPLEMENTATION OF THE CEMP	29
7.1	Complaints, Comments and Enquiries.....	29
7.2	Site Visits and Evaluation of Compliance	29
7.3	Control of Records.....	29
8	IMPLEMENTATION, REVIEW AND TRAINING.....	30
8.1	Training Awareness and Competence.....	30
9	CONCLUSIONS.....	31
10	REFERENCES.....	32

FIGURES

Figure 1-1: Site Location	1
Figure 2-1: Individual Built Elements of the Urban Park	4
Figure 2-2: Proposed Drainage Network	8
Figure 2-3: Indicative Infiltration Detail	9
Figure 6-1: Site Incident Response	27

TABLES

Table 2-1: Surface Water Discharge Summary	10
Table 3-1: Proposed Construction Schedule	12
Table 4-1: Roles and Responsibilities	14
Table 5-1: Rating Magnitude of Impact	16
Table 5-2: Rating of Likelihood of Risk Occurring.....	16
Table 5-3: Rating of Consequence of Risk Occurring.....	16
Table 5-4: Site Specific Environmental Risk Assessment and Management	18

APPENDICES

Appendix A: Proposed Site Layout showing Buffer Distances to Watercourses

1 INTRODUCTION

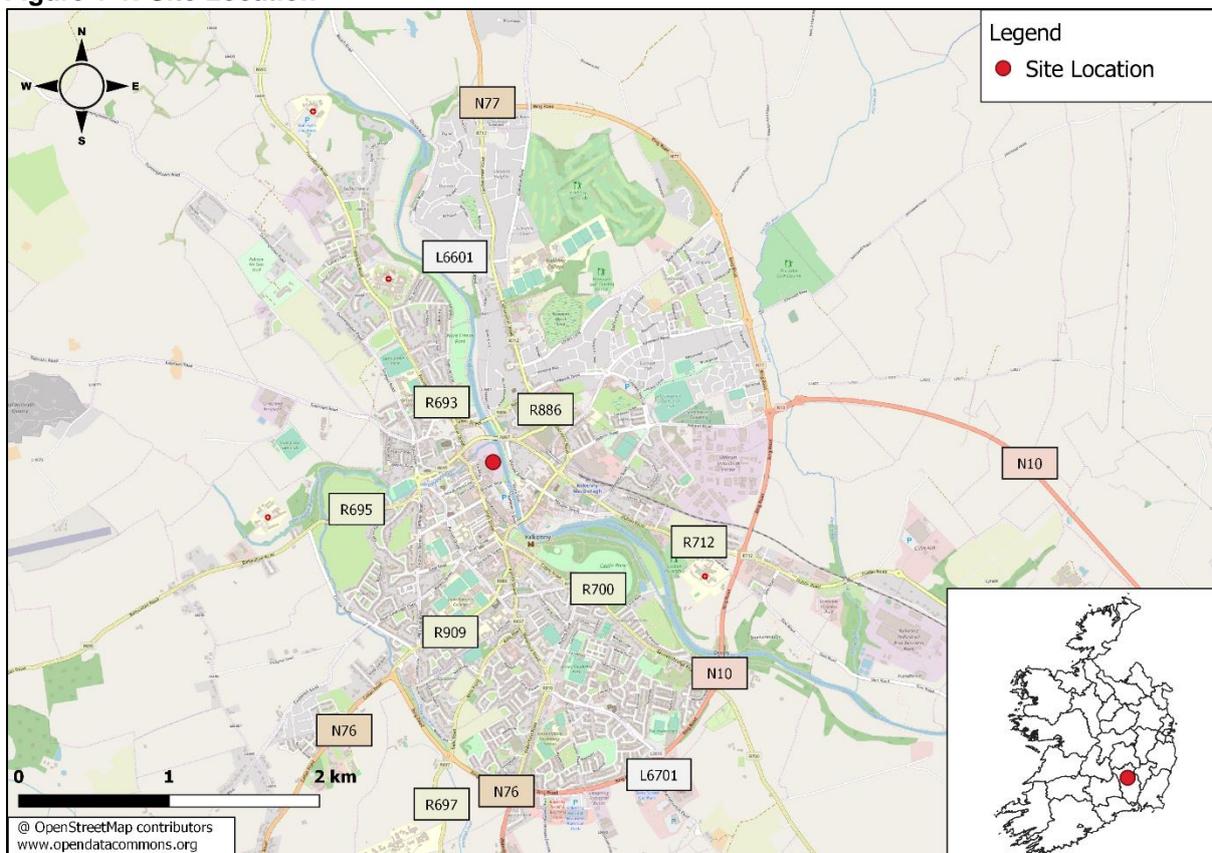
Malone O’ Regan Environmental Services (MOR) was commissioned by Kilkenny County Council (KCC) (‘the Applicant’) to prepare a preliminary Construction Environmental Management Plan (pCEMP) for a c.1.44 hectare (ha) development within the Kilkenny Abbey Quarter which will consist of an Urban Park, an Urban Street and ancillary services. :

The Park will consist of a variety of grassed areas, trees, paved surfaces, water features and meeting points. The Park will provide a new amenity area for Kilkenny City. The Park has been specifically designed to express known important historic national monuments. In addition, the Park will provide space to accommodate outdoor events.

The Urban Street will link Bateman Quay to St Canice’s Place. The street will cross over the River Breagagh, using the existing bridge previously utilised by the former Smithwick’s brewery site approximately 40m upstream of the River Nore confluence. The Urban Street will be a pedestrian and cyclist dominated space that will facilitate access to adjoining existing and future developments. It should be noted that only limited access to other vehicular through traffic will be available, namely service, delivery, maintenance and emergency vehicles serving directly adjoining buildings and the Park. This will be controlled by use of automated traffic bollards and a permitting system.

Services included in the proposed development will largely be installed beneath the Street. These services have been designed to accommodate this proposed development as well as future neighbouring developments.

Figure 1-1: Site Location



1.1 Scope and Objective

The key objective of this pCEMP is to ensure that all potential construction phase environmental impacts will be addressed in accordance with current legislative requirements and best practice guidelines. It will assist in the control of environmental risks that may arise during construction to ensure that these works do not result in an environmental incident, environmental damage or undue nuisance to the local environment.

This document contains a careful assessment of the likely risks on-site, it outlines procedures for monitoring the effectiveness of the environmental protection measures and for the dissemination of information to all relevant personnel during the construction programme. In assessing risks to watercourses on, and adjacent to the Site, full cognisance has been taken of:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors (CIRIA, 2001);
- C648 - Control of Water Pollution from Linear Construction Projects: Technical Guidance (CIRIA, 2006);
- C649 - Control of Water Pollution from Linear Construction Projects: Site Guide (CIRIA, 2006);
- C733 – Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks (CIRIA, 2014);
- C741 - Environmental Good Practice on Site (4th edition) (CIRIA, 2015);
- C753 - The SuDS manual (CIRIA, 2015);
- Requirements for the Protection of Fisheries Habitat during Construction and Development (Inland Fisheries Ireland , 2016);
- Guidelines for the Crossing of Watercourses (National Roads Authority, 2005);
- Guidance for the Treatment of Otter Prior to the Construction of National Road Schemes (National Roads Authority, 2006);
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes (National Roads Authority, 2006);
- Guidance for the Treatment of Otters Prior to the Construction of National Road Schemes (National Roads Authority, 2006);
- Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010)
- BS 5228-1+A1:2014 : Code of Practice for noise and vibration control on construction and open sites- Part 1: Noise (BSI, 2009) and Part 2 Vibration (BSI, 2009); and
- ISO 4866:2010 Mechanical vibration and shock vibration of fixed structures guidelines for the measurement of vibrations and evaluation of their effects on structures (ISO, 2010).
- The Framework and Principles for Protection of the Archaeological Heritage (Duchas, 1999).

To achieve this objective the pCEMP will:

- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management / Best Practice Guidelines;
- Set a framework for ensuring compliance with current legislation;

- Effectively minimise any potential adverse environmental effects during construction including how site-specific method statements will be developed to avoid, minimise and mitigate construction effects on the environment; and,
- Communicate key environmental obligations that apply to all contractor organisations, their sub-contractors and employees while carrying out any form of construction activity.

