SDZIA 10104

Airton Close Footbridge, Tallaght

Preliminary Construction Environmental Management Plan

18132

November 2021

hamilton ARCHITECTS

Contents

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1. Introduction

1.1 Preamble

The purpose of this Outline Construction Environmental Management Plan (CEMP) is to establish a framework recommending measures, practices and protocols to be implemented during the construction phase. A final version of the CEMP will be prepared prior to commencement of development by the selected Main Contractor who has not been appointed yet.

As per point 6 of Decision Order Number 0858 (SD21A/01014) *'The applicant is requested to provide an Outline Construction Environmental Management Plan (CEMP) as additional information.'*

The Outline CEMP details the implementation of measures in accordance with environmental commitments and aims to establish preliminary method statements which identify the perceived risks to the aquatic environment and identifies potential pollution pathways and the mitigation measures to be employed which will negate the risk to adjacent aquatic environment. Method statements will provide details of pollution prevention measures to be employed during construction and operation, demonstrating how contamination of waterways linked to the development site will be avoided.

1.2 Document Structure

This CEMP is structured as follows:

- Section 1 describes the development and typical equipment to be used
- Section 2 references contractual and legal requirements
- Section 3 details key roles and responsibilities, contact details and methods of communication
- Section 4 highlights perceived risks to aquatic environment, pollution pathways and mitigation measures
- Section 5 details the approach to environmental training, logs and site awareness
- Section 6 details the environmental mitigation measures proposed to be employed during the construction phase and,
- Section 7 details the approach to monitoring and audit procedures.

2. Project Description

2.1 Description of Development

The project proposes the construction of a footbridge from the car park within the Tallaght campus of TU Dublin to Airton Close. The footbridge crosses a tributary of the Tymon River and connects the main campus with ancillary university office accommodation at 1 Airton Close.

2.2 Site Topography

The topography of the site is generally level however there is a difference of c.750mm between the northern and southern banks of the stream. It is proposed to construct the bridge with a 1 in 25 gradient to address the level difference. Some minor adjust of levels will be required within the boundary of the university campus to facilitate this gradient and ensure universal access for all users. Refer to Proposed Site Section in Appendix 1.

2.3 Site Restrictions

The main site restrictions are as follows: -

a. The existing live university campus and car park which will limit location of contractor's compound and approach to phasing

b. Existing industrial/business units on Airton Close requiring unhindered access to all premises

c. Existing live sub-station on the northern bank with underground cables within the confines of the construction site

d. Existing foul sewer which traverses the stream within the confines of the construction site

e. Town centre location therefore normal restrictions apply to construction traffic. Construction entrance is proposed off Belgard Road (R113) which is a dual-lane carriageway and c.18.0m wide.

f. Alternative site access is via Airton Road and Airton Close which is a cul-de-sac. Airton Close is c.6.0m wide.

2.4 Site Context

The proposed site is on the northern boundary of the university campus and within the main campus car park. A number of parking spaces will be removed to provide the staggered access arrangement between the bridge and the rear main doors of the campus building. Immediately to

the east of the proposed bridge is an existing ESB sub-station which is to be retained and protected during the course of the works.

The bridge will pass over tributary of the Tymon River and connect to an embankment on Airton Close. The bridge will align with the footpath on Airton Close. To the west of this connection point on Airton Close, is the entrance to an existing commercial premises. Currently this is vacant, however the contractor should ensure that access is maintained.

3. Programme, Phasing & Typical Equipment

3.1 Programme

The construction works are proposed to commence on site upon appointment of main contractor, envisaged to be Q1 2022. The estimated completion date for the construction of building and all siteworks would be Q2 2022.

It will be a requirement of the principle contractor to submit a detailed programme for the construction of the development. The programme will take into account measures to minimise the impact of the construction on the adjacent surface watercourse and its environs. Construction phase plans shall be implemented to minimise risks to construction workers and local residents from dust and emissions.

3.2 Phasing

The Employer's Statutory mobilisation works will be undertaken in advance of onsite construction.

The footbridge is to be built upon the scrubland boundary of the university campus and grass embankment of Airton Close. It is proposed site construction will be as follows: -

1. Site hoarding to be erected and create site compound within the university car park with access off Belgrad Road. Protection required around existing ESB sub-station.
2. GPR survey to be carried out in advance of any excavations and all services visibly delineated on the existing ground.
3. Site clearance to commence and existing vegetation removed from campus boundary together with 2No. young Elder trees
4. Construct new temporary access across stream for construction personnel only. Security fencing to be erected to prevent unauthorised access.
5. Construct concrete support walls for both ends of bridge. Prefabricated bridge base to be craned into position from university car park
6. Handrails, gates and landscaping to be completed, together with new lighting to car park.

3.3 Typical Equipment

Construction activity will involve all the necessary operations to construct the structure as described. At different stages, this will involve the use of earth-moving equipment, movement, loading and unloading of vehicles and plant, the erection, use and dismantling of scaffolding, use of cranes/platforms and the creation of stockpiles of materials and a construction compound. A list of typical equipment to be used on site during the construction period is summarised below;

- Excavator and tractor for excavation of trenches and foundations

- Crane for lifting operations
- Pumps to enable excavation trenches to remain dry
- Delivery vehicles, articulated and non-articulated; and
- Fuel tank delivery vehicle

4. Environmental Studies and Surveys

This outline CEMP includes reference to a Flood Risk Assessment undertaken by McCloy Consulting in October 2021 and an Appropriate Assessment Screening Report completed by Scott Cawley in October 2021.

5. Environmental Policies and Legal Requirements

5.1 Environmental Policies

As part of the appointment, a Principle Contractor will provide a copy of their Health, Safety and Environmental Policy. The Principle Contractor will ensure that a copy of their Health, Safety and Environmental Policy is clearly displayed on site notice boards throughout the site area during the construction period. All employees are expected to comply with the requirements of the Environmental Policy and the requirements of the Environmental Management System (EMS).

The Principle Contractor will ensure its employees and support staff (contractors, subcontractors, suppliers etc.) actively promotes and administer a strong environmental culture. To achieve this, a number of initiatives will be in operation during the life of the project. This will include the use of poster campaigns to raise awareness of topical subjects and toolbox talks involving all members of the project team and site workforce.

5.2 Legislation and other legal requirements

A legislation register shall be held in the project environmental file. The register shall be reviewed periodically and updated as necessary. Any legislative changes shall be disseminated to project management immediately, after which the method statements of any affected operations shall be changed accordingly. A register of required consents and licences shall be held in the project environment file.

6. Roles and Responsibilities

Principle Contractor

The Principle Contractor shall be responsible for:

- Appointing a Site Manager.

Site Manager

The Site Manager shall be responsible for:

- Undertaking weekly Site Compound Checks and appointing persons to supervise refuelling of tanks and bowsers
- Ensuring the required consents are in place before work starts
- Ensuring environmental and waste requirements are included on requisitions and in sub-contracts and orders
- Ensuring oil, including diesel is stored in properly bunded tanks / drip trays
- Ensuring Waste Transfer Notes / Special Waste Consignment Notes are checked against invoices before payment
- Liaising with statutory authorities as required and ensuring records of communication (including verbal communication) are kept. Statutory authorities should always be accompanied on site visits
- Ensuring employees, contractors and subcontractors implement the controls set out in this CEMP
- Ensuring employees, contractors and subcontractors receive Induction Training (including project environmental issues) and Toolbox Talks, as appropriate
- Ensuring personnel needed for audits are available when required
- Verifying actions resulting from Corrective Action Requests and ensuring Observations raised during audits are completed by the deadlines
- Ensuring environmental training is provided
- Reporting incidents to the Principle Contractor immediately and to statutory authorities where required
- Logging and monitoring incidents and non-conformances
- Disseminating information, including changes to legislation and relay to relevant contractor's employees
- Identifying employees who require environmental training and maintain training records in line with the contract for the works
- Providing advice and dealing with queries and correspondence on environmental issues
- Identifying significant environmental impacts for the project and assist in setting up contracts to include the necessary controls
- Monitoring the progress in closing out Corrective Action Requests and Observations raised during audits
- Ensuring all records are retained and readily available; and
- Carrying out monthly site audits.

All Staff

All staff have responsibility for the environment, responsibilities include but are not limited to:

- In the case of an incident, stopping work, implementing control procedures and reporting it to the Site Manager
- Contacting the Waste Representative when waste needs collecting
- Passing any queries or correspondence on environmental issues to the Site Manager; and
- Working in accordance with environmental procedures, the CEMP and Method Statements.

Communication

Regular construction meetings shall be held during the construction phase. These meetings shall include health, safety and environmental matters. Any issues resulting from daily or weekly audits shall be discussed with appropriate corrective actions agreed. A 'look ahead' shall be provided at the construction meeting where any environmental constraints or special requirements can be discussed and agreed in advance, where required.

The Site Manager shall conduct daily construction briefings, as required, to ensure site personnel are advised of any specific environmental requirements and constraints.

Complaints Procedure

The Principle Contractor shall put in place a system for recording and responding to, all complaints received from third parties. The system shall include the timely reporting of all such complaints.

7. Risks to Aquatic Environment

The primary risks to the aquatic environment associated with construction will be the minor increase in surface water runoff associated with the creation of the footbridge, site compounds etc and the compaction of the native soils and the potential for contamination / pollution of the storm system from hydrocarbons.

