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IE-DUBZZ-STE1-EO-MOR-RP-V-87003

Construction Environmental Management Plan

(Working Document)

INXN DUB 15/16

On behalf of
Digital Netherlands VIII B.V.

Profile Park, Nangor Road, Clondalkin, Dublin 22

MALONE O'REGAN ENVIRONMENTAL

QUALITY
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01	28/07/21	CEMP Report	Final	CB	SDC	DH
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Construction Environmental Management Plan
INXN DUB 15/16
Digital Netherlands VIII B.V.
Profile Park, Nangor Road, Clondalkin, Dublin 22

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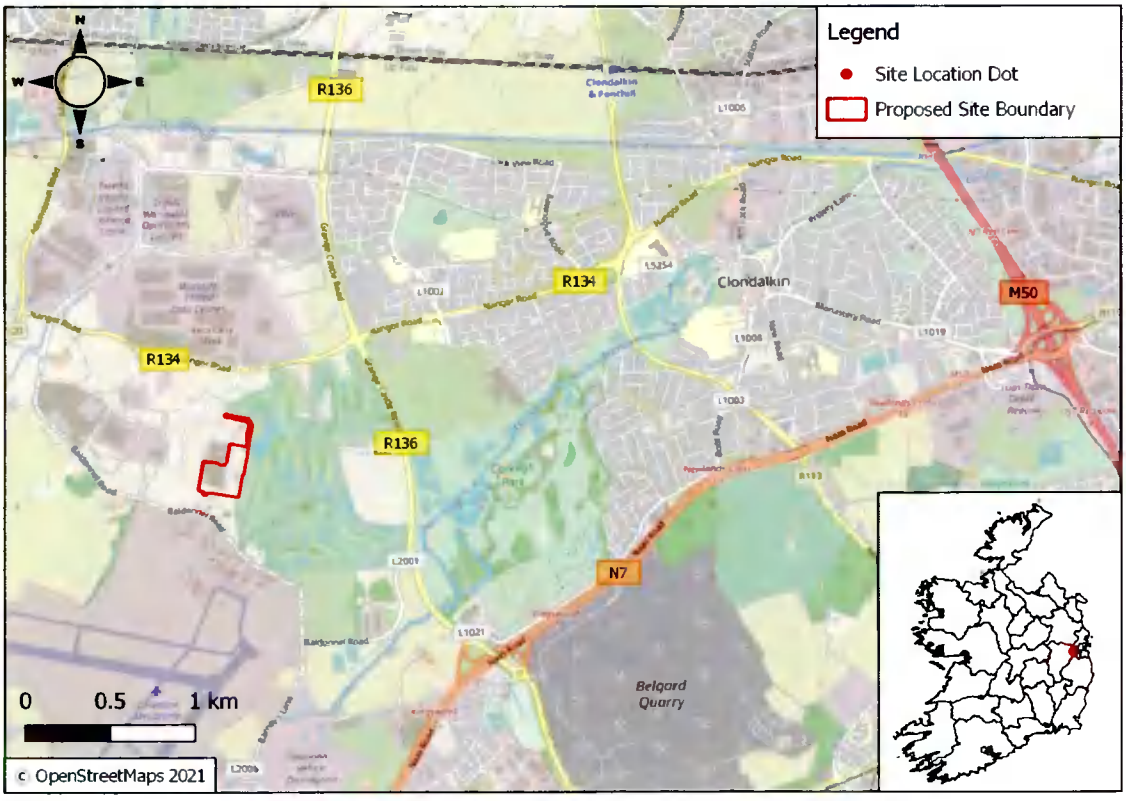
1 INTRODUCTION

In response to a Request for Further Information (RFI), Malone O' Regan Environmental Services (MOR) were commissioned by RKD Architects Ltd. on behalf of Digital Netherlands VIII B.V. ('the Applicant') to update the Construction Environmental Management Plan (CEMP) submitted as part of planning for two (2No.) proposed data centres and all ancillary works at DUB 15 / 16, Profile Park, Nangor Road, Clondalkin, Dublin 22, Co. Dublin (Planning Reference: SD21A/0217).

The location of the proposed development ('the Site') is shown in Figure 1-1 (OS Reference O 03785 30338).