This pCEMP will be used by the appointed contractor to prepare an updated and comprehensive CEMP prior to the commencement of any on-site works. The updated plan will be approved by the Planning Authority in advance of any works commencing on-site. The approved plan will be implemented for the duration of the construction works to protect the receiving environment from potential impacts arising during the construction works.

1.2 Report Structure

The adopted construction stage CEMP should be considered by the appointed contractor as a 'living' document with reviews being undertaken at predetermined intervals and data added as appropriate. The measures identified in the CEMP should be:

- Viewed as mandatory and common practice on-site; and,
- Embedded within the construction company's policies and site procedures, e.g. within an existing environmental management system framework.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

All design details of the proposed development have been included within the overall planning application and are briefly summarised within this section:

2.1 Urban Park

The individual built elements of the Urban Park are presented in Figure 2-1 below and a short description of each element thereafter.

Figure 2-1: Individual Built Elements of the Urban Park



The Urban park will consist of the following elements;

1. The Abbey Plaza (c. 812m²) will be the main arrival area to the remains of the historic St Francis Abbey Choir and Belltower from the City.
2. The Brewhouse Plaza (c. 625m²) is proposed to be adjacent to the former St Francis Abbey Brewery Tasting Rooms which has the potential to be adapted for reuse in the future. It will be populated with seating, information signage, grove of trees and paving related to the historic use of the site as a brewery.
3. A c. 294m² lawn for picnicking, exercising or relaxation.

4. Elevated c.248m² lawn with a lit limestone seating edge. This area represents the transept of the St Francis Abbey.
5. The c.73m long walkway along the River Breaghagh allows for views back to St Francis Abbey and to the Bell Tower, and links to the Riverside Gardens. A south-facing seating edge will be provided all along the walk.
6. This c. 383m² area will provide another recreational lawn with planted hedges as a reference to the historic use as the St Francis Abbey cemetery.
7. The orchard of forgotten fruits (c. 647m²) will provide a shady space to enjoy the park lawns and serve as a point of interest to explore heritage fruit species.
8. The ornamental crab apple orchard (c.727m²) will provide shaded seating. The timber seats and backrests will run along the planted beds under the tree branches. Lower level, medicinal and symbolic plants under the trees will provide another point of interest and sensory experience, as they are often aromatic.
9. A larger space will be left open in front of Evans Turret to give visitors the space to view this historic structure. Evans Turret itself will be set in a background of perennial planting.
10. The c.105m long path along the river will connect to the Riverside Gardens park both on the North and the South end and provides views both to the River Nore and to St Francis Abbey.
11. Fitness equipment zone (c.36.4m²).
12. Older children playground c.111.6m²).
13. Younger children playground. (c.70.7m²)
14. A c.78m² water mirror within a 700m² plaza, will act as a reference to the historic St Francis well.

2.2 The Street

The urban street is 320m long and has an overall pavement width of 11.1m consisting of a 5.5m wide shared space and 2m to 3m wide dedicated pedestrian pavement with tree planting and street furniture to each side. The Street will be a shared space. The vehicle access carriageway will be only demarcated by a change in the Street surface finish and drainage channels. The Street will operate as a one-way system, for limited service vehicles, from Bateman Quay in the South to Wolf Tone Street in the North. Specific road markings for pedestrians, cyclists and other vehicles will only be present from the bridge over the Breaghagh to the junction with Wolf Tone Street in the North and at the junction with Bateman Quay in the South. Pedestrians and cyclists will therefore have freedom of movement across the entire Street and into the Urban Park.

Full details of the proposed development are provided within the Planning Application which has been submitted to the KCC planning section.

2.3 Services

The proposed development itself will only require electricity for lighting and a water supply for maintenance and the proposed water feature. However, to facilitate the installation of services for the development of the overall Masterplan in a coordinated manner, mains services and connection points have been included as part of the proposed development. The Street is required to incorporate all utility services required for the development of potential future building plots adjoining the Street. These services, required for the Masterplan, include foul water drainage, surface water drainage, electricity, broadband, gas and public lighting. However, these services for the wider Masterplan will not be commissioned as part of this

development. The services outlined in this section are in line with the specifications deemed necessary for the development of the Masterplan by the various service providers.

2.3.1 ESB/Power

Preliminary power requirements for the proposed development will be limited solely to external, high-efficiency lighting and to power the water feature. ESB Networks have proposed that they will provide additional capacity from McDonagh Substation as part of an upgrade to the area to facilitate the proposed development and future Masterplan developments.

2.3.2 Lighting

Along the Street element, LED light fittings will be mounted on 6m high poles. Along the River Nore walkway, softer LED light fittings mounted on 6m high poles will be utilised which will minimise light spill and glare to cater for wildlife. Along the River Breagagh walkway and on the bridge crossing the River Breagagh, 1.2m high lighting will be utilised to offer targeted lighting and minimise light spill. The St Francis' Abbey courtyard area will be lit by a pole-mounted floodlight which will be used as a feature light. The pole height will be 6m and the light fittings will be angled to avoid light spill to surrounding areas.

2.3.3 Gas Supply

Although the proposed development itself will not require a gas supply, the design includes a 4bar 125mm diameter HDPE network throughout the Site. Each Masterplan building will require a connection point that will be easily accessible by Gas Networks Ireland (GNI) for metering purposes.

2.3.4 Broadband/Telecommunications

The proposed supply will originate from two (2 No.) separate points located north and south of the Masterplan area thus ensuring the resilience of the network and continuity of supply. Fibre optic cabling will be supplied to each unit via dedicated ELV ducting as per the proposed services engineering drawing P813 submitted with this planning application.

2.3.5 Water Supply

Although the proposed development itself will only require a limited water supply for maintenance and the water feature, a mains water supply is provided through the centre of the site beneath the proposed Street. Connection to the public water supply will be required to facilitate future Masterplan developments. The preliminary layout of the proposed watermain within the site has been designed and agreed with Irish Water based on the proposed connection to an existing watermain on St Frances bridge.

The proposed new 200mm HDPE water main will connect to the public water supply in the north of the Site and will run underneath the Street before reconnecting to the public water supply at Bateman Quay. The water feature will recirculate and treat the water so will only require filling during commissioning and topping up periodically when water is lost to evapotranspiration.

2.3.6 Foul Water Drainage

No wastewater will be generated from the proposed development itself. However, the Street element of the proposed development will include a new mains foul drainage sewer to cater for wastewater discharge from potential future developments on neighbouring sites.

The new foul sewer will flow from north to south and connect to the existing foul sewer inside the slightly south of St Francis Abbey. The foul water load generated for the new foul drainage sewer has been estimated as 2l/s (dry weather flow), taking into account the Masterplan and consultation with Irish Water. The peak flow has been estimated as 12l/s.

The foul water network will consist of watertight manholes and pipes. The sewer pipes will consist of uPVC. Sealed spurs from the foul network are included on the line for future Masterplan structures.