7.1 Flood Risk Assessment

A Flood Risk Assessment was completed by McCloy Consulting in October 2021 to ensure that all relevant issues related to flooding are addressed, determine any potential for the site to be impacted by flooding, the potential impacts of the development on flooding both onsite and in the vicinity, and the proposed measures which can be incorporated into the development to mitigate any identified risks.

The Office of Public Works (OPW) and South Dublin County Council (SDCC) have developed flood maps as part of the Catchment Flood Risk Assessment and Management (CFRAM) Programme. The watercourse at the site (a tributary of the Tymon River) is included on the 'Poddle River Fluvial Flood Extents' detailed in CFRAM flood mapping. Detailed hydraulic modelling was also undertaken and determined the site lies outside the present day and climate change / culvert blockage 1% AEP and 0.1% AEP fluvial floodplain of the unnamed watercourse which flows alongside the site.

In relation to Flood Zones as defined by the OPW Guidelines, the detailed assessment has determined that the area of proposed development lies within Flood Zone C. As such, the proposals do not pose a risk of increased flooding elsewhere.

No other significant flood mechanisms exist at the site. Refer to report in Appendix 2.

7.2 Surface Water runoff and Silt Mitigation

The Principle Contractor shall ensure that measures shall be taken to minimise direct sediment run-off from the working site into the adjacent watercourse. Pollution prevention will be achieved with both physical and procedural measures such as; temporary sediment forebays within the proposed attenuation basin, protective surfacing for permeable paving sub grade, and suitable storage of materials.

The Principle Contractor shall provide dedicated persons to ensure that the required mitigation is installed and maintained to an appropriate standard.

Terram will be placed under ACO channel gullies, where appropriate, in order to intercept silt-laden surface run-off and prevent it from entering the surface water drainage network. This mitigation will be assessed on a regular basis (especially after heavy rain) and maintained if required.
Wheel wash and road sweeping facilities will further reduce the potential for silt pollution on and

from the construction sites both on the campus side and Airton Close. The wheel wash bays will be in a designated area of hard standing at least 10m from the surface drains where practicable.

7.3 Spill Response Plans and Control Measures

A spill response kit will be available onsite and accessible to all to control pollution incidents. These spill kits will contain absorbent pads, absorbent granules and methods of disposal of materials and used kit. These kits will be located at appropriate points around the site which are considered to be at a higher risk of pollution (e.g. refuelling area and next to fuel tanks). Further spill kits and supplies will be located in the stores within the site, where replacements for used kits will be found. Spill kits will need to be regularly inspected and immediately replaced if used.

Toolbox talks will be communicated to site staff and contractors so that they are fully informed of refuelling procedures.

7.4 Emergency Response Plan

Site staff will be trained in mitigating impacts to the environment, resulting from a pollution incident.

Pollution control equipment will be available in high-risk areas and will be checked regularly to ensure the equipment is available and re-stocked if used.

Work will be stopped in the vicinity of the spill and the discharge stopped at source (i.e. Turn plant off). Containment equipment will be deployed in the form of spill kits / booms / sandbags / granules / straw bales / terram, depending on the type of pollution discharged. The Site Manager and Project Manager will be notified immediately and used pollution control equipment will be disposed of in accordance with OPW guidance and legislation.

Toolbox talks will be communicated to site staff and contractors so that they are fully informed of Dealing with Environmental Incidents.

8. Environmental Training and Awareness

8.1 Inductions

All project personnel and sub-contractors shall receive an Environmental Induction Presentation, prior to commencement of works onsite. No personnel, including subcontractors, shall be permitted to commence employment on site without prior attendance at an induction.

Environmental topics covered in the induction shall include but will not be limited to:

- Water resources
- Pollution prevention
- Emergency response procedures
- Waste management and house keeping
- Management structure
- Duties and responsibilities
- Relevant procedures
- Ecologically sensitive areas
- Incident reporting
- Consents and licenses
- Legislation; and
- Environmental best practice.

8.2 Toolbox Talks

Regular 'Tool-Box Talks' on specialised topics shall supplement the induction course. Toolbox talks shall be used to highlight issues of concern and to disseminate new information not previously provided. They will also offer site personnel with the opportunity to provide feedback.

Tool-Box Talks shall include, but will not be limited to, instances where:

- There is a change to existing legislation, which requires an operational change
- Site inspections or audits have identified corrective actions which require rolling out
- Work is being undertaken in environmentally sensitive areas
- There are significant changes in environmental conditions, i.e. heavy rainfall.

The frequency and topics of the Tool-box Talks shall depend upon the phase of construction. They shall be provided as often as necessary to address site-specific environmental requirements.

Toolbox talk topics for environmental management shall include, but will not be limited to:

- Silt and water management
- Environmental incident and reporting
- Protected species/habitats
- Waste management and segregation

Records of all 'Tool-Box Talks' and attendance shall be kept in the site offices.

8.3 Specialist Training

Specialist training for specific members of the construction crews will be provided as required. This may include but will not be limited to: Emergency environmental crews, Waste representatives and Fuel tanker drivers.

9. Environmental Management of Site Activities

9.1 General

The following outlines how potential impacts from the construction phase of the project will be mitigated.

9.2 Air Quality – Dust

Dust emissions from a site can cause a nuisance for neighbours and contribute to air pollution. The principal activities that have the potential to result in fugitive emissions of dust from site construction works are considered to be excavations, earthworks and the movement of site traffic on paved and unpaved roadways. Dust can be spread onto the public highway and along public access paths by vehicles entering and exiting the site.

The Principle Contractor will develop a best practice management scheme for the control of dust on the site; the elements which may be adapted are outlined below.

Issue	Control Measure
Site planning	• Erect solid barriers to site boundary • No bonfires to be present on site • Plan site layout - machinery and dust causing activities should be located away from sensitive receptors • All site personnel to be fully trained • Trained and responsible manager on site during working times to maintain logbook and carry out site inspections • Hard surface site haul routes
Construction traffic	• The main site for construction access will be off Belgard Road, which provides the greatest accessibility onto the strategic highway network whilst minimising the impact on local receptors. • All vehicles to switch off engines - no idling vehicles • All vehicles leaving the site will be subjected to a wheel washing and vehicle cleaning procedure that will limit the carriage of mud and dust from the site accumulating on off-site roads. • Materials deliveries report to site office and unload within materials storage area. • All loads entering and leaving site to be covered • All site roads will be swept and sprayed with water in prolonged spells of dry weather to prevent dust causing a nuisance off-

	site • No site runoff of water or mud • Minimise movement of construction traffic around site • Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site • Site construction vehicles will be retained on site during the construction period. To minimise noise and emissions, all construction machinery will be switched off when not in use and speed limits imposed on internal roads and across the site.
Earth moving works	• Earthworks and stockpiles will be sited and managed to avoid adverse effects from dust and to prevent damage to underlying soil • Minimise dust generating activities • Use water as dust suppressant where applicable • Cover, seed or fence stockpiles to prevent wind whipping • Re-vegetate earthworks and exposed areas

9.3 Ecology

The proposed development consists of a new gated footbridge from car park of the university campus to Airton Close. It is proposed to fabricate, supply and install a new pedestrian footbridge and gates to the design indicated in planning application Ref. SD21A/0104. Low level landscape and trees are to be planted either side of footbridge. Existing trees will be retained where possible.

During the construction phase of the proposed development, surface water is to be collected via existing road gullies in the car park. These gullies discharge to the River Poddle. During the operational phase of the proposed development, the construction of the footbridge will include the installation of 150mm ACO drains along the footbridge which will discharge to the River Poddle. Given the nature of the proposed development, it will not generate foul water.

Following an examination, analysis and evaluation of the best available information, and applying the precautionary principle, it can be concluded that the possibility of any significant effects on any European sites, whether arising from the project alone or in combination with other plans and projects, can be excluded. In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the zone of influence, and their conservation objectives, have been fully considered. For the full 'Appropriate Assessment Screening Report' refer to Appendix 3.

9.4 Noise & Vibration

The Principle Contractor shall at all times apply the principles of Best Practicable Means and carry out all work in such a manner as to reduce any disturbance from noise and vibration to a minimum. Site opening hours will typically be 07:00-18:00 Monday to Friday, 07:00-17:30 Saturday, no work on Sundays and public holidays.

General Construction Noise
The Principle Contractor shall ensure that all plant has appropriate certification to indicate that it conforms to regulatory limits (where applicable). Generators and other potentially noisy plant will be located away as far from properties as is practical. Noisy plant will be screened as appropriate to prevent nuisance. All appropriate equipment will be fitted with silencers where possible.

Vehicle noise
Vehicles and plant used during construction will be maintained in good and efficient working order. When not in use machinery is to be switched off and not left running. Site vehicles will not be over-revved. All machinery will be properly maintained and silenced according to manufacturer's instructions. Acoustic covers will be fitted to appropriate machinery. All vehicles to observe set speed limits on site and local roads. Toolbox talks will be communicated to site staff and contractors so that they are fully informed of noise and vibration control.

Mitigation measures if required will be in accordance with BS5228: Parts 1 and 2.