Figure 1-1: Site Location



1.1 Scope and Objective

The key objective of this CEMP 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 onsite, 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 in the vicinity of the Site, full cognisance has been taken of:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors (CIRIA, 2011);
- CIRIA C741- Environmental Good Practice on Site (4th edition) (CIRIA, 2015);

- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA, 2005)
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes (NRA, 2006); and,
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2006).
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010); and,
- All works will be undertaken in accordance with the 'Requirements for the Protection of Fisheries Habitat during Construction and Development' (Inland Fisheries Ireland , 2016).

To achieve this objective the CEMP will:

- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management / Best Practice Guidelines;
- Ensure 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.

Further guidance mentioned in the Natura Impact Assessment (NIS) and Ecological Impact Assessment (EcIA) regarding the protection of particular species may also be applicable to the construction period.

To achieve this objective the CEMP will:

- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management Requirements / Best Practice Guidelines;
- Ensure 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 CEMP will be used by the appointed contractor to prepare an updated and comprehensive CEMP prior to the commencement of any on-site works. If required by the conditions of the grant of planning permission, 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 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 onsite; 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

2.1 Proposed Development

The proposed development will consist of a 10-year permission for the following:

- Removal of an existing unused wastewater treatment facility onsite;
- Two (2No.) data centre buildings, DUB15 and DUB16, comprising of 8No. data halls and the various equipment areas required to support the IT servers contained within them. These buildings will comprise a total floor area of 33,577m^2 over two-storeys;
    - The first two storey data centre building (DUB15), located to the southwest of the Site, will comprise 16,865m^2 data storage use, ancillary office use and associated electrical and mechanical plant rooms, loading bays, maintenance and storage space;
    - A second two storey data centre building (DUB16), located to the southeast of the Site, will comprise 16,712m^2 data storage areas, ancillary office use and associated electrical and mechanical plant rooms, loading bays, maintenance and storage space; and,
    - Both data centre buildings will reach a height of 20m and will be enclosed by plant screens with areas containing green trellises. Green roofs will be incorporated over the administration sections of both data centre buildings.
- Emergency generators and associated emission flues and plant are proposed in compounds adjacent to each data centre building;
- A storm-water attenuation pond alongside additional Sustainable Urban Drainage (SUDs) measures will be implemented onsite to control surface water run-off;
- The application proposes to re-route a watercourse, which was previously constructed through the centre of the Site pursuant to an earlier planning permission. It is proposed to reroute this watercourse along the eastern and southern boundary of the Site, refer to Figure 3-2 for indicative location;
- Landscaping is proposed to the south of the Site to screen the buildings;
- Other ancillary buildings throughout the Site include a pump room (ca.52m^2) and two (2No.) refuse stores (ca.25m^2). The total floor area of all ancillary structures is ca. 2,717m^2.
- Fencing and security gates are proposed around the Site; and,
- New access roads within the Site are proposed alongside 71No. car parking spaces, 26No. cycle spaces, bin stores, Site lighting and all associated works including underground foul and storm water drainage attenuation and utility cables.

Figure 2-1 Proposed Stream Diversion

2.1.1 Data Centre Buildings

Each data centre building will be a two-storey building, (ground and first floors). Each floor will be identical, comprising of 4No. data halls on each floor, it is within these data halls where the IT servers will be located. Electrical switch-rooms will be located internally adjacent to the data halls.

Equipment for data hall cooling will be located on the roof of the building, with standby emergency generators located in external compounds at ground level.

The following will be accommodated in each of the main building areas:

- Data Centre Technical Areas;
    - Data halls;
    - Low voltage switchgear, UPS and battery rooms;
    - Water services plant room;
    - Fire suppression tank and valve rooms;
    - Storage and waste areas;
    - POP and IDF rooms;
- External Ground Level;
    - Containerised MV generators (with belly fuel tanks);
    - Containerised MV switchgear;
- Office and Logistics Area;

- Security and entrance facilities;
- Loading bay and debox area;
- Toilets and showers;
- Office areas;

- Roof;
  - Air handling units providing fresh air to the offices and other Power Base Build (PBB) spaces;
  - Air handling units providing make-up air the data halls;
  - Air handling units providing make-up air to electrical plantrooms (UPS rooms and battery rooms);
  - Medium voltage switchrooms;
  - MV/LV transformers; and,
  - Refrigerant condenser systems (direct expansion and variable refrigerant volume) supporting space heating and cooling units, and their air handling units.