2.3.7 Surface Water Drainage

The proposed drainage infrastructure for the Site will consist of three (3 No.) drainage networks:

- Network 1 – North of the River Breagagh
- Network 2 – South of River Breagagh
- Network 3 – Proposed Street

Figure 2-2: Proposed Drainage Network



Network 1 -  Network 2 -  Network 3 - 

Network 1 – North of the River Breagagh

Drainage Network 1 will be located to the north of the River Breagagh. This will be replaced by a new proposed storm drain which will cater for run-off from the access road, cycle track, footpath and future Masterplan developments. Surface runoff will be collected in road gullies and discharged to a proposed network of watertight manholes and drainage lines. The proposed storm drains will connect to existing storm drainage outfall to the north west of the Site and will pass through an oil / silt separator before discharging to the existing outfall to the River Breagagh. The proposed separator will be a Class 1 type separator which will reduce

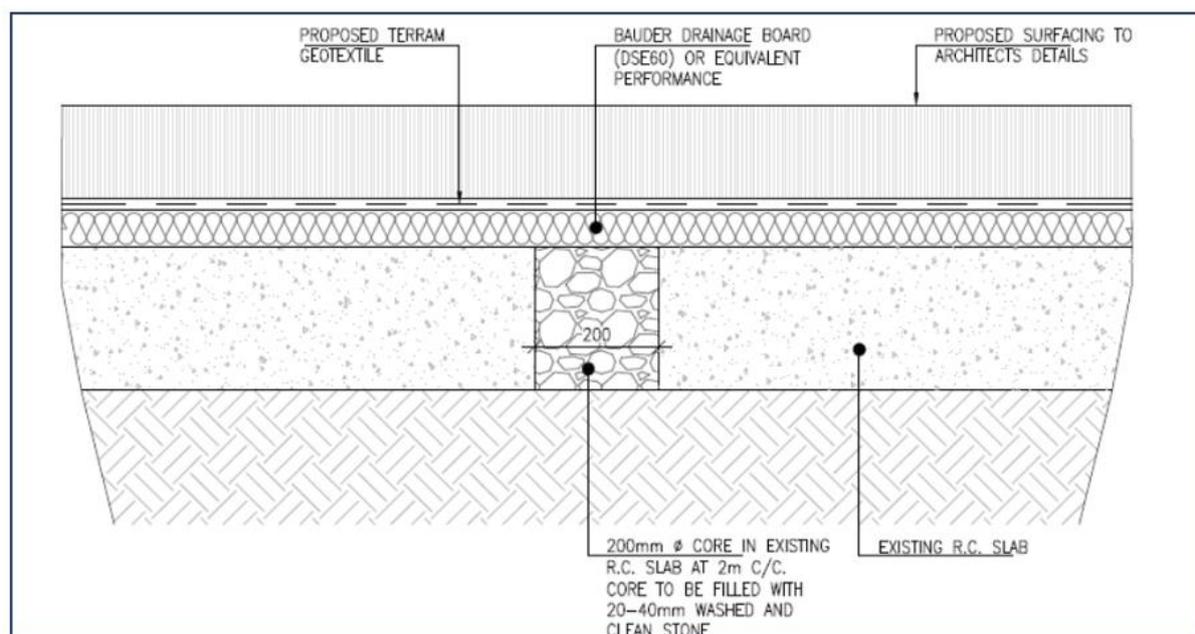
oils to a concentration of 5mg/l and can store 150L of oily contaminants. This proposed separator will have a capacity to store 1,000L of silt.

Network 2 – South of the River Breagh

Drainage Network 2 will cater for drainage from the area of soft and hard landscaping south of the River Breagh and future Masterplan structures.

The surface water from soft landscaped areas will drain by infiltration through the installation of cores in the existing concrete hardstanding, which will promote drainage to the underlying soils. An indicative infiltration detail design is illustrated in Figure 2-3.

Figure 2-3: Indicative Infiltration Detail



A drainage board will form part of the landscaping build-up over the concrete hardstanding. The purpose of the drainage board will be to retain 10-12 litres of water per m² to support the growth of grass and planted areas and minimise the requirement for watering.

A proposed storm drainage line will cater for run-off from the hard-landscaped areas. Sections of the existing storm sewer in poor condition will be replaced. To minimise impact when replacing the pipes, the new sections of pipe will be laid in the same alignment as the original lines, where possible. Any drains left in place will be decommissioned by blocking each end and any gullies with grout to prevent water ingress. This area will be drained by surface channels (ACO drains). A silt bucket will form part of the ACO drain which will reduce silt discharge to the drainage pipelines. The surface water will discharge to a network of watertight manholes and sealed pipework.

The surface water from the hard-landscaped areas in Network 2 will flow through a new oil / silt separator before discharging through the existing outfall to the River Breagh in the north western corner of the zone. It is proposed to install a Class 1 type separator which can achieve a concentration of 5mg/l of oil and can store 300L of oil. This separator will have a capacity to store 2,000L of silt.

Network 3 – Proposed Street

Network 3 serves the proposed Street element of the Site. Surface water from the Street will be collected by surface channels (ACO drains). Silt buckets will form part of the ACO drains. The silt buckets will reduce silt discharge to the storm drainage network. Surface water runoff from future Masterplan structures will also discharge to this proposed storm drainage network.

Sealed spurs from the storm drainage lines are included for these future connections. The surface water will discharge to a network of proposed watertight manholes and pipework.

Surface water from this area will flow to the centre of the Street. The surface water will flow through a new oil / silt separator before discharging through the existing outfall on the western bank the River Nore which will be retained as part of the development. The proposed separator will be a Class 1 type separator which can achieve a concentration of 5mg/l of oil and can store 600L of oil. This separator will have a capacity to store 4,000L of silt.

Design Flows

The maximum design flows for the stormwater networks are presented in Table 3-1.

Table 2-1: Surface Water Discharge Summary

Network	Discharge Location	Design Flow (l/s)
Storm Network 1	Northern bank of River Breagagh	88.9
Storm Network 2	Southern bank of River Breagagh	137.1
Storm Network 3	Western bank of River Nore	180.8

Attenuation

As described above, the majority of the existing Site is hardstanding. The proposed development will incorporate a number of landscaped / grassed areas. The inclusion of planted and grass areas, a drainage board in drainage network 2 and infiltration holes in soft landscaped areas will result in a reduction of surface water discharge compared with the existing, fully hardstanding surface. The design will therefore provide a natural attenuation. Therefore, while it is not proposed to attenuate run-off from the Site mechanically, there will be an overall reduction of surface water run-off from the proposed development compared to the current situation.

3 CONSTRUCTION WORKS

3.1 Construction Management Plan

During the construction phase, the methods of working will comply with all relevant legislation and best practice in reducing the environmental impacts of the works. Although construction phase impacts are generally of a short-term duration and are localised in nature, the impacts will be reduced as far as practicable through compliance with current construction industry guidelines. The construction works will take approximately ca. 14 months to complete.

The construction duration will take account of the planting season for the soft landscaping design to the Park. The first six months of the construction program will involve the completion of all site clearance works, excavation works, installation of drainage and services for the entire project. The remaining six to eight months of the programme will include for the soft and hard landscaping finishes to be installed. These works include the installation of feature limestone garden seats, cycle stands, amenity seating, light fittings, feature trees, water features and finally the surface finishes and soft landscaping. An ecological clerk of works (ECoW) will inspect the Site in advance of works commencing and will undertake Site inspections as required during the works, to ensure that they are completed in line with the mitigation measures stipulated within the CEMP. The approximate timeline is shown in Tables 3-1.

Table 3-1: Proposed Construction Schedule

	before construction	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14
Pre-construction ecological surveys	✓														
Site set-up		✓													
Tree removal / protection		✓													
Slab removal			✓	✓											
Drainage and services installation					✓	✓	✓	✓	✓						
Slab reinstatement									✓	✓					
Street construction									✓	✓	✓	✓			
Hard landscaping									✓	✓	✓	✓			
Soft landscaping & street furniture											✓	✓	✓	✓	
Hard landscaping of the Street														✓	✓
Finishing														✓	✓

3.2 Construction Access

It is proposed that the access\egress to the site will be via the proposed junction with St. Canice's Place close to St. Francis' Bridge at the northern end of the site and Johns Street (Bateman Quay) at the southern end of the site.

3.3 Hours of Work

Construction works will be agreed with the Planning Authority prior to the commencement of these works and will be specified in the CEMP. Hours will generally be limited to 7am to 7pm Monday to Friday and 9am to 4pm on Saturday. Construction works outside these hours will be limited to works necessary for health and safety reasons or to protect the environment.

3.4 Temporary Construction Compound and Storage Facilities

The construction phase will necessitate the provision of a temporary contractor's compound along with welfare facilities. A temporary connection to water supply and foul sewer will be provided to accommodate these welfare facilities. A 20m buffer separating the compound from the nearest watercourse will be implemented. The temporary construction compound will have sufficient space for parking of construction and workers private vehicles, turning of Heavy Goods Vehicles (HGVs) and the loading / unloading of all vehicles during the construction period. All deliveries will be unloaded and loaded within the temporary construction compound.

Temporary car parking for contractors' vehicles will be provided within the temporary contractor's compound. Temporary signage will also be erected at the entrances to the Site.