9.5 Traffic Management

The Principle Contractor shall prepare and implement a Traffic Management Plan (TMP) outlining procedures to follow and prescribed routes when working on the site. The TMP shall incorporate any restrictions imposed by the planning consents, Highways Authorities and/or the Garda Síochána. The TMP will include specific routeing for construction traffic to the site via Belgard Road and restrictions on construction hours. The TMP shall be circulated to all parties who are employed or have a legitimate interest in the works.

The Principle Contractor shall ensure that Construction Traffic Routeing Signs are erected prior to works commencing, and that these are maintained in good and clean condition throughout the duration of the works.

9.6 Waste

The construction of the development will lead to the generation of waste. The key to minimising the production of waste is to implement the waste hierarchy of Reduce, Reuse, Recycle, and Dispose. Reducing the amount of materials used also has the effect of minimising use of natural resources and reducing costs.

The Principle Contractor shall produce and implement a Site Waste Management Plan (SWMP)

with respect to all wastes. This will set out the requirements of the project including how the project will:

- Clearly identify all wastes that are likely to be produced during construction and classify them as 'controlled' ('general') or hazardous wastes
- Minimise the waste generated
- Reuse or recycle wherever possible
- Collect, separate, store and contain securely and label all wastes
- Allocate responsibility for waste management on site
- Employ suitable licensed waste contractor(s) and audit their licence(s); and
- Monitor and periodically audit the waste management scheme and activities.

The SWMP will ensure the site meets and maintains the legal waste requirements for the site.

9.7 Contaminated Land

The presence of any significant previously unidentified contamination which becomes evident during the development of the site shall be brought to the immediate attention of the Client and where necessary the appropriate statutory authority, and works in connection with the unsuspected contamination shall cease until such time as a remediation scheme has been submitted to and approved in writing by Council/Department of the Environment, Climate and Communications. The agreed remediation measures shall then be implemented in their entirety and retained and maintained thereafter in accordance with the planning consent for the site.

9.8 Energy Strategy & Sustainability

The Principle contractor will be pro-active to implement measures to address the procurement of materials, the environmental impact of materials and the sourcing of materials.

10. Monitoring and Auditing

10.1 Introduction

Appropriate monitoring of the environmental effects of construction enables the effectiveness of environmental mitigation to be evaluated. It also allows environmental problems to be identified and responded to at an early stage. Monitoring will also help the Principle Contractor to identify and implement environmental improvements, which will contribute to the overall environmental performance of the project.

10.2 Environmental Audits

The Principle Contractor will carry out appropriate environmental inspections and monitoring of environmental performance in the form of monthly audits. Formal audits will be against an audit checklist, which will provide a mechanism to monitor and assess compliance against all the Principle Contractors requirements and standards.

Where problems are recognised, the corrective action will be identified by the inspector and subsequent corrective action undertaken within a defined time frame.

10.3 Environmental Monitoring

Environmental monitoring shall be carried out as necessary and requirements for environmental monitoring shall be reviewed as consents are received and consultations completed. Key parameters that will require environmental monitoring include:

- Energy use arising from construction site activities
- Water use arising from construction site activities
- Waste generation during construction; to be monitored as part of the Site Waste Management Plan to ensure the appropriate treatment, handling, management and disposal measures are applied. Records shall be kept of quantities and types of waste handled
- The site compound including fuel storage and spill control equipment
- Construction Plant and Equipment; and,
- Dust pollution arising from construction site activities.

Documentation from environmental monitoring shall be maintained and made available as appropriate.

10.4 Environmental Incident and Corrective Action Reporting

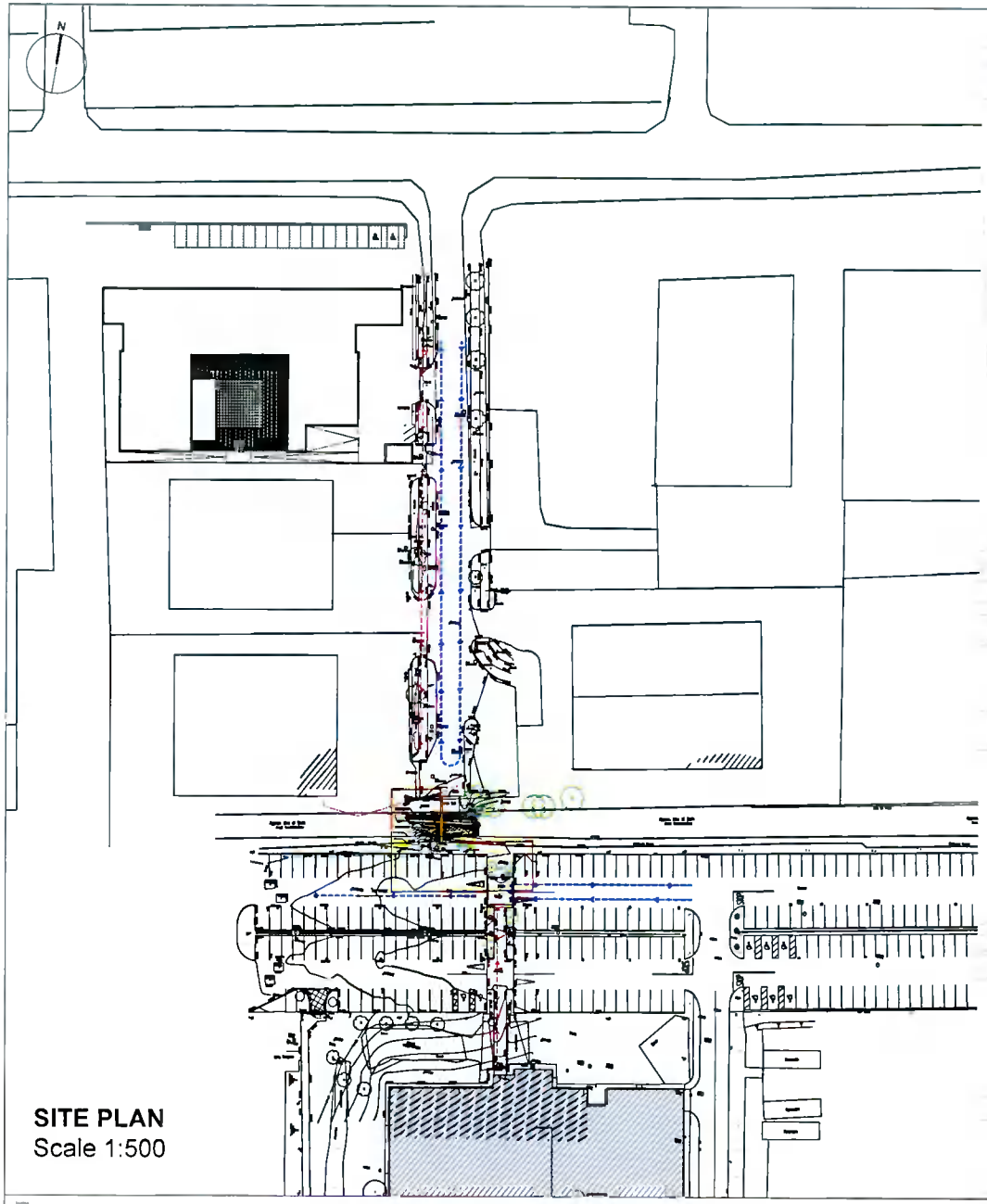
All environmental incidents and near misses shall be reported and investigated by the Principle Contractor. All environmental incidents shall be reported as soon as possible. Where relevant, the

appropriate statutory authority (e.g. Environmental Protection Agency) shall be informed immediately. Copies of incident investigation reports shall be supplied by the Principle Contractor and action taken to prevent recurrence.