Each building will have its own standalone back-up generator system from the containerised generators located adjacent to each building. In total there will be a maximum of 32No. generators across the Site if the full upgrade potential is deployed. These shall provide power to the Site in the event of a grid outage.

2.1.2 Power

The Proposed Development will import power from the grid. This will allow the data centre to use renewable power when available. Utility power feeds will connect directly to the MV fundamental block switchrooms located at roof level.

The incoming voltage to the Site will be rated at 11kV.

2.1.3 Fuel Storage

During the operational phase of the proposed development, there will be 32No. backup diesel generators onsite. These will require 859,248 litres of fuel which will be stored in 'belly tanks' within each generator container. All fuel storage will be integrally bunded with leak detection systems that conform to Irish regulations.

2.1.4 Earthworks

The development of DUB13 and DUB14, the two (2No.) existing data centres immediately northwest of the Site, involved bulk excavation of material and the remaining stockpiles and made ground are currently located within the southwest area of the Site.

Enabling works will include the removal of these existing stockpiles onsite for recovery and disposal at a licensed facility. It will also include for the excavation and removal of the decommissioned sewage treatment works and associated buried structures and foundations. These excavations will be filled with suitable engineering fill to allow for the construction of DUB16.

Additional Site clearance and preparation works will include service diversions and works associated with the diversion of the Baldonnell Stream and the creation of the attenuation pond.

During enabling works, unsuitable material or made ground encountered onsite will be excavated under all structures and associated infrastructure for removal from Site to a suitably licensed facility and replaced with suitable engineering fill.

The suitability of the excavated materials for re-use as acceptable earthworks fill be assessed in accordance with the requirements of the TII Specifications for Roadworks.

2.1.5 Drainage

Drainage from the proposed DUB15, DUB16 and Switch Room shall be drained by a completely separate system, with separate foul and surface water drains. The outfall of the proposed surface water system will discharge into an attenuation pond, which after completion of the proposed development will cater exclusively for surface water run-off coming from the proposed development before discharging to the Baldonnell stream.

Foul water drainage will outfall and discharge into the existing Profile Park private foul drain network along The Fairways estate road which subsequently discharges into existing Irish Water Foul Sewer. See attached Drainage Layout.

The drainage systems have been designed in accordance with Part H Building Regulations, BSEN 752 Drain and Sewer Systems outside Buildings, the Greater Dublin Regional Code of Practice for Drainage Works, the Greater Dublin Strategic Drainage Study (GDSDS) and to the requirements of South Dublin County Council and Irish Water.

2.1.5.1 Surface Water

Surface water run-off from the proposed development shall drain by gravity via the proposed swales and pipe network to the attenuation pond located within the northeast portion of the Site. The attenuation pond has been designed to contain a permanent pool of standing water alongside a hydrobrake which will limit the discharge to green field run-off rate, refer to Appendix A for Drainage Layout.

Surface water discharges from the Site will be restricted in line with the Greater Dublin Regional Code of Practice for Drainage Works and South Dublin County Council Water Services requirements to 1.99 litres/second/hectare. Any flows in excess of the allowable discharge rate will be retained onsite in the proposed attenuation pond for storms up to and including the 1 in 100-year event + 20% climate change allowance. Additionally, SuDS measures will be incorporated into the development to improve the quality of waters discharging into the receiving surface water system, namely green roofs, interceptors porous paving and swales will allow for partial infiltration whilst excess run-off from roads and these areas will be directed through Class 1 bypass petrol interceptors and an attenuation pond prior to reaching the Baldonnell Stream. The run-off from refuelling areas next to the generator yards will be collected via the proposed surface water drainage system (outlined in Appendix A) and directed through Class 1 Full Retention Petrol Interceptors fitted with carbon monitors and lockdown valves.

Peak surface water discharges from the Site (particularly during storm events) will be substantially reduced due to the restricted outflow from the proposed development, thereby reducing the impact on the receiving drainage network. Also, the proposed watercourse diversion will significantly improve the existing surface water strategy throughout the Site, with benefits related to the quantity and quality of the water, amenity value and biodiversity.