Materials will be stored within storage containers provided by the Principal Contractor in an appropriately bunded area on impermeable bases and / or within double skinned tanks. All materials to be stored in compounds shall be stored in a manner that is safe and in line with industry best practice. Any potentially harmful substances will be stored in accordance with the manufacturers' guidelines.

3.5 Security

The Site will be secured by fencing to prevent unauthorised access, with security measures implemented to prevent risks and control access to the Site. All vehicles / HGVs entering the Site will pass the on-site security hut, where details of the vehicle will be recorded.

3.6 Hoarding

Solid screens (hoarding) should be erected around St Francis Abbey and all Site Boundaries (Maturation building if still present). The hoarding should be at least as high as any potential stockpiles on site.

4 ENVIRONMENTAL MANAGEMENT FRAMEWORK

4.1 Environmental Policy

The project will be carried out in accordance with the policies / objectives listed below:

- Kilkenny County Council’s Environmental Policy and Procedures; and,
- The appointed Contractor’s Environmental Policy and procedures.

4.2 Objectives and Targets

Environmental objectives for the construction phase will be developed and should refer to legal compliance and environmental good practice, these may include:

- Zero pollution incidents;
- Minimise disruption to residents (and their complaints);
- Reduce / avoid impacts on biodiversity; and,
- Minimise waste sent to landfill.

Monitoring of the construction processes against the project environmental objectives will be the responsibility of the Appointed Project Manager.

4.3 Structure and Responsibilities

A management structure that includes an organisational chart encompassing all staff responsible for environmental work will be included within the CEMP. This will set out the respective roles and responsibilities with regard to the environment and identify the nominated Construction Environmental Manager. Illustrative key roles and responsibilities are set out in Table 4-1 below.

Table 4-1: Roles and Responsibilities

Role	Responsibility
Project Manager (Appointed Contractor)	Responsible for management of the construction phase of the project. Has overall responsibility for the environmental performance of the project. Responsible for implementing the Site Waste Management Plan during the construction phase to ensure that waste is disposed of legally, economically and safely. Ensure compliance with environmental legislation, consents, objectives, targets and other environmental commitments, including those arising from the Environmental Report.
Site Staff (Assigned by Appointed Contractor)	To receive general environmental awareness training and undertake work in accordance with Method Statement Briefings and toolbox talks. Trained personnel to manage particular tasks such as refuelling plant and equipment, managing the stores, water quality monitoring and supervising the segregation and collection of waste.
Environmental Consultant (Assigned by Appointed Contractor) (MOR)	To provide information relevant to construction that may assist the Contractor to manage environmental aspects of the scheme and to ensure that the Contractor complies with all the relevant legal requirements, commitments and targets agreed for the scheme.

4.4 Communication

The CEMP will be distributed to the project team, including sub-contractors, to ensure that the environmental requirements are communicated effectively. Key activities and environmentally sensitive operations will also be briefed to staff and Contractors. Project, client and company environmental policies, where available, should be displayed on-site.

The Contractor will define procedures for internal and external communication. The client may require that any communication with external parties such as environmental regulators or the public will be undertaken through a nominated client representative.

During the construction phase, internal communication will include regular progress meetings, which should cover:

- Training undertaken;
- Progress reports;
- Inspections, audits and non-conformance;
- Complaints received;
- Visits by external bodies and the outcome or feedback from such visits;
- Objective / target achievement, including reporting on environmental performance; and,
- External communication, including letter drops or meetings, and liaison with statutory authorities will be overseen by the Project Manager.

5 ENVIRONMENTAL RISK ASSESSMENT

5.1 Risk Classification

The classification of the environmental risks, arising from the construction phase will follow the definitions of significance as outlined by the Environmental Protection Agency (EPA) for Environmental Impact Statements (EPA, 2015) as shown below in Table 5-1.

Table 5-1: Rating Magnitude of Impact

Magnitude of Impact	Importance / Sensitivity of Resource			
	High	Moderate	Low	Negligible
Large	Very Substantial	Substantial	Moderate	Slight
Medium	Substantial	Substantial	Moderate	Slight
Small	Moderate	Moderate	Slight	Slight
Negligible	Slight	Slight	Slight	Negligible

In addition to the assessment of risk arising from known sources, an assessment of risk for an unplanned event/incident on site were also assessed. These were rated as per the EPA 'Guidance on assessing and costing environmental liabilities,' (EPA, 2014). The methodology for the rating of likelihood and consequence are shown in Tables 5-2 and 5-3.

Table 5-2: Rating of Likelihood of Risk Occurring

Rating	Likelihood	
	Category	Description
1	Trivial	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring.
3	Medium	Medium chance of hazard occurring.
4	High	High chance of hazard occurring
5	Very High	Very high chance of hazard occurring.

Table 5-3: Rating of Consequence of Risk Occurring

Rating	Consequence	
	Category	Description
1	Trivial	No impact or negligible change to the environment.
2	Minor	Minor impact / localised or nuisance.
3	Moderate	Moderate impact to environment.
4	Major	Severe impact to the environment
5	Massive	Massive impact to a large area, irreversible in medium term.

5.2 Risk Identification

In developing this pCEMP, the following Site specific aspects are considered relevant to the construction phase:

- The location of the Site in the context of urban setting;
- An increase to noise emissions during the construction stage;
- Damage to historic structures through vibration during construction procedures;

- Impact on human health from contaminated materials that may be encountered during groundworks;
- Impact on receptors from dust emissions during construction procedures (especially during demolition activities)
- Mismanagement of invasive species (namely Japanese Knotweed - *Fallopia japonica* & Himalayan Balsam – *Impatiens glandulifera*);
- The biodiversity value of the Site and its surrounding habitats (River Barrow and River Nore SAC 002162 & River Nore SPA 004233); and
- Impact on the water quality of the River Breagagh & Nore.

Mitigation measures to prevent and manage likely environmental risks are outlined within Table 5-4. A full schedule of mitigations measures which must be complied with are included in the EIAR. The methodologies to control these risks and pertinent site relevant factors to the construction area limiting these risks are also outlined in Table 5-4. Likelihood of each of the risks occurring is related to the scope of the risk and the site-specific conditions.

In assessing risks on-site, full cognisance has been taken of best practice guidance including:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors (CIRIA, 2001);
- C648 - Control of Water Pollution from Linear Construction Projects: Technical Guidance (CIRIA, 2006);
- C649 - Control of Water Pollution from Linear Construction Projects: Site Guide (CIRIA, 2006);
- C733 – Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks (CIRIA, 2014);
- C741 - Environmental Good Practice on Site (4th edition) (CIRIA, 2015);
- C753 - The SuDS manual (CIRIA, 2015);
- Requirements for the Protection of Fisheries Habitat during Construction and Development (Inland Fisheries Ireland , 2016);
- Guidelines *for the Crossing of Watercourses* (National Roads Authority, 2005);
- Guidance for the Treatment of Otter Prior to the Construction of National Road Schemes (National Roads Authority, 2006);
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes (National Roads Authority, 2006);
- Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010)
- BS 5228-1+A1:2014 : Code of Practice for noise and vibration control on construction and open sites- Part 1: Noise (BSI, 2009) and Part 2 Vibration (BSI, 2009); and
- ISO 4866:2010 Mechanical vibration and shock vibration of fixed structures guidelines for the measurement of vibrations and evaluation of their effects on structures (ISO, 2010).
- The Framework and Principles for Protection of the Archaeological Heritage (Duchas, 1999).