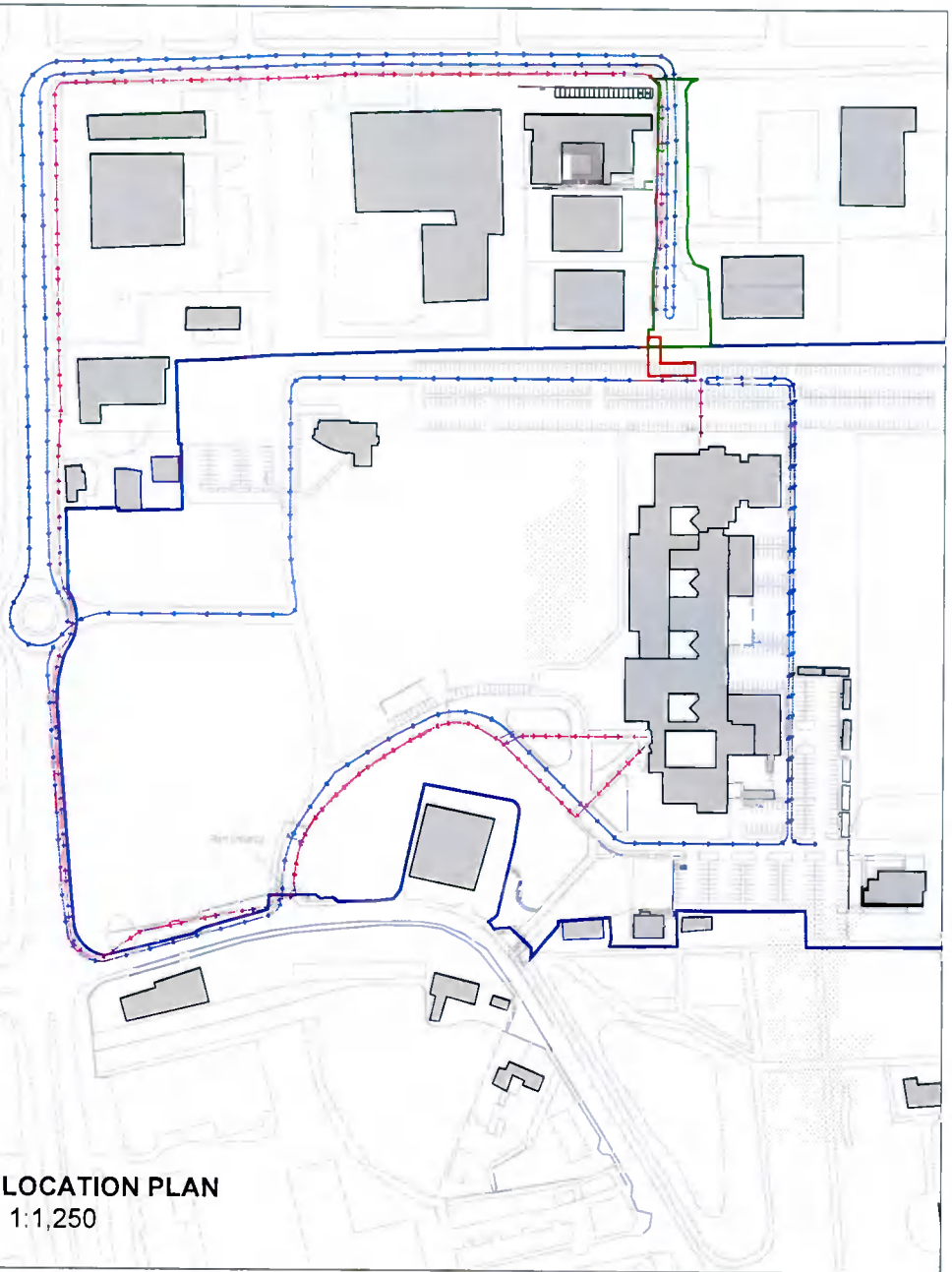
All corrective action, incident and near miss report forms shall be held in a register maintained at the construction site.

Appendix 1

Architectural Drawings



SITE PLAN
Scale 1:500



SITE LOCATION PLAN
Scale 1:1,250

Technological University Dublin - Tallaght
Anton Close

Existing Site Plan
Footbridge

PLANNING — As stated@A1 — 10/02/2020

Project no.	Originator	Zone	Level	Type	Role	Number	File
18132	HAM	XX	XX	DR	A	00004	P1

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Rev	Description	Date	Initial	Chkd
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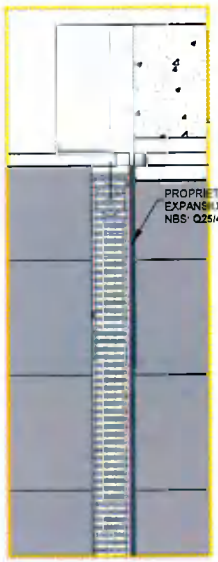

150mm ACO Drain - Plan View
Scale 1:10

Site Plan View
Scale 1:50

TECHNOLOGICAL UNIVERSITY DUBLIN
AIRTON CLOSE

FOOTBRIDGE PLAN & DETAILS
PROPOSED PLAN

TENDER 1/50, 1/10 09.05.2018

18132 HAM XX 00 DR A 2401 04

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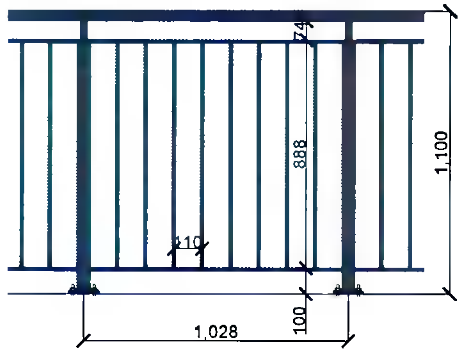
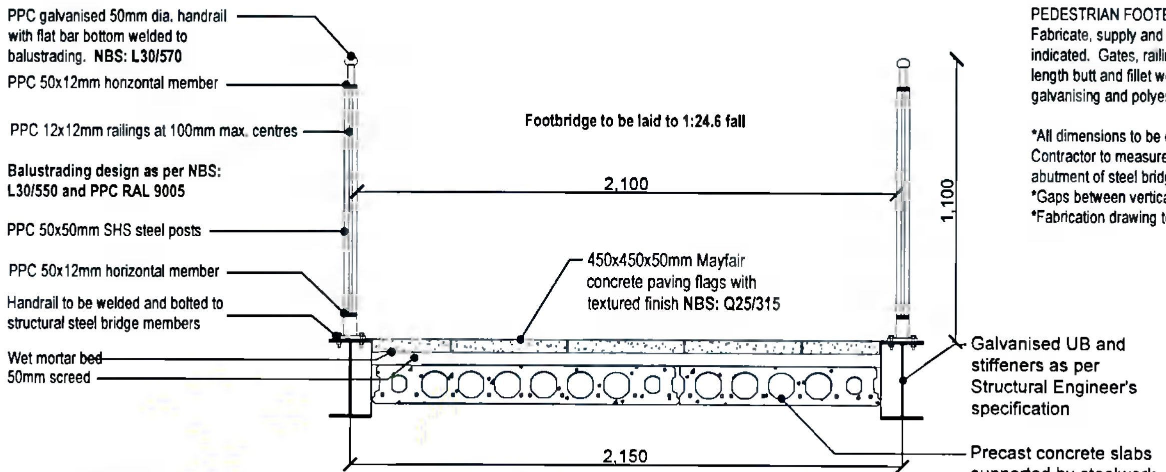
PEDESTRIAN FOOTBRIDGE & GATES
Fabricate, supply and install new pedestrian footbridge and gate to design indicated. Gates, railings and posts to be manufactured in mild steel, with full length butt and fillet welds at all joints. All welds to be ground smooth prior to galvanising and polyester powder coated, black - RAL9005.

*All dimensions to be clarified by site measurement prior to manufacture. Contractor to measure and mark out foundations to ensure an accurate abutment of steel bridge.
*Gaps between vertical bars no to be greater than 99mm.
*Fabrication drawing to be provided for comment prior to manufacture.



FOOTBRIDGE BALUSTRADING DETAIL
SCALE 1:10



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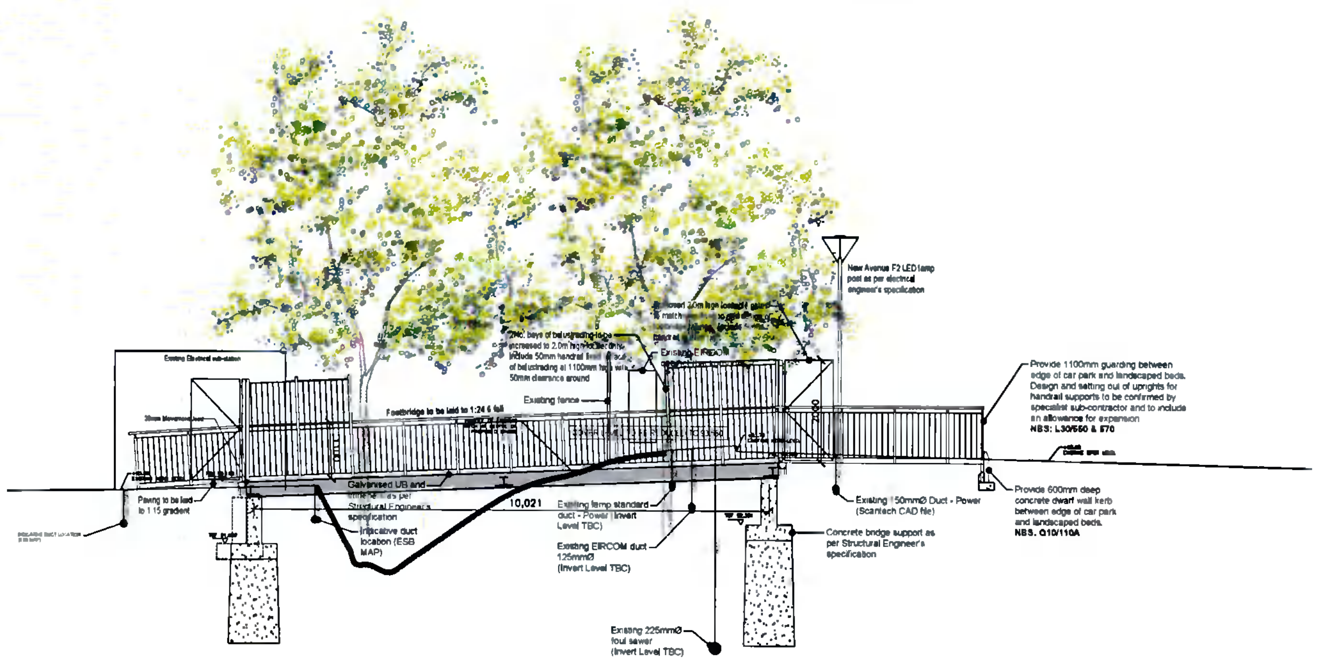