2.1.5.2 Foul Drainage

Foul drainage from the proposed development shall be drained by a separate system to that of the surface water drainage system. Foul drainage from the proposed development shall drain by gravity and discharge to the existing 225mm foul drainage system along the Fairways Road, of Profile Park ownership, which subsequently discharges into Irish Water Foul sewer. No new connections will be required to the public sewerage system and Irish Water have

confirmed that the additional discharge from the Site is feasible without the need for an '*infrastructure upgrade*,' refer to Surface Water Drainage Report for further details.

2.1.6 External Lighting

External lighting will be provided outside the main structures and within the car-parking areas. A lighting plan has been submitted as part of the overall application, reference IE-DUBZZ-STE1-E0-ARP-DR-E-63000.

2.1.7 Landscaping

The Proposed Development design includes for boundary landscaping works. The proposed layout masterplan, reference IEDUBZZ-STE1-EO-MAL-LA-L-91001 and attached as Appendix D, presents both boundary and internal site breakout landscaping works.

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.

It is envisaged that the construction works will take approximately 60 months to complete. It is anticipated that the construction activities for the DUB15 building, and all landscaping and external areas will take 18-months and that construction works for the DUB16 building are anticipated to last 10-months. The buildings are planned to be fitted out and commissioned in 6-month phases, with 4 fit out and commissioning phases per building.

Works will be limited to:

- Monday - Friday 07:00 hours – 18:00 hours
- Saturday 08:00 hours – 14:00 hours
- Sundays and Public Holidays Closed

An Ecological Clerk of Works (ECoW) will inspect the Sites in advance of works commencing and will undertake monthly Site inspections during the works as well as being present during away works adjacent to or near any waterbodies or the trees lines to ensure that they will be completed in line with the mitigation measures detailed within the CEMP. In addition, the ECoW will also supervise the works associated with the BMP.

4 ENVIRONMENTAL MANAGEMENT FRAMEWORK

4.1 Environmental Policy

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

- South Dublin 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.
Health and Safety and Environmental Officer (Assigned by Appointed Contractor)	The Contractor's appointed Health and Safety Office will report to the Project Manager. They will be responsible for the following: • Carrying out duty of health and safety coordinator during the construction works; • Safety Induction of all staff and personnel on Site; • Implementing the contractor's Health and Safety Plan; and, • Auditing the Site Health and Safety Plan and updating, as necessary.
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 onsite.

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 onsite 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 CEMP, the following Site-specific aspects are considered relevant to the construction phase:

- The location of the Site in context of the surrounding area;
- Pluvial flood risk posed by heavy rainfall and associated surface water ponding;
- Water quality impairment during construction and operation;
- The watercourses within and adjacent to the Site boundaries;
- An increase to noise emissions during the construction stage; and,
- The biodiversity value of the Site and its surrounding habitats.

Mitigation measures to prevent and manage likely environmental risks are outlined within Table 5-4. Additionally, the following detailed Site-specific plans will be completed by the appointed Principal Contractor:

- Construction Management Plan (CMP);
- Outline Construction Methodology; and,
- Final Construction Environmental Management Plan (CEMP).

These plans will be supplied to South Dublin County Council prior to the commencement of site works. They will be prepared by the appointed contractor to ensure best practicable policies are incorporated in the management of the Site.

The specific risks to the environment are outlined in Table 5-4 below. 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.