Table 5-4: Site Specific Environmental Risk Assessment and Management

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
1. Site Operations and Design	a. Potential nuisance towards public (out of hours activities).	Slight	Low	<ul style="list-style-type: none"> Normal construction hours will be restricted to 07:00 to 19:00 Monday to Friday and 09:00 to 16:00 on Saturdays. Surface water shall not be permitted to flow onto the public road from the Site. Existing inlets or drains taking surface water from the public road into the Site shall be preserved and maintained.
	b. Traffic	Moderate	Low	<ul style="list-style-type: none"> Best practice measures and the Construction Traffic Management Plan will be implemented. Access to the site for HGVs will be via St. Canice's Place only. Hydrocarbon spill kits shall be in place on all site vehicles / plant. Adequate signage shall be provided on the public network identifying the Site, access, speed limits etc.
2.A Water Quality – Suspension solids	a. Suspended sediment due to run-off from construction areas entering the River Breaghagh & Nore causing potential detriment to water quality.	Moderate	Medium	<ul style="list-style-type: none"> Standard measures to control run-off will be incorporated to the Method Statements, to include Construction Industry Research and Information Association (CIRIA) 2001 C532 – Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors and CIRIA 2015 C741 Environmental Good Practice on Site. Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows. During the construction period appropriate containment measures, sandbag or similar, shall be installed on site where material is required to be stored temporarily, thus ensuring adequate protection in silt-laden runoff draining off site. In addition, existing silt traps will be maintained throughout the construction period, where possible. Discharges to the River Breaghagh / River Nore will be blocked while the new oil / silt interceptors are being installed so that no discharge from the Site occurs during this time. The Contractor shall ensure that sediment / silt-traps, and check dams are regularly maintained during the construction phase. The Contractor will carry out visual examinations of watercourses receiving flows from the proposed works during the construction phase to ensure that sediment is not above baseline conditions. Existing drains which are not being used as part of the proposed development will be grouted at both ends and associated gullies will be blocked Weather conditions will be considered when planning construction activities to minimise risk of run off from site.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<ul style="list-style-type: none"> • Soil erosion on the riverbanks at the confluence of the River Nore & Breagagh will be avoided – works only completed when seasonal waters are at their lowest, scrub clearing and replanting will be completed by hand & hessian or a similar material will be placed on the riverbanks while establishment is underway. • Provision of 20m exclusion zones and barriers between any stockpiled materials and any surface water features to prevent sediment washing into the receiving water environment. • If dewatering is required as part of the proposed works e.g. in trenches for services in wet areas, water must be treated prior to discharge. The Contractor shall employ best practice settling systems to ensure maximum removal of suspended solids prior to discharge of any surface water or groundwater from excavations to receiving waterbodies. This may include treatment via settlement tanks. There will be no direct pumping of water from the works to watercourses at any time. • Within the construction area, the ground stripped of existing cover / vegetation will be kept to the absolute minimum required for the works. • Run-off will be diverted away from stripped areas. • Entry by plant equipment, machinery, vehicles and construction personnel into watercourses, wet drainage ditches or the river riparian zones shall not be permitted. • All routes used for construction traffic shall be protected against migration of soil or wastewater into watercourses. • An ecological clerk of works shall be engaged to periodically inspect all elements of the works for their entire duration. • Emergency response procedures will be put in place. • Existing drainage and fuel / oil interceptors will be maintained until they are ready to be replaced. • Any oils fuels and potential pollution substances shall be stored on hardstanding.
2.B Water Quality – Oil & other construction related chemicals	a. Oil Spill/Oil leaking from bulk container to ground / surface water. Oil pollution is known to cause significant damage to the aquatic environment.	Moderate	Medium	<ul style="list-style-type: none"> • All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction. • Appropriate containment facilities will be provided to ensure that any spills from vehicles are contained and removed off-site. Adequate stocks of absorbent materials, such as sand or commercially available spill kits shall be available.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<ul style="list-style-type: none"> • The Contractor shall ensure that all personnel working on-site are trained in pollution incident control response. A regular review of weather forecasts of heavy rainfall is required. • No storage of hydrocarbons or any polluting chemicals will occur within 50m of watercourses or surface water features. • Any diesel or fuel oils stored on site will be banded to 110% of the capacity of the storage tank. Re-fuelling of plant will not occur within 50m of any watercourse or surface water feature and only in banded refuelling areas. Design and installation of fuel tanks to be in accordance with best practice guidelines BPGCS005, oil storage guidelines. Drip trays and spill kits will be kept available on site. • Cabins, containers, workshops, plant, materials storage and storage tanks shall not be located within 20m of either River. • Prior to any works commencing, all construction equipment will be checked to ensure that they are mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease. • Existing drainage and fuel / oil interceptors will be maintained until they are ready to be replaced.
	<p>b. Oil spill during refuelling operations.</p>	<p>Moderate (low volume)</p>	<p>Low</p>	<ul style="list-style-type: none"> • Refuelling of plant and machinery will be completed in a controlled manner using drip trays (banded container trays). Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile containers. Bunds for the storage of hydrocarbons and chemicals will have a holding capacity of 110% of the volume to be stored. • Only emergency breakdown maintenance will be carried out on-site. Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures. • Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage. • Drip trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills. • Only designated trained operators will be authorised to refuel plant on-site. • Procedures and contingency plans will be set up to deal with emergency accidents or spills. • An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. • Existing drainage and fuel / oil interceptors will be maintained until they are ready to be replaced.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
2.C Water Quality - Cement	a. Cement and Concrete entering waters resulting in water pollution and contamination to the environment	Moderate	Low	<ul style="list-style-type: none"> All concrete pours will be carefully planned to avoid any impacts; Water supply points, if required, will be agreed with the appointed Contractor in advance of the works. Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed. Chemicals used will be biodegradable where possible. Any spillages will be cleaned up immediately and disposed of correctly. Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening. Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete. Concrete washout of trucks and larger plant should not occur on site; Concrete washing from smaller equipment will be collected and disposed of off-site, not to the on-site drainage system; Surplus concrete will be returned to batch plant or off-site concrete wash facility after completion of a pour.
3. Earthworks	a. Encountering some contaminated materials during excavation works	Moderate (this may rise depending on conditions encountered during the earthworks and will require further assessment)	Medium	<ul style="list-style-type: none"> Given the past industrial use at the Site, there is a potential that contaminated materials could be encountered during the earthworks phase of the project. If such materials are encountered then a risk assessment will be completed by an independent competent person to determine the most appropriate control measures. All excavated contaminated soils will be removed off site in a timely manner, in accordance with the relevant waste legislation.
4. Waste Management	a. Incorrect management of general Municipal Wastes / welfare facilities resulting in litter on-site and / or attraction of rodents	Slight	Medium	<ul style="list-style-type: none"> Existing concrete slab which will be removed in places will be reused as an aggregate for the construction of the proposed development, as much as is reasonably practical, in place of virgin materials. Should hazardous waste be encountered during construction (such as contaminated soils), it will be segregated, contained, classified, transported and disposed of by appropriately permitted waste contractors in accordance with all relevant national and international waste legislation.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<ul style="list-style-type: none"> Measures will be implemented to minimise waste and ensure correct handling storage and disposal of waste. During the construction phase, covered skips should be available across the Site to allow for appropriate segregation of wastes in accordance with existing legislation. No burning of waste material shall take place on site.
5. Nuisance – Dust / Dirt	a. Generation of dust leading to dust soiling at receptors	Moderate	Medium	<ul style="list-style-type: none"> A dust management plan must be developed and incorporated into the CEMP. This should include but not be limited to the following measures; Undertake on-site and off-site visual inspections of receptors for evidence of dust, with results logged and maintained onsite. This will include regular dust soiling checks of surfaces with particular attention street furniture, window sills and cars within 100m of the Site. If necessary, cleaning should be provided to ensure dust soiling is removed; Erect solid screens (hoarding) around St Francis Abbey and Site Boundaries. The hoarding should be at least as high as any potential stockpiles on site; Ensure effective water suppression is used during all demolition activities (concrete cutting, crushing/screening, loading/transporting waste concrete etc). Haul routes should be along hard surfaced areas and be kept damped down during dry, windy weather. Implement passive monitoring using the Bergerhoff method at selected boundaries. Implement a wheel washing system until earthworks are completed. Wheel wash system should have an adequate amount of hard surface between it and the site exit. (For further details refer to Section 9.5 of the EIAR).
6. Nuisance - Noise	a. Generation of noise resulting in loss of amenity to the local area and cause disruption to the local species;	Slight	Medium	<ul style="list-style-type: none"> While increased levels of background noise are unavoidable during any construction works, all construction activities will be confined within the Site Boundary. Activities and deliveries to the Site to occur only during permitted hours. All plant where possible shall be low noise rated. Where necessary the use of enclosures and noise screens shall be used to control noise from plant. All major compressors should be 'sound reduced' models fitted with properly lined and sealed acoustic covers which should be kept closed whenever the machines are in use.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<ul style="list-style-type: none"> Any ancillary pneumatic percussive tools should be fitted with mufflers or silencers of the type recommended by the manufacturers. Positioning of the Site Compound as far from the closest NSR as possible (>50m if possible). On-site policy for all plant and equipment, including Site delivery vehicles, to power off rather than to be left with idling engines. All plant and vehicles on the Site will be in a fit condition for use, to prevent the addition of noise from maintenance issues. Working Method Statements will be developed for the Site Construction Personnel to ensure optimal working procedures are employed, thereby minimising time spent in proximity to NSRs. To minimise the likelihood of complaints Kilkenny County Council & affected residents should be informed of construction programme in advance. A Site Representative will be appointed to receive and respond to noise complaints and enquiries during construction by local residents, the Local Authority and any other regulatory body. Relevant details will be provided to the Local Authority prior to construction, and will be made available to third parties, including local residences. (Refer to section 10.5 of the EIAR for further details).
7. Vibration	a. Excessive vibration could cause structural damage to historical features (i.e. St Francis Abbey, Kilkenny City Walls, Evans Turret etc.) on site.	Substantial	Medium	<ul style="list-style-type: none"> Assessment of likely vibration transmission rates from the proposed construction procedures should be completed prior to construction works beginning. The detailed requirements for monitoring and actions to be implemented in-line with onset of vibration trigger values, must be included in the CEMP completed for the construction phase activities.
8. Green House Gases (GHG)	a. Carbon emission to the environment.	Slight	Medium	<ul style="list-style-type: none"> Where site materials, particularly crushed concrete, can be reused/recycled within the development, this will take precedence over importation of materials. Crushing and screening of concrete onsite will be utilised where possible.
9. Encountering Archaeological Artefacts	a. Destructive encounters with culturally significant artefacts or structures.	Moderate	High	<ul style="list-style-type: none"> Archaeological monitoring of all ground works in proximity to the 10 archaeological sites should be conducted (See section 12.5 of the EIAR for further details). If unexpected archaeology is discovered during ground works, then ground works in that area will stop and the National Monument Service (NMS) will be informed. A methodology to mitigate the