FOOTBRIDGE SECTION A-A 1:50

TECHNOLOGICAL UNIVERSITY DUBLIN AIRTON CLOSE	
FOOTBRIDGE PROPOSED SECTION ELEVATION	
PLANNING	1:50 & 1:10@A1 10/02/2020
18132 HAM XX 00 DR A 00006	P1

P1 Additional 3m high gates & railings at Airton Close added 29.11.21 MG MP

Rev | Description | Date | Initial | Chk'd

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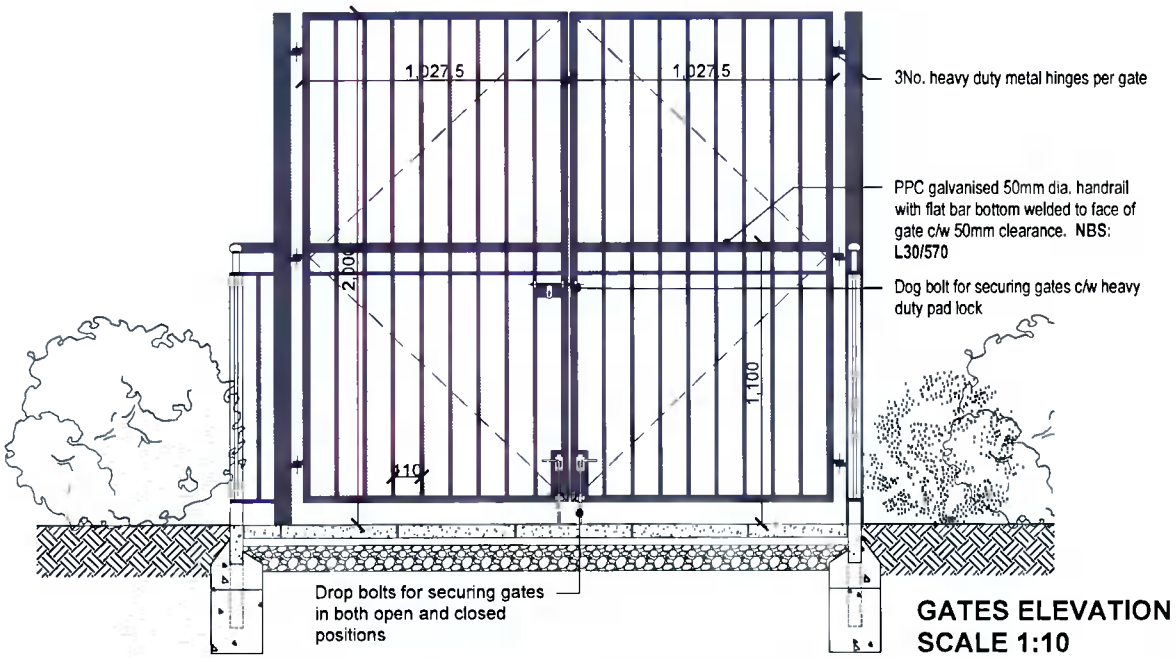

GATES ELEVATION
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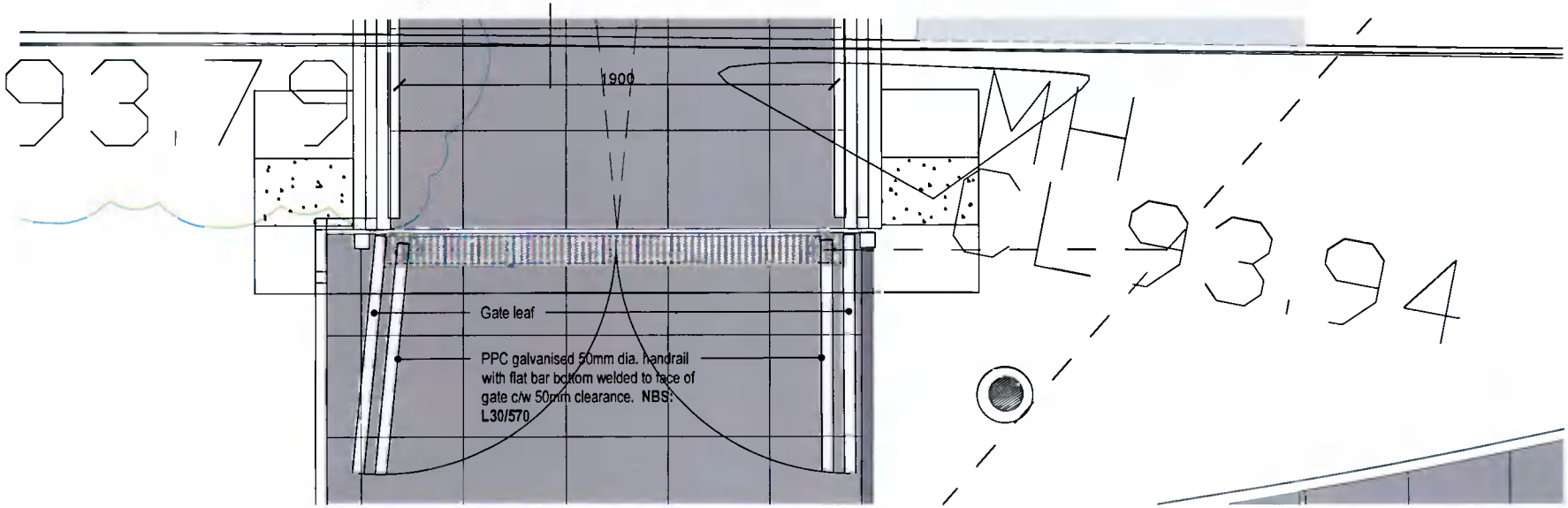

GATES PLAN
SCALE 1:10

TECHNOLOGICAL UNIVERSITY DUBLIN
AIRTON CLOSE
FOOTBRIDGE
PROPOSED DETAILS
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18132 HAM XX 00 DR A 00007 P1
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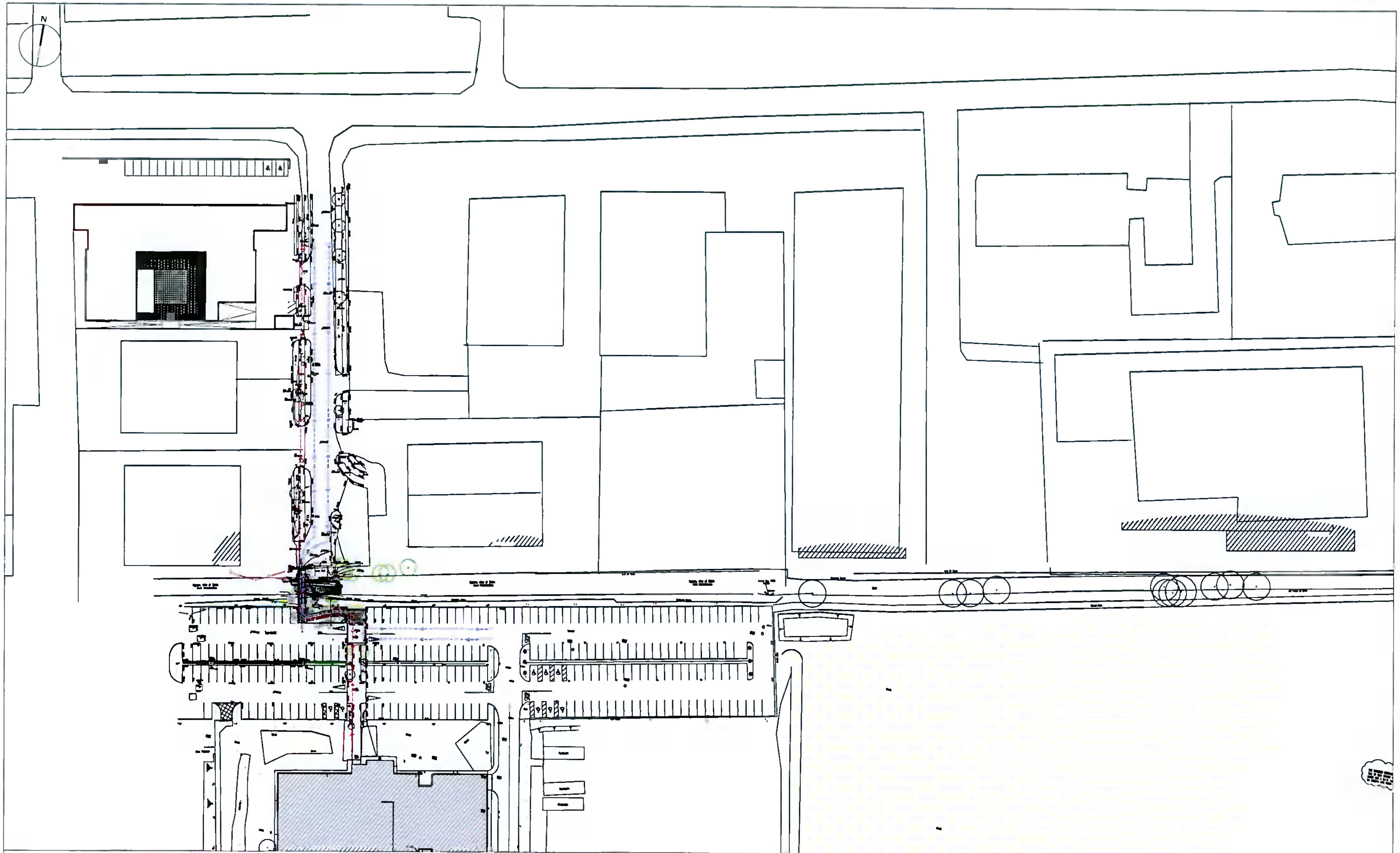