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 hour's activities).	Slight	Low	• Normal construction hours will be restricted to 07:00 to 18:00 Monday to Friday and 07:00 to 14:00 on Saturdays.
	b. Traffic	Moderate	Low	• Best practice measures will be implemented; • Hydrocarbon spill kits shall be in place on all Site vehicles / plant; and, • Adequate signage shall be provided on the public network identifying the Site, access, speed limits etc.
2. Water Quality – Suspended solids	**a.** Suspended sediment due to run-off from construction areas entering the Baldonnell Stream or drainage ditch network causing potential detriment to water quality.	Moderate	Low	• All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction; • The working area will be clearly defined, and construction activities will be carefully planned to minimise ground disturbance. • Silt traps / fences will be installed as required under the direction of the ECoW; • Existing vegetation will be retained where possible; • Runoff will be diverted away from stripped areas. • Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows. • Any stockpile of material will be covered during periods of prolonged or heavy rain and will be located away from surface water features. • In order to prevent potential water pollution risk when drainage lines are in place but not fully commissioned, no discharges to the surface water drainage system at the Site will be made until all drains are fully connected to the proposed and approved Petrol Interceptor; • Weather conditions will be considered when planning construction activities to minimise risk of runoff from Site; • All valves should be of steel construction and the open and close positions should be clearly marked; and, • No surface water runoff will be discharged onto public roads, foul sewers or adjacent property.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
3. Water Quality - Oil	**a.** Oil Spill to ground / surface water. Oil pollution is known to cause significant damage aquatic habitats and communities and loss of bulk stored oil or oil from construction vehicles will likely have an adverse impact on the aquatic environment.	Moderate	Low	• Prior to construction commencing, all construction equipment will be checked to ensure that they are mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease; • All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction; • Any chemical / oils to be stored onsite will be placed within a bund on an area of hardstanding to ensure there is no seepage of pollutants into groundwater or surface water; • All bunds will have a capacity of the largest tank volume plus 10 percent, at a minimum, with additional capacity to hold 30mm of rainfall; • Steel tanks will be protected from corrosion; • All drainage from bund area must be directed to secure containment prior to suitable disposal; • Preventative maintenance and relevant maintenance logs will be kept for all onsite plant and equipment; • Adequate spill kits including absorbent booms and other absorbent material will be maintained onsite; • All contractor workers will be appropriately trained in the use of spill kits; • Fuels, lubricants and hydraulic fluids for equipment used in the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to current best practice; • Any sediments adversely effected by contamination will be excavated and stored in appropriate sealed containers for disposal offsite in accordance with all relevant waste management legislation; and, • In order to prevent potential water pollution risk when drainage lines are in place but not fully commissioned, no discharges to the surface water drainage system at the Site will be made until all trains are fully connected to the proposed approved petrol interceptor.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
	b. Oil spill during refuelling operations.	Moderate (low volume)	Low	• Adequate fuel storage facilities and re-fuelling protocols will be provided; • Fuel will be delivered onsite by a dedicated tanker or in a delivery bowser dedicated to that purpose; • Emergency Response Procedures will be put in place to enable trained response in the event of a spill by Site operatives; • Vehicle or equipment maintenance work will be carried out in a designated area on the Site. In the event that refuelling is required outside this area a spill tray will be employed during the refuelling operation; and, • The Appointed Contactor will put in place a specific, step-by-step refuelling procedure which will be communicated to all relevant employees onsite.
4. Water Quality - Cement	**a.** Cement and Concrete entering waters resulting in water pollution and contamination to the environment.	Moderate	Low	• Concrete pours will be adequately planned and executed; • Washouts of equipment used for concrete operations will be done either offsite or within a designated washout area, which will comprise a container that will capture the washout material / water for reused or disposal offsite; • Any spillage of cementitious materials will be cleaned-up immediately; • Any pouring of concrete will only be carried out in dry weather. Washout of concrete trucks will not be permitted on the Site; and, • Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows.
5. Water Quality – Stream Diversion	**a.** Potential pollutants entering the Baldonnell stream and subsequently the wider river network during the in-river works / watercourse diversion works.	Moderate	Low	• The construction of the new channel / reprofiling works must be carried out as far as possible in advance of the actual diversion of flow, and ideally bankside vegetation of native streamside tree and bush species should be well established; • The construction of the pond, headwalls and associated works will be completed in advance of the stream connection to the new channel;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				• The new channel should be constructed as a two-stage channel comprised of a stepped profile, and should be gently profiled to minimise the risk of erosion with the channel bottom formed of coarse non eroding material i.e., rocks, cobble & gravel; • The new channel should contain occasional boulders to create variations in flow type; • The new channel should ensure connectivity for commuting and foraging species; • The new channel should be constructed in such a way as to minimise suspended solids released when the river is re-routed. The use of loose fine-grained materials in the new channel construction should be strictly limited; • Earth moving works and construction activities should be avoided in the area within 10m of the bank of the Baldonnell Stream, with exception to the area where the realigned channel joins with the existing river channel. However, this area should be fenced off prior to the commencement of works; • Where practicable, existing vegetation along the drainage ditch into which the Baldonnell Stream will be rerouted should be retained and supplemented / managed as required to maintain sheltered commuting routes and connectivity along the river corridor and to the wider landscape; • Landscaping measures will be implemented to ensure that the watercourse continues as a contiguous natural habitat for a range of species, with new sections of riparian habitat to be created as part of the works being planted with semi-mature trees; • The Contractor appointed shall ensure that all personnel working onsite are trained in pollution incident control response; and, • The Contractor or Ecologist shall establish contact with Inland Fisheries Ireland (IFI) before works commence and as per consultation, all works will be carried out with an approved design and method statement.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
6. Waste Management	**a.** Incorrect management of general Municipal Wastes / welfare facilities resulting in litter onsite and / or attraction of rodents	Slight	Medium	• Waste materials will be collected and stored in suitable receptacles before they are taken off Site; • Waste materials will not be allowed to accumulate because of the fire/vermin risk; • The waste will be separated into recycling types and general waste in designated general waste and refuse and recycling stores; and • Measures will be implemented to minimise waste and ensure correct handling, storage and disposal of waste.
	b. Welfare – Toilet waste.	Slight	Trivial	• Welfare facilities will be available at the Construction Compound, it is proposed that these facilities will be used for the duration of the works. • There will be no foul effluent discharge arising from the initial Site development works – portable toilet facilities will be used (emptied as required).
7. Nuisance – Dust / Dirt	**a.** Generation of dust / dirt onsite adversely affecting water quality within surrounding watercourses and further downstream to the SAC.	Slight	Low	• Earth movements and soil stripping operations will not be carried out during dry and windy weather without suitable mitigation measures; • Stockpiles, tips and mounds will be constructed in such way to minimise dust creation; and, • Water bowsers, sprays and mists will be used to suppress dust arising from stockpiles, and screening activities, during dry weather as required; • Within the construction area, the ground to be stripped of existing cover / vegetation will be kept to the absolute minimum required for the works; and, • All excavated material or existing stockpiles onsite for disposal will be removed to a suitably licensed facility offsite.
	b. Generation of dust from truck movements to and from Site could adversely affect waterbodies if left uncontrolled.	Slight	Low	• Speed restrictions within and around the Site; • Maintenance of good road surfaces; • Dampening of access road by bowser during dry periods; and,