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<p>impact of the works will be submitted to the NMS for approval prior re-commencing work in that area.</p> <ul style="list-style-type: none"> Archaeological remains encountered will be avoided and preserved in situ where possible; if this is not possible, then the remains will be preserved by record in accordance with the relevant guidelines. Construction contractors will not move, park or turn heavy machinery or loads in the exposed areas (where concrete slab has been removed), to avoid compacting or damaging underlying subsurface remains. The removed concrete surface will be replaced with another surface to preserve the archaeology in-situ.
10. Biodiversity Protection	a. Impacts on Bats	Low	Low	<ul style="list-style-type: none"> The establishment of additional hedgerows and the wildflower area as a part of the works will provide additional foraging and commuting opportunities for species of bat that may occur within the area. Artificial bat boxes will be erected within the retained trees of the proposed Site.
	b. Impacts on Otters	Medium	Low	<ul style="list-style-type: none"> A pre-construction survey will check for any otter holts within or close to the Site by the appointed Ecological Clerk of Works (ECoW). Construction works will be limited to daylight hours in order to allow otters and other wildlife to forage along the watercourses at dawn, dusk and during the night. If unidentified burrows are identified within the works area during construction, the project ECoW will be contacted for advice. Where excavations will be required onsite, appropriate measures to protect mammals from ingress will be installed;
	c. Hedge / Treelines	Medium	Low	<ul style="list-style-type: none"> Sturdy tree protection fencing or suitable site hoarding will be erected before demolition or construction work commences along the lines shown on the Tree Protection Plan (see Appendix 6.2 of the EIAR). The works to lift the existing concrete slab within the Root Protection Areas (RPAs) of the retained trees will be carried out with machinery or operators working with care from hard surfacing outside the RPAs where practicable. If unavoidable, suitable ground protection will be put in place to prevent any significant soil compaction or root damage near the trees. Where there is an existing sub-base, this should be left intact and re-used underneath the new concrete slab wherever possible. Where there is no existing sub-base and a compact surface is required beneath the new concrete slab within the RPAs of retained trees, the slab should be poured upon a layer of engineering product designed to minimise soil compaction.

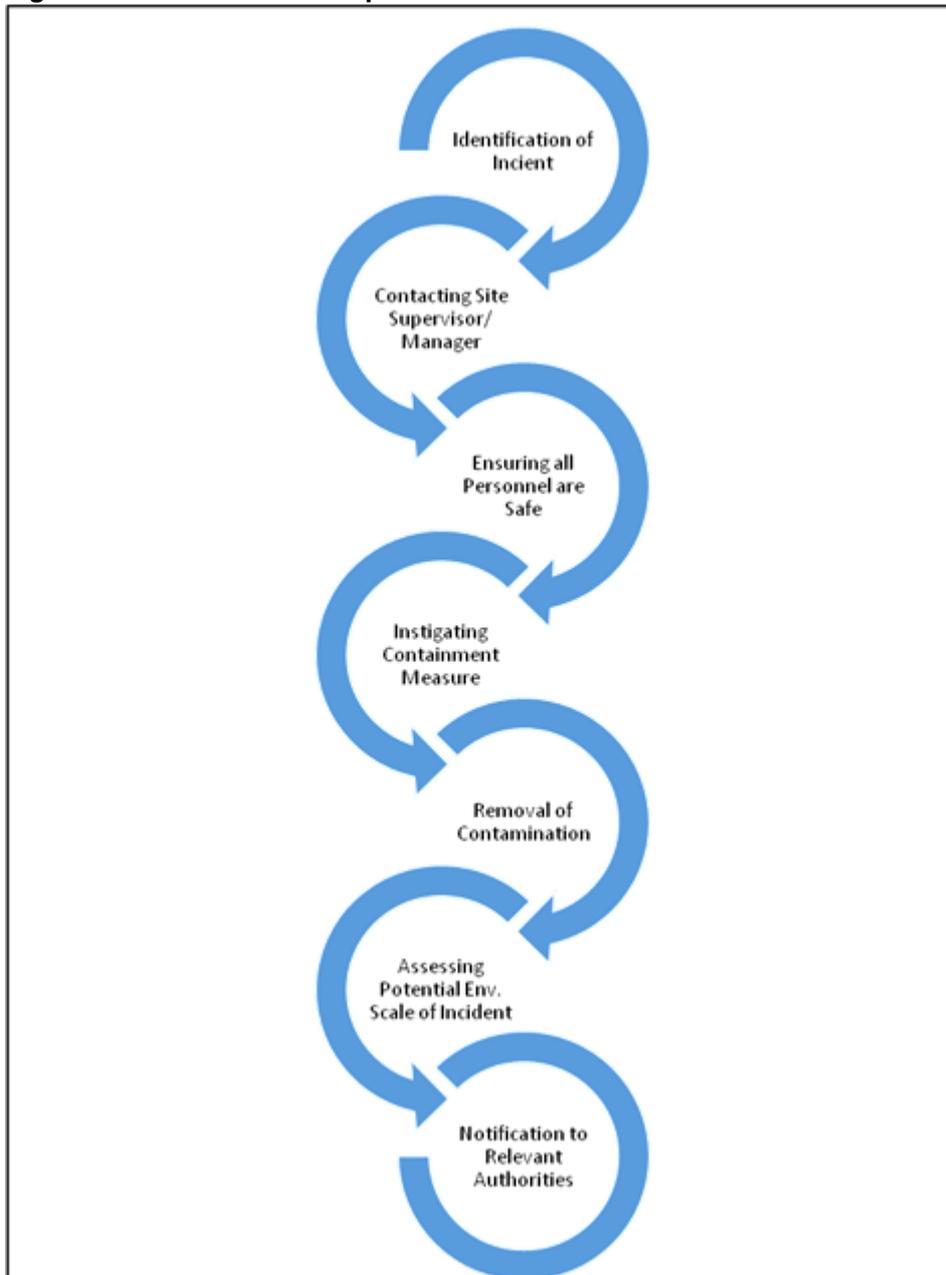
Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<ul style="list-style-type: none"> The area of new concrete slabs adjacent to retained trees should be lined with an approved geotextile prior to pouring to limit the caustic effects of wet concrete affecting the adjacent tree roots. All new underground services such as water, foul water and electricity will be routed away from the RPAs of trees to be retained; where this is not practical the services will be installed under any significant tree roots into trenches excavated by compressed air lance or other approved tree root friendly system. All exposed roots and / or soil profiles containing roots of trees to be retained will be kept damp in dry conditions by regular watering and be covered with a double layer of hessian fabric to prevent desiccation. All site offices, materials storage, staff parking etc. will located outside of the RPAs of the trees. The tree protection measures and specialist work methods will be overseen and directed on-site by a dedicated site arborist. The arborist should also make regular visits to the site during the construction process to ensure compliance and be available to provide advice and guidance where necessary. No materials or equipment will be stored within the buffer zone. In order for hedge protection measures to work effectively, all personnel associated with the operation of heavy plant machinery must be familiar with the above principles for the protection of hedgerows / treelines.
	d. Impacts on Birds	Low	Low	<ul style="list-style-type: none"> Vegetation clearance will not be conducted between the 1st of March and the 31st of August (bird breeding season).
11. Invasive Species	a. Spread of Invasive Alien Species	Slight	Low	<ul style="list-style-type: none"> All vehicles, machinery and any other equipment used for the works will be washed prior to its use at the Site to prevent the import of plant material or seeds; Before machinery or equipment is unloaded at the Site, equipment will be visually inspected to ensure that all adherent material and debris has been removed; Any vehicles and machinery that are not clean will not be permitted entry to the Site; All materials to be imported to the Site including additional planting will be sourced from a reputable supplier and records of all material and supplies will be maintained; and,