KEY

Rev	Description	Date	Initial	Chk'd
P1	First issue	[illegible]	MG	MP

Technological University Dublin - Tallaght
Airton Close

Proposed Site Plan
Footbridge

PLANNING 1:500@A1 29/11/2021

18132 HAM XX XX DR A 00008 P1

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Appendix 2

Flood Risk Assessment Report

McCloy Consulting

Flood Risk Assessment

TU Dublin, Tallaght, Dublin 24

M02174-01_DG02 | December 2021

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DOCUMENT CONTROL

DOCUMENT FILENAME	M02174-01_DG02 TU Dublin, Tallaght FRA Rev 3.Docx
DOCUMENT REFERENCE	M02174-01_DG02
TITLE	Flood Risk Assessment
CLIENT	TU Dublin
CLIENT CONTACT	McMahon Associates
PROJECT MANAGER	Kyle Somerville
AUTHOR(S)	Duncan Hartwick, Paul Singleton
BRANCH	DUBLIN Unit 12, The BEaT Centre, Stephenstown Industrial Estate, Balbriggan T: +353 (0)1 5138963 | W: www.mccloyconsulting.ie

REVISION HISTORY

Rev. Ref.	Date	Prep	Chk	App	Amendments	Reason for Issue
1	13/10/2021	PS	DKS	DKS	Original	Draft for Review / Approval
2	22/11/2021	PS	DH	DKS	Minor Amendments	For Information
3	03/12/2021	PS	DH	DKS	Section 50 Consent added	For Information

DISTRIBUTION

Recipient	Revision					
	1	2	3	4	5	6
FILE	✓	✓	✓			
CLIENT	✓	✓	✓			

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APPENDICES

1 INTRODUCTION

1.1 Terms of Reference

This Flood Risk Assessment (FRA) report was commissioned by TU Dublin to support a planning application for the development of proposed watercourse crossing at TU Dublin, Tallaght, Dublin 24. The proposed development is hereafter referred to as 'the site'.

1.2 Statement of Authority

This report and assessment have been prepared and reviewed by qualified professionals with appropriate experience in the fields of flood risk, drainage, wastewater, and hydraulic modelling studies. The key staff members involved in this project are as follows:

- Duncan Hartwick *BEng (Hons) BSc (Hons) MIEI* – Project Engineer with experience in flood risk assessment, flood modelling, hydrology and hydrogeology, and SuDS.
- Paul Singleton *BEng (Hons) MSc CEng MIEI* – Chartered Civil and Environmental Engineer specialising in flood risk assessment, hydrology, and SuDS, and recognised as an industry professional providing industry training in these fields in both Ireland and the UK.
- Kyle Somerville *BEng (Hons) CEng MIEI* – Director of the McCloy Consulting Ltd Irish branch and Chartered Engineer specialising in flood risk assessment, flood modelling, hydrology, and drainage and surface water management design.

1.3 Purpose

This assessment is intended to produce a detailed FRA to ensure that all relevant issues related to flooding are addressed. This Stage 3 FRA will assess the adequacy of existing information and present analysis undertaken to supplement existing data.

The assessment will therefore determine potential sources of flooding at the site. This report will also determine flood zones relevant to planning policy guidelines specific to flood risk management planning and will provide a basis for appropriate design and mitigation measures to be considered as part of the proposed development.

1.4 Approach to the Assessment

Consideration has been given to the sources and extent of fluvial flooding at the site, as well as flooding from pluvial sources, overland flow, and ponding of localised rainfall at the site. A walkover survey of the site was carried out by McCloy Consulting to investigate all sources of potential flooding, and a photographic survey of the site and adjacent lands was undertaken at the same time. A topographical survey of the site was also commissioned and undertaken by a third party.

The method of assessment complies with the Source-Pathway-Receptor model, allowing for a spatial assessment of flood risk to people, properties, and the environment at the site.

1.4.1 Hydraulic Model Status

For the purposes of this assessment, the primary stakeholders are the Office of Public Works (OPW) and South Dublin County Council (SDCC). OPW and SDCC data was used to form the basis of this assessment

The OPW have developed detailed Flood Maps as part of the Catchment Flood Risk Assessment and Management (CFRAM) Programme. The unnamed watercourse at the site (a tributary of the Tymon River) is included in the 'Poddle River Fluvial Flood Extents' CFRAM Flood Maps.

The CFRAM Flood Maps are understood to not be directly suitable for site-specific flood risk assessments / watercourse crossing design. Additional analysis was therefore deemed necessary. To facilitate a better understanding of flood risk at the site and to inform future development, detailed hydraulic modelling of the unnamed watercourse has been undertaken and is summarised in this report.

1.4.2 Planning Guidelines

The requirements for flood risk assessments are generally as set out in the OPW's The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009, hereafter referred to as 'the OPW Guidelines'. Further guidance is also provided in the CIRIA Research Project 624 Development and Flood Risk: Guidance for the Construction Industry.

Planning guidelines applicable to the area of interest are implemented in the South Dublin County Council Development Plan 2016-2022 – specifically through the Strategic Flood Risk Assessment, hereafter referred to as the 'SDCC SFRA' – and in the Tallaght Town Centre Local Area Plan 2020-2026, specifically through the 'Tallaght LAP SFRA'.

These two SFRAs were prepared in accordance with the requirements of the OPW Guidelines and adopt an identical flood zone standard to the national planning guidelines. Flood Zones are the extents of a design flood event that determine the suitability of development from a flood risk viewpoint and are defined in both the OPW Guidelines and SFRAs as follows:

- Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding).
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding).
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding).

The OPW Guidelines clarify that Flood Zones are to be used to determine suitability of proposed developments and are to be derived from 'present day' hydrological estimates. The OPW Guidelines also state that Flood Zones are generated without the inclusion of climate change and that, in addition to flood zoning, developments should be designed to be resilient to the effects of climate change.

2 DEVELOPMENT AND SITE DETAILS

2.1 Site Location

Figure 2.1 Location Context

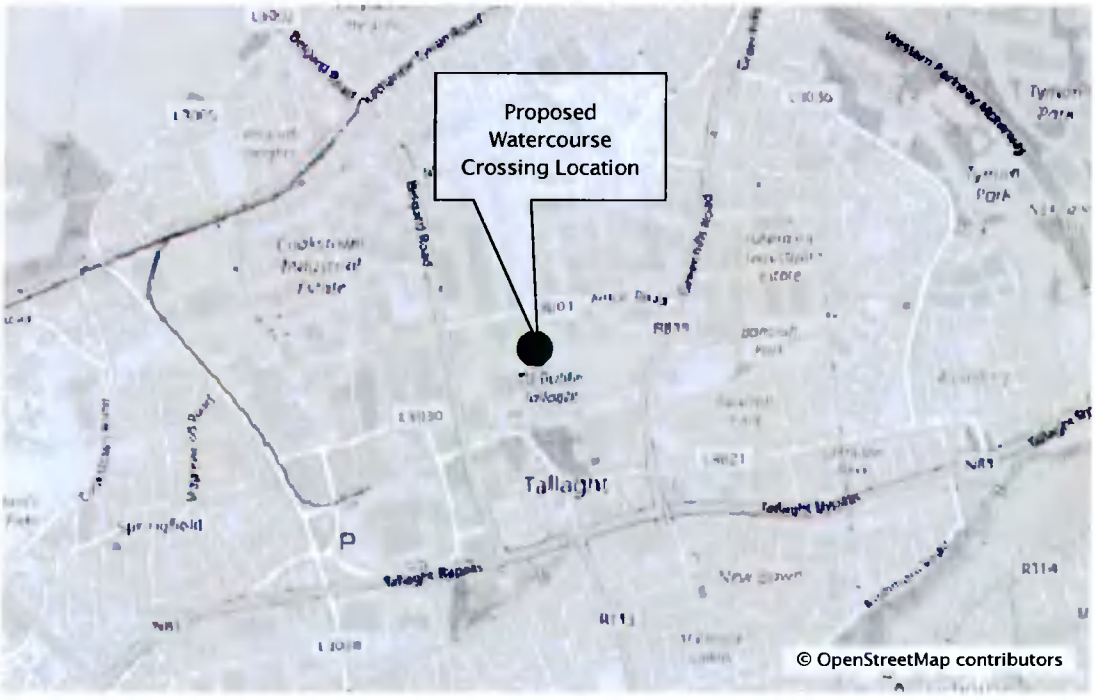
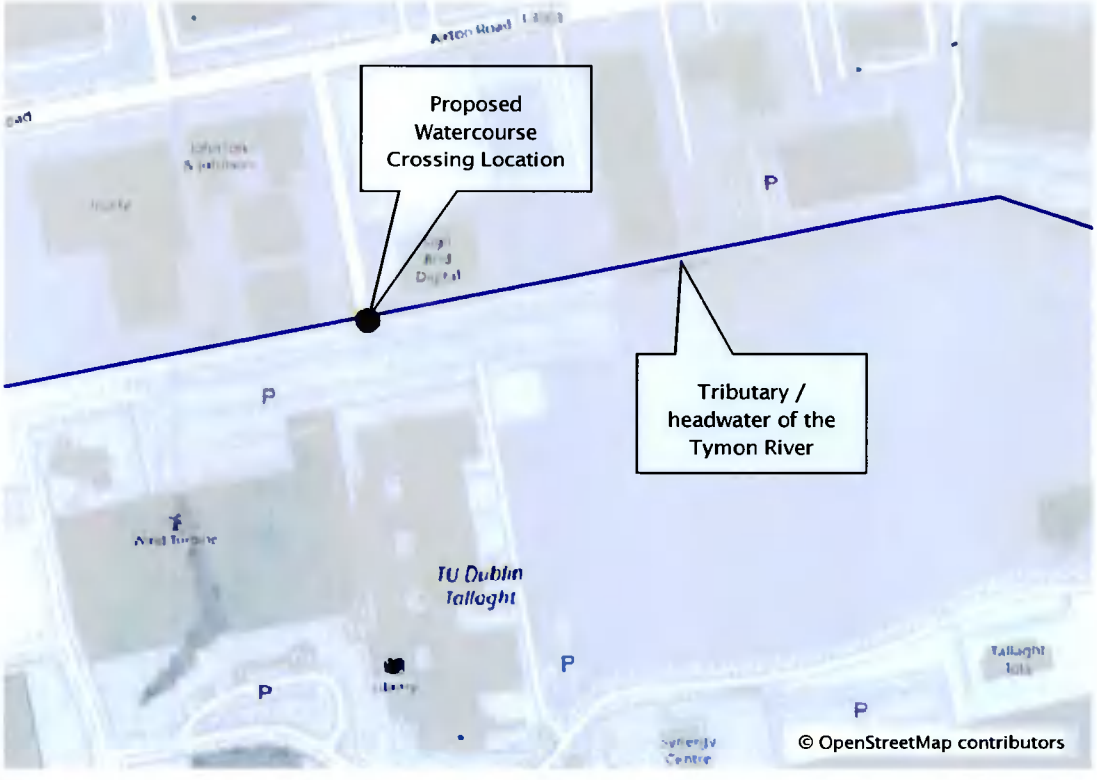