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				• Heavy plant will be fitted with upswept exhausts and radiator fan shields.
8. Nuisance - Noise	**a.** Generation of noise resulting in disturbance to designated species during construction	Slight	Medium	• Only plant with the lowest noise ratings will be selected and its location will be based on the least impact in terms of noise; • Plant will only be left running during works and will be switched off at all other times. Plant will not be left idling; and, • All construction related works, aside from emergencies will be carried out during normal working hours.
9. Biodiversity Protection	General Measures	Moderate	Low	• All activities will comply with all relevant legislation and best practice to reduce any potential environmental impacts. The mitigation measures detailed within this EcIA and the NIS will be fully adhered to; • The Site manager shall ensure that all personnel working onsite will be trained and made aware of the mitigation measures detailed within this EcIA and the NIS; • An ECoW will be appointed for the construction works and will be available as required. If protected or notable species are encountered during operations at the Site, the ECoW will be contacted for advice; and, • In advance of works, all Site personnel will receive a toolbox talk regarding notable and protected species. Everybody working onsite must understand the role and authority of the ECoW.
	a. Hedgerow / Treeline	Moderate	Low	• Trees, treelines and hedgerows to be retained that will be in close proximity to the construction areas will be fenced off by effective construction proof barriers before construction works commence. These barriers will remain in place for the duration of the works to prevent accidental disturbance and define the limits for construction vehicles and other construction staff; • Care will be required to prevent disturbance to root systems – a buffer zone / construction exclusion zone of unexcavated ground will be maintained along the retained hedgerows and mature tree; • Where machinery access has to encroach areas within close proximity to the retained hedgerows / treelines or the mixed broadleaved