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				<ul style="list-style-type: none"> Measures outlined in Section 3.1 of C744 (Invasive non-native species) will be taken into account.
12. Unexpected Contamination		Moderate	Medium	<p>Visual and olfactory indicators of contamination may include the following;</p> <ul style="list-style-type: none"> Asbestos Containing Materials (ACMs) – board, pipe, free fibres and fragments; Refuse material (other than concrete and brick); Odour (petroleum, oil, creosote, solvent, sulphur & gas); and Discoloured soil (black/green staining is most common); <p>If any unexpected materials are identified during the excavation process which differ from those outlined in Chapter 7 of the EIAR, works should cease in the area. The area should be fenced off with barrier tape (2.0m buffer zone) and a competent person contacted. The competent person will advise on how to safely proceed which may require a visual inspection/sampling/analysis.</p>

6 EMERGENCY MANAGEMENT PLAN

Although the Site will be managed, there remains a low risk from the unexpected occurrences, such as accidental spillages on-site, that may result in environmental pollution. Incidents on-site will follow a similar emergency response template. This template is outlined in the schematic presented in Figure 6-1 below:

Figure 6-1: Site Incident Response



6.1 Incident Response

Where an environmental incident is identified then it will be reported to the Site Manager and thereafter the Employers Representative. Each incident will have the following information gathered and reported:

- Location of the incident;
- Time and date;
- Scale of the incident;
- Nature of the incident, including any specific environmental dangers;
- Remediation actions taken;
- Name of personnel noting the incident, and who they work for; and,
- Any other relevant details.

Works in the vicinity of the incident must be stopped until the incident is resolved and an all clear is issued by the Employers Representative. All personnel in the immediate area of the release/spill shall be alerted to the circumstances and any dangers to them (Health and Safety) and to the environment.

The Employers Representative will ensure, where required, that the incident details are communicated to the relevant regulatory authorities.

7 MONITORING AND IMPLEMENTATION OF THE CEMP

7.1 Complaints, Comments and Enquiries

Any complaint related to the Site will be dealt with by the Project Manager. The source of the complaint will be investigated immediately. If possible, the source of the complaint will be stopped, moved or modified immediately. All complaints must be recorded including details of the complaint and any required corrective actions.

7.2 Site Visits and Evaluation of Compliance

A pre-construction Site walkover by a suitably qualified environmental professional and Ecologist will take place followed by additional Site visits as required. The aim of these visits will be to ensure compliance with procedures set out in the CEMP and environmental conditions established under planning.

This will be done by means of a Site inspection and the auditing of different aspects of the works including documentation. Checklists for compliance will be drawn up, corrective actions will be required for any non-compliances identified and follow-up surveys will be scheduled to ensure compliance.

All monitoring results and reports detailing the compliance or otherwise of the works will be maintained at the Site office. In the event of an incident, an incident report will be completed and that will document both the cause of the incident and the corrective action taken to address the incident. These incident forms will be available for inspection within the Site office.

7.3 Control of Records

Environmental records, including waste management records, will be maintained in accordance with the respective company procedure and legal requirements. The records are to be maintained, in either hard copy or electronic format as required by the individual procedure that the records relate to, in such a way that they are readily identifiable, retrievable and protected against damage, deterioration or loss. The procedure that the records relate to also specifies the retention time for the records and who has the authority to dispose of them.

8 IMPLEMENTATION, REVIEW AND TRAINING

The Appointed Project Manager will be responsible for developing an updated Site specific CEMP prior to commencement of Site works. The Site Manager will be responsible for ensuring compliance with the CEMP. Each sub-contractor will be responsible for appointing a point of contact for matters related to environmental protection.

Copies of the CEMP will be made available to all personnel on-site. All Site personnel and sub-contractors will be instructed about the objectives of the CEMP and informed of the responsibilities which fall upon them as a consequence of its provisions. All staff will be required to have the appropriate training and certification to undertake their specific roles.

All staff will receive environmental awareness training as part of their Site induction to ensure they are aware of their responsibilities under the CEMP. This will include:

- Site induction, including relevant environmental issues;
- Environmental posters and site notices;
- Method statement and risk assessment briefings;
- Toolbox talks, including instruction on incident response procedures; and,
- Key project specific environmental issues briefings.

Furthermore, the provision of an Environmental Induction Sheet informing them of the specific measures which have been put in place and that must be adhered to.

The CEMP will be reviewed on an as needed basis if the scope of works changes significantly or if the need is identified following a site audit.

8.1 Training Awareness and Competence

Site personnel shall be trained appropriately to ensure they are competent to perform tasks that have the potential to cause a significant environmental impact as part of the proposed development. Competence is defined in terms of appropriate education, training and experience.

All managers and supervisors will be briefed on the CEMP.

Method Statements will be prepared for specific activities prior to the works commencing and will include environmental management / best practice measures and emergency preparedness appropriate to the activity covered. The Construction Manager will review key Method Statements prior to their issue.

Method Statement briefings will be given before personnel carry out key activities for the first time.

9 CONCLUSIONS

This pCEMP document outlines the management procedures to enable the Appointed Project Manager to respond to potential environmental risks from construction activities on-site. The final CEMP will cover all aspects of the construction development.

The appointed Contractor will be required to develop an updated CEMP prior to the commencement of any construction works and this will be submitted to the Planning Authority.

The implementation of all of the environmental management measures outlined in this pCEMP will ensure that the construction programme will be completed without significant adverse effects on the surrounding environment.

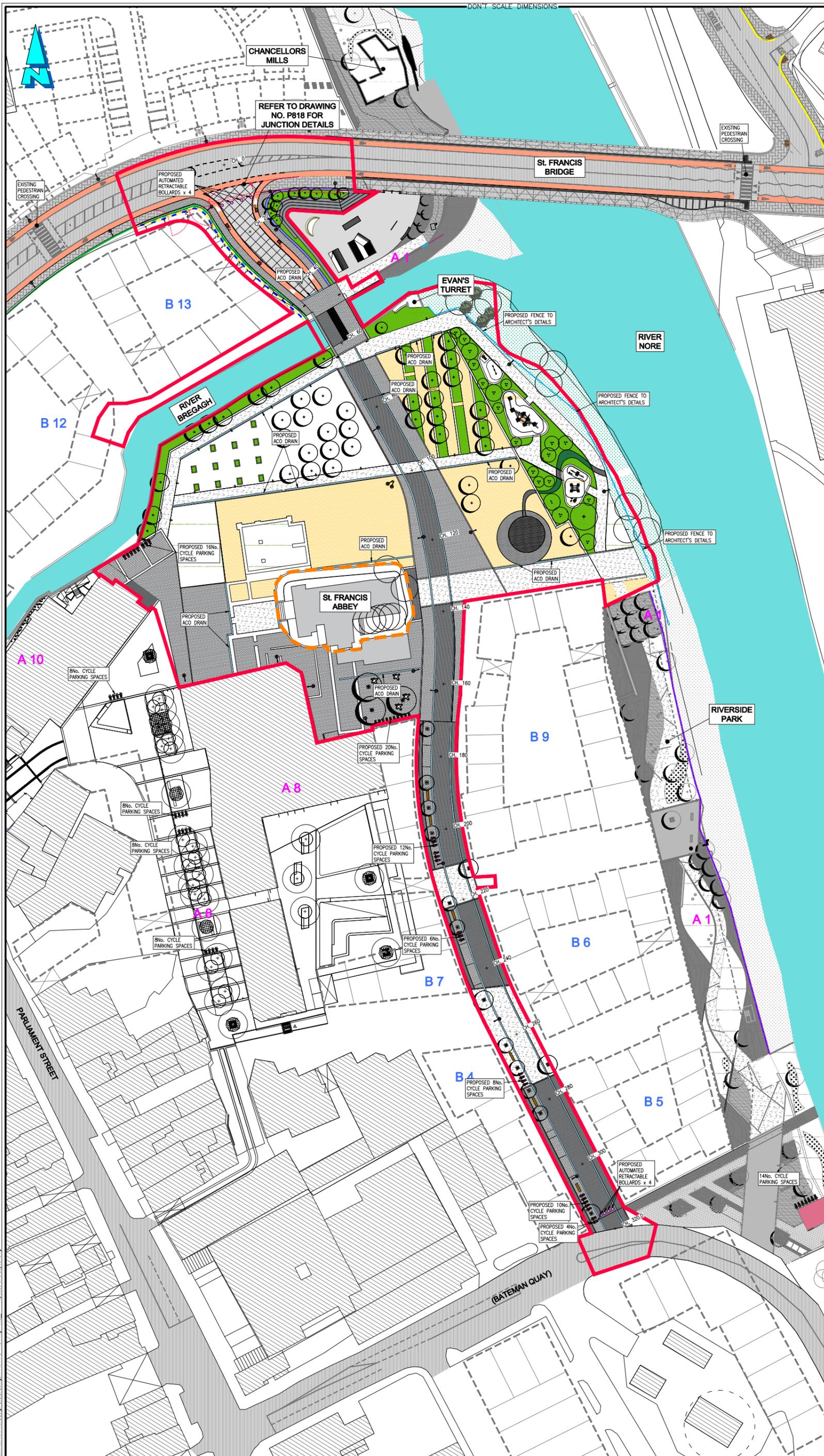
10 REFERENCES

- BSI. (2009). *BS 5228-2:2009 2009 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*. London: British Standard.
- BSI. (2009). *BS5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites. Noise*. London: British Standards Institution.
- BSI. (2012). *BS 5837: Trees in relation to design, demolition and construction - Recommendations*.
- CIRIA. (2001). *CIRIA C532 Control of Water Pollution from Construction, Guidance for Consultants and Contractors*. CIRIA.
- CIRIA. (2003). *C584 – Coastal and Marine Environmental Site Guide*. London: Construction Industry Research and Information Association.
- CIRIA. (2006). *C648 - Control of Water Pollution from Linear Construction Projects Technical Guidance*.
- CIRIA. (2006). *C649 - Control of Water Pollution from Linear Construction Projects: Site Guide*.
- CIRIA. (2010). *C692 - Environmental Good Practice on Site (Third Edition)*. London: Construction Industry Research and Information Association.
- CIRIA. (2014). *C733 - Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks*. London: CIRIA.
- CIRIA. (2015). *C741 - Environmental Good Practice on Site (4th edition)*.
- CIRIA. (2015). *C753 - The SuDS Manual*. London: CIRIA.
- Duchas. (1999). *Framework and Principles for the Protection of the Archaeological Heritage*. Dublin: Department of Arts Heritage and the Gaeltacht.
- EPA. (2014). *Guidance on assessing and costing environmental liabilities*. Dublin: EPA.
- EPA. (2015). *Revised Guidelines on the Information to be Contained in Environmental Impact Statements (Draft)*. Dublin: Environmental Protection Agency.
- Health and Safety Authority. (2013). *Asbestos-containing Materials (ACMs) in Workplaces - Practical guidelines on ACM Management and Abatement*. HSA.
- Inland Fisheries Ireland . (2016). *Guidance and Protection of Fisheries during Construction Works in an adjacent to Water* . Dublin: IFI.
- ISO. (2010). *ISO 4866: 2010 - Mechanical vibration and shock vibration of fixed structures guidelines for the measurement of vibrations and evaluation of their effects on structures* . International Organization for Standardization .
- National Roads Authority. (2005). *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes*. Dublin: National Roads Authority.
- National Roads Authority. (2006). *Guidelines for the Treatment of badgers prior to the Construction of National Road Schemes*. National Roads Authority.
- National Roads Authority. (2006). *Guidelines for the Treatment of Bats prior to the Construction of National Road Schemes*. Dublin: National Roads Authority.
- NRA. (2010). *Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*. Dublin: National Roads Authority.

Appendices

Appendix A

DON'T SCALE DIMENSIONS



Notes:

1. NO PART OF THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF MALONE O'REGAN CONSULTING ENGINEERS AS COPYRIGHT HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DRAWING WAS ORIGINALLY ISSUED.
2. THE APPOINTMENT OF THE PROJECT SUPERVISOR DESIGN PROCESS IS THE CLIENT'S RESPONSIBILITY.
3. ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.
4. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. DISCREPANCIES SHALL BE REPORTED TO THIS OFFICE IN WRITING.
5. THIS DRAWING TO BE READ IN ACCORDANCE WITH ALL RELEVANT ENGINEERS' DRAWINGS AND SPECIFICATIONS.

LEGEND

- PROPOSED PLANNING AREA (14,418m²)
- AREA EXCLUDED FROM PLANNING
- #### PROPOSED CYCLE PARKING SPACES. 76No. SPACES
- #### CYCLE PARKING SPACES NOT PART OF THIS PROJECT. 30No. SPACES
- LUMINAIRE A VEELITE VISTA 52w LED STREET OPTIC WIDE A13 LAMP 32LED
- LUMINAIRE B VEELITE VISTA 38w LED STREET OPTIC WIDE A13 LAMP 16LED
- LUMINAIRE C VEELITE KASSIO BOLLARD 11w LED ASYMMETRIC A13 LAMP 8LED
- LUMINAIRE D VEELITE FARO MAST 47w LED 4K LAMP LED 4K
- EXISTING LAMP STANDARD
- - - - - INDICATES FUTURE BUILDINGS

REFER TO DRAWING NO. P808 FOR LONGITUDINAL SECTION OF PROPOSED URBAN STREET

REFER TO ARCHITECT'S DRAWINGS FOR PROPOSED SITE LEVELS AND PROPOSED SITE FINISHES

Rev.	Description	Date	Drawn	Chkd	Appr
P	PLANNING ISSUE	24.07.2020	JD	PR	PR

THIS DRAWING TO BE USED FOR PLANNING PURPOSES ONLY

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Client: KILKENNY COUNTY COUNCIL

Job: ABBEY QUARTER URBAN PARK AND STREET

Drawing: PROPOSED SITE LAYOUT

Job No	Drg No	Stage	Revision	Scale
W14017	P805	PL	P	A1 1:500 A3 1:1000

R:\2014\W14017\10_Design and Drawings\1\MDR\PL - Planning\P805_P - Proposed Site Layout.dwg

DON'T SCALE DIMENSIONS