Figure 2.2: Site Location



2.2 Development Proposals

The proposed development is located at TU Dublin, Tallaght, Dublin 24 and comprises a clear span watercourse crossing to facilitate pedestrian access between the TU Dublin site and Airton Close to the north. The proposed crossing location over a tributary / headwater of the Tymon River is shown in Figure 2.2. At this location, the watercourse flows in a straight, relatively clean channel with no existing watercourse crossings in the vicinity.

Relevant proposal drawings are included in Appendix A. Photographs of the existing site and its surroundings, taken as part of the walkover survey carried out by McCloy Consulting, are included in Appendix E.

2.3 Vulnerability Classification

The proposed development comprises residential development with vulnerability classification – per the classification criteria set out in the OPW Guidelines – as follows:

Table 2.1: Vulnerability Classification

Part	Use	Classification
Pedestrian Access Bridge	Local Transport Infrastructure	Less Vulnerable

3 BACKGROUND INFORMATION REVIEW

As part of the data collection phase of this assessment, several available sources of information, generally as set out in the OPW Guidelines, were investigated to build an understanding of the potential risk of flooding to the site. The following review highlights the key findings of this background information.

3.1 South Dublin County Council Development Plan 2016-2022

The South Dublin County Council Development Plan 2016-2022 and SDCC SFRA have been considered as part of this FRA, with the following objectives being the most relevant to flooding and drainage:

- FMP 2: To restrict development in areas susceptible to flooding except where; a) The proposed development can be justified on strategic grounds; b) The flood risk can be managed to an acceptable degree and without increasing flood risk beyond the site itself; c) Appropriate and detailed mitigation measures can be implemented to remove/minimise flood effects.
- FMP 3: Development proposals on land identified as being at risk of flooding shall be accompanied by a site-specific Flood Risk Assessment (FRA) carried out in accordance with the methodology set out in The Planning System and Flood Risk Management – Guidelines for Planning Authorities, 2009.
- FMP 4: All applications in areas prone to flooding shall be subject to the justification test set out in the Flood Risk Management Guidelines. Compensatory flood storage provision or the provision of flood defences will not override the need for completion of the justification test.
- FMP 5: To protect the capacity of rivers, streams, riparian corridors, flood plains and wetlands from inappropriate development which will contribute to increased flood risk. Development on or within a floodplain will not be permitted.
- SDP 1: To require best practice in the design, construction, and operation of expanding and new developments to ensure minimum effects on the aquatic environment. Sustainable Urban Drainage Systems designed to ensure both water quality protection and flood minimisation should be included in developments.
- SDP 2: To ensure that new development is adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems as appropriate to minimise the effect of a development on flooding and pollution of existing waterways.
- SDP 3: To require that planning applications are accompanied by a comprehensive SuDS assessment that addresses run-off quantity, quality, and its impact on the existing habitat.
- SDP 4: To ensure that all storm water discharges shall be restricted onsite attenuation and or other measures to the pre-development levels (greenfield) in all new developments. All attenuated storage volumes must take into consideration climate change.

3.2 Tallaght Town Centre Local Area Plan 2020-2026

The Tallaght Town Centre Local Area Plan 2020-2026 has also been considered as part of this assessment, with the following objectives being the most relevant to flooding and drainage:

- UF7: To protect, enhance and develop an interconnected green and blue infrastructure network of parks, open spaces, hedgerows, grasslands, rivers and streams for amenity and recreation, biodiversity protection, flood management and adaptation to climate change.
- CC6: It is an objective of the Council to manage flood risk in Tallaght Town Centre in accordance with the requirements of The Planning System and Flood Risk Management Guidelines for Planning Authorities, DECLG and OPW (2009) and Circular PL02/2014 (August 2014). For lands identified as being at risk of flooding in (but not limited to) the Strategic Flood Risk Assessment, a site-specific Flood Risk Assessment to an appropriate level of detail, addressing all potential sources of flood risk, is required.

Further, the following are outlined in the Tallaght LAP SFRA:

- The implementation of the Planning Guidelines on a settlement basis is achieved through the application of the policies and objectives contained within Section 7.3.0 'Flood Risk Management' of the South Dublin County Council Development Plan 2016-2022.
- Key development sites have been identified throughout the Tallaght Town Centre LAP. Most of the identified sites are located within Flood Zone C and, therefore, have a low risk of fluvial flooding. However, specific key development areas are within or close to the River Poddle pluvial extents (including this site).

- As part of any regeneration programme, areas identified to be at risk of fluvial or pluvial (surface water) flooding will require an FRA at development management stage.
- All stormwater design proposals / drainage assessments should be undertaken in accordance with the Greater Dublin Strategic Drainage Study guidance document. Reference should also be made to the Surface Water Management policies and objectives contained within the South Dublin County Development Plan and the Tallaght Town Centre LAP.

Predictive pluvial flood mapping was produced as part of the Tallaght LAP SFRA and is intended to supersede the pluvial extents shown on the OPW Preliminary Flood Risk Assessment (PFRA) flood maps.

As shown in Figure 3.1, the Tallaght LAP SFRA pluvial flood mapping indicates that the proposed watercourse crossing location is not affected by pluvial flooding. An extract from the Tallaght LAP SFRA is included in Appendix B.

Figure 3.1: Tallaght LAP SFRA Predictive Flood Mapping (Pluvial Extents)

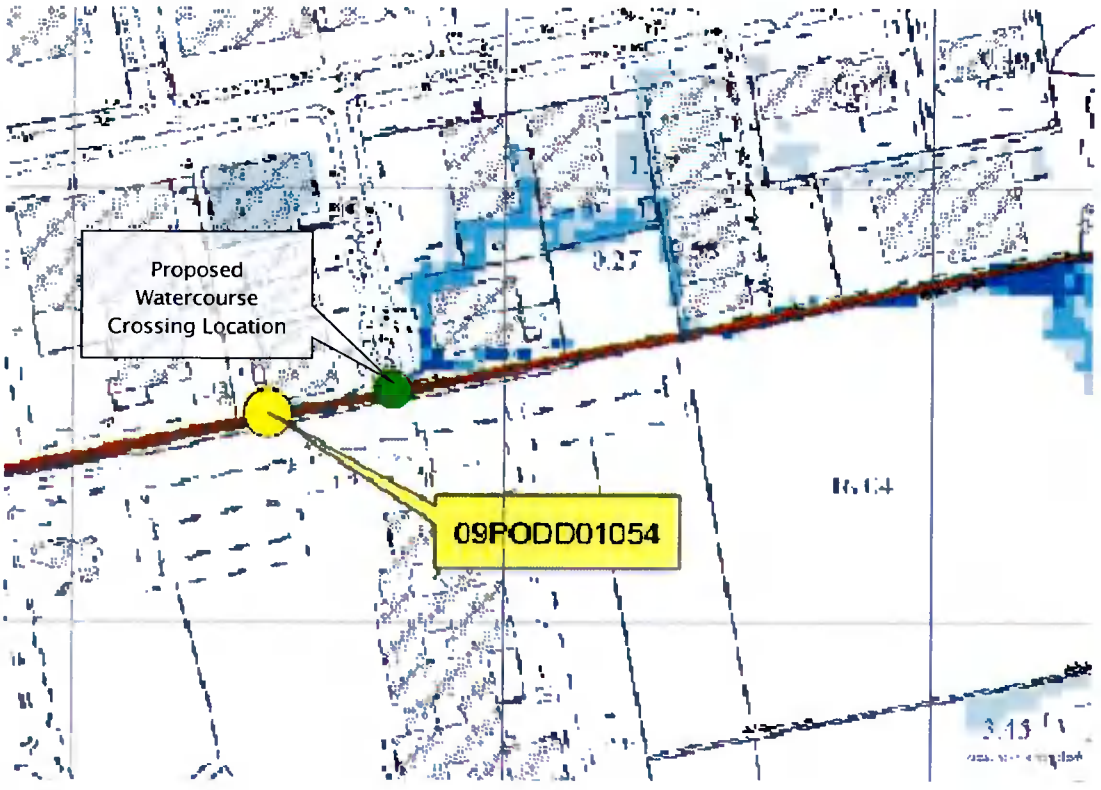
3.3 Office of Public Works Data

3.3.1 Catchment Flood Risk Assessment and Management (CFRAM)

CFRAM Flood Maps were developed during the second stage of the CFRAM Programme and are more detailed than the PFRA indicative flood maps. The site and surrounding area are included in the 'Poddle River Fluvial Flood Extents' CFRAM Flood Maps.

The CFRAM Flood Maps for the area are available through the OPW online portal (floodinfo.ie). An extract from the relevant CFRAM Flood Map is included in Figure 3.2, and copies of the original Flood Maps are included in Appendix B.

Figure 3.2: CFRAM Flood Extents Map



3.3.2 Past Flood Events

OPW Past Flood Events mapping (also available through floodinfo.ie) provides no records of past flooding in the vicinity of the site.

3.4 Internet / Media Background Search

A background search comprising internet media and archived newspaper articles found no evidence of flooding in the vicinity of the site.

3.5 Walkover Survey

A walkover survey, which included a photographic survey, of the site and adjacent lands was conducted by McCloy Consulting on 10th August 2021. Photos are included in Appendix E.

The watercourse at the site was observed to flow in a relatively clean, straight channel and seemed to have been recently maintained and widened. No evidence of out-of-bank flooding was noted.

4 ASSESSMENT OF FLOOD MECHANISMS

4.1 Preamble

Development control procedures advise against inappropriate development in areas at risk of flooding and aim to avoid new development that increases flood risk elsewhere, in accordance with the OPW Guidelines.

The following assessment determines the flood hazards to life and property at the site to subsequently assess the site and proposed development based on the Flood Risk Framework outlined in the OPW Guidelines. Mitigation of flood hazards, where required, is detailed in Section 5.2.

4.2 Initial Assessment

Table 4.1 shows a record of the screening assessment of the development site for potential flooding mechanisms requiring further detailed assessment. It is based on the background information review and consultations.

Table 4.1: Possible Flooding Mechanisms

Source/Pathway		Significant?	Reason
Fluvial Flooding	Floodplain	Yes	OPW flood mapping indicates that there is a risk of fluvial flooding in the vicinity of the site.
	Culvert Blockage	Possible	The proposed development constitutes a watercourse crossing.
Coastal Flooding		No	N/A
Urban Drainage		No	No urban drainage flooding / sewer incapacity was identified in an initial evidence search.
Surface Water Flooding		No	Tallaght LAP SFRA and OPW flood mapping does not indicate that the site is predicted to be affected by surface water flooding.
Surface Water Discharge		No	The proposed development is of limited scale and will have no discernible impact on surface water runoff. Existing flow regimes (into the watercourse) will not be changed.
Groundwater		No	OPW flood mapping does not indicate that the site is predicted to be affected by groundwater flooding. Due to the site topography, there are no areas that would cause impoundment of groundwater.
Reservoirs / Canals / Artificial Sources		No	A screening assessment based on OSI mapping indicates that there are no impoundments or reservoirs in close proximity to or that drain towards the site.

Those flood mechanisms screened as being potentially significant have been assessed in further detail and are discussed in the following sections.

4.3 Existing (Pre-Development) Fluvial Flooding

4.3.1 Preamble

As no existing flood model data was available for the unnamed watercourse at the site, a site-specific detailed hydraulic model suitable to the scale and nature of the proposed development and its associated risk was developed. Details of the methodology are included in Appendix C.

4.3.2 Flood Zoning / Existing Flood Risk (Present Day)

Flood water from the 1% AEP (Flood Zone A) and 0.1% AEP (Flood Zone B) events has been determined to remain inside the steep-sided, open-channel watercourse that runs adjacent to the site. This is consistent with the 'Poddle River Fluvial Flood Extents' CFRAM Flood Maps.

Table 4.2 shows the flood levels determined from the hydraulic model at cross sections upstream of, adjacent to, and downstream of the proposed watercourse crossing location.

Mitigation of flood risk to future development shall be achieved by siting development outside the 1% AEP / 0.1 % AEP fluvial flood extents and ensuring proposed finished levels provide sufficient freeboard above the predicted flood levels. Mitigation is discussed in detail in Section 5.2.

Table 4.2: Modelled Flood Levels - Existing Scenario Present Day

Model Node Reference	Location	Flood Zone A / 1% AEP Water Level (mOD)	Flood Zone B / 0.1% AEP Water Level (mOD)
520.036	Upstream of the Proposed Watercourse Crossing	92.86	92.98
467.85	Adjacent to the Proposed Watercourse Crossing	92.50	92.63
404.375	Downstream of the Proposed Watercourse Crossing	91.98	92.10

4.4 Proposed (Post-Development) Fluvial Flooding

4.4.1 Preamble

The following report sections assess flood risk to the development as proposed and determine the effect of the development proposal on flood risk elsewhere.

4.4.2 Proposed Flood Risk - Present Day (Effect of the Development)

Given that flood water from the 1% AEP (Flood Zone A) and 0.1% AEP (Flood Zone B) events has been determined to remain inside the watercourse, the proposed development is wholly sited in Flood Zone C, in accordance with the OPW Guidelines and SDCC requirements. It will therefore have no impact on the existing floodplain or on flood risk elsewhere. Table 4.3 shows the proposed scenario flood levels, which are the same as the existing scenario flood levels shown in Table 4.2.

Table 4.3: Modelled Flood Levels – Proposed Scenario Present Day

Model Node Reference	Location	Flood Zone A / 1% AEP Water Level (mOD)	Flood Zone B / 0.1% AEP Water Level (mOD)
520.036	Upstream of the Proposed Watercourse Crossing	92.86	92.98
467.85	Adjacent to the Proposed Watercourse Crossing	92.50	92.63
404.375	Downstream of the Proposed Watercourse Crossing	91.98	92.10

4.4.3 Proposed Flood Risk – Climate Change

The OPW Guidelines and the SDCC SFRA require site-specific FRAs to consider increased flood risk to the proposed development due to climate change. OPW guidance suggests using a Mid-Range Future Scenario (MRFS), which represents a 20% increase in flood flows and / or 0.5 m increase in mean sea level.

An estimation of the effect of climate change on flooding at the site has been derived from the detailed hydraulic model using a 20% increase in the present day design flows. Table 4.4 shows the anticipated post-development climate change flood levels at the site.

Allowance for climate change causes a maximum increase in flood level of 0.10 m and flooding for the 1% AEP + CC / 0.1% AEP + CC events does not impact any part of the proposed development as floodwater is still retained in the watercourse.

Mitigation of the predicted effects of climate change, through selection of an appropriate freeboard, is discussed in Section 5.2.

Table 4.4: Modelled Flood Levels – Proposed Scenario Climate Change

Model Node Reference	Location	1% AEP + CC Water Level (mOD)	0.1% AEP + CC Water Level (mOD)
520.036	Upstream of the Proposed Watercourse Crossing	92.96	93.09
467.85	Adjacent to the Proposed Watercourse Crossing	92.60	92.73
404.375	Downstream of the Proposed Watercourse Crossing	92.08	92.20

4.4.4 Proposed Flood Risk – Downstream Culvert Blockage

The OPW Guidelines state that FRAs should also consider increased flood risk to the development arising from potential culvert blockage. However, the proposed development constitutes a clear span, minimal deck depth pedestrian bridge set above both the 1% AEP + CC and 1% AEP + CC flood levels. Given that the risk of blockage of the clear span bridge is negligible, blockage is not considered a source of flood risk to the site and surrounding area.

5 SUMMARY OF FINDINGS AND RECOMMENDATIONS

5.1 Summary of Findings

It has been demonstrated through site-specific hydraulic modelling that proposed development is outside the present day and climate change 1% AEP and 0.1% AEP fluvial floodplain of the unnamed watercourse that flows adjacent to the site. It has also been concluded that blockage is not considered a source of flood risk to the site and surrounding area.

In relation to Flood Zones as defined by the OPW Guidelines, it has been determined that the location of proposed development is wholly within Flood Zone C. As such, the proposal will have no impact on the existing floodplain or on flood risk elsewhere.

No other significant flood mechanism exists at the site.

5.2 Design Requirements

The following section details measures incorporated into the proposal submitted in support of the planning application and to be further developed in any detailed design post-determination of the planning application.

5.2.1 Land