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				woodland, a Root Protection Area (RPA) will be established and suitable ground protection will be put in place to prevent any significant soil compaction or root damage. This should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight; • All weather notices will be erected on the fences, and the fencing will be inspected on a regular basis during the construction process; • Trench digging or other excavation works for services etc. will not be permitted within close proximity to retained trees and hedgerows unless approved and supervised using methods outlined in BS5837: Trees in relation to design, demolition and construction (2012); • No materials, equipment or machinery will be stored within close proximity to retained hedgerows and trees; • In order for treeline 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 treelines; • Care will be taken when planning Site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible; • Notice boards, wires, etc. will not be attached to any trees. Site offices, materials and contractor parking will all be outside the Construction Exclusion Zone; and, • The retained trees will be assessed following the completion of the construction works.
	b. Impacts on Birds	Moderate	Low	• All vegetation clearance required as part of the works will be scheduled to take place outside of the nesting bird season (typically considered to be between 1st March to 31st August – weather dependant as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000;

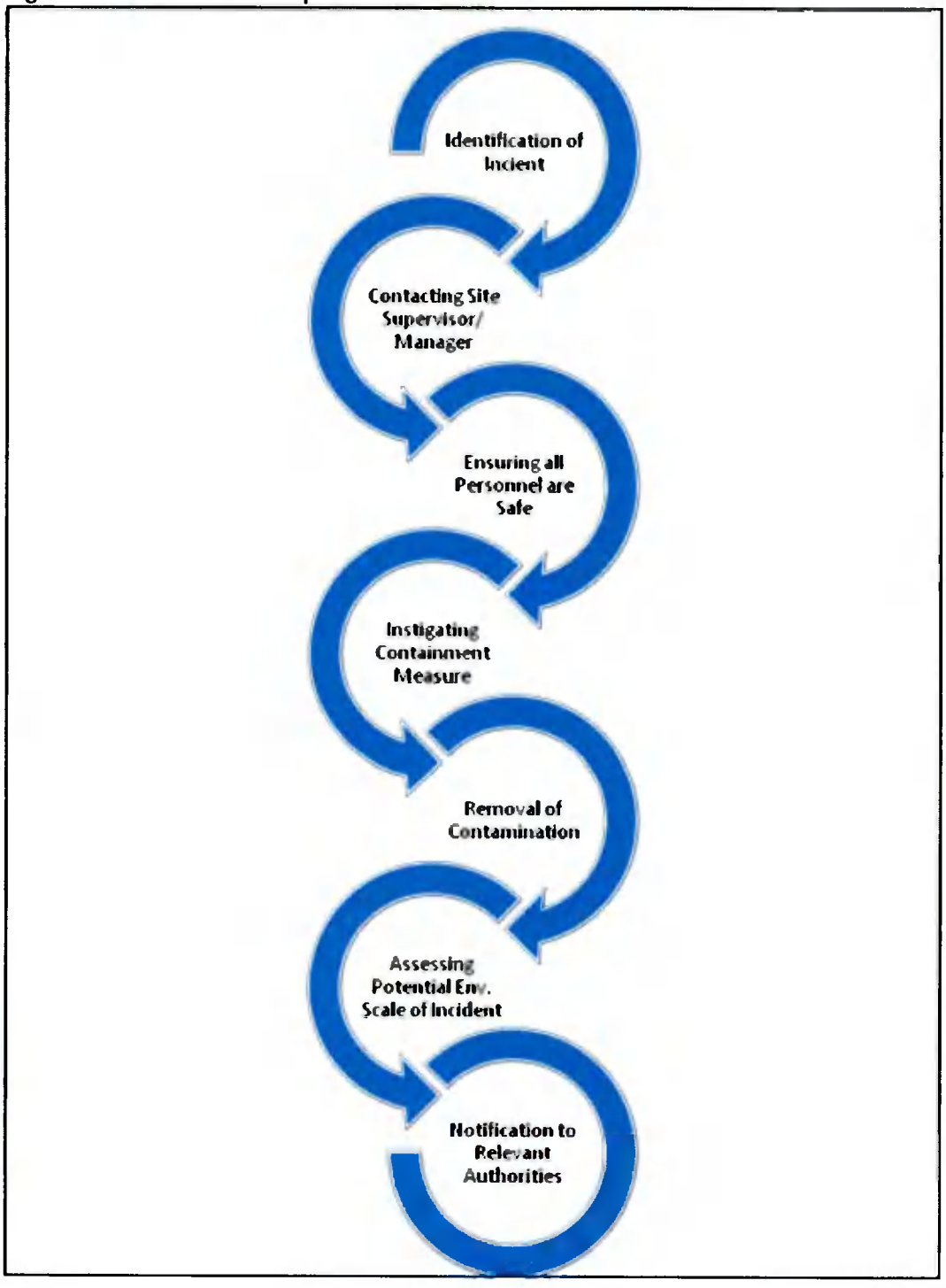
Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
				• In the event that works need to be undertaken within the main breeding season, this would be undertaken in consultation with NPWS; • Prior to the vegetation removal the ECoW will inspect the Site and the project ECoW will inspect the Site during the vegetation removal works; and, • Should birds nest within the active working area during the construction phase, works within the area will stop within the area and the project ECoW will be consulted.
	c. Impacts on Badgers / Terrestrial Mammals	Moderate	Low	• Where deep excavations will be required onsite, appropriate measures to protect mammals from ingress will be installed; • Should construction works be required outside of daylight hours, the appointed project ECoW will be consulted as required; and, • If unidentified burrows are identified within the works area during construction, works will cease within that area and the project ECoW will be contacted for advice.
10. Invasive Species	**a.** Spread of Invasive Alien Species	Slight	Low	• 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; • Measures outlined in Section 3.1 of C744 (Invasive non-native species) will be considered; and,
11. Monitoring	**a.** To ensure adherence to the mitigation measures outlined in	Moderate	Low	• An ECoW will inspect the Site in advance of works and will undertake Site inspections as required during the works to ensure the works will

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedures – Mitigation Measures
	the CEMP, EcIA and NIS / construction works have been carried out successfully.			be completed in-line with the mitigation measures stipulated in this CEMP, including: • An ECoW will inspect and monitor all watercourse sections along or in close proximity to the proposed works; inspect all surface water treatment measures; and monitor stockpiles within close proximity to the watercourse. • Where the ECoW has carried out an investigation of a release of sediment to a watercourse causing a plume, the following procedure will be followed: o The relevant NPWS and IFI staff shall be notified immediately; o The discharge generating the sediment discharge shall be stopped immediately; o The contractor will be required to take immediate action and to implement measures to ensure that such discharges do not re-occur; o Works shall not recommence until appropriate corrective measures to avoid any repetition are put in place. Such measures shall be agreed with the ECoW following consultation with the NPWS and IFI and shall be in accordance with the requirements of these control measures; and, o Where the ECoW considers that the risk of a sediment release is high, the contractor will be informed, and protective action will be undertaken. Where the contractor does not take immediate action the ECoW shall instruct the contractor to take action and the same shall be reported to the Contract Manager and the Client. • The ECoW must be present when the watercourse is initially diverted • Following the installation of the lighting for the proposed development, the project ECoW will undertake a further Site inspection in order to check the lighting patterns and lux levels along the Site boundaries.

6 EMERGENCY MANAGEMENT PLAN

Although the Site will be managed, there remains a low risk from the unexpected occurrences, such as accidental spillages onsite, that may result in environmental pollution. Incidents onsite 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 on-duty Site Foreman 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 onsite. 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;
- 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 CEMP document outlines the management procedures to enable the Appointed Project Manager to respond to potential environmental risks from construction activities onsite. The final CEMP will cover all aspects of the construction development.

In assessing risks onsite, full cognisance has been taken of best practice guidance including:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors (CIRIA, 2011);
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA, 2005)
- CIRIA C741- Environmental Good Practice on Site (4th edition) (CIRIA, 2015);
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes (NRA, 2006); and,
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2006).
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010); and,
- All works will be undertaken in accordance with the 'Requirements for the Protection of Fisheries Habitat during Construction and Development' (Inland Fisheries Ireland , 2016).

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 South Dublin County Council for approval.

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

10 REFERENCES

CIRIA. (2011). *C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors .*

CIRIA. (2015). *C741 - Environmental Good Practice on Site (4th edition).*

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.

Inland Fisheries Ireland . (2016). *Guidance and Protection of Fisheries during Construction Works in an adjacent to Water .* Dublin: IFI.

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NRA. (2010). *Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.* National Roads Authority.

APPENDICES

APPENDIX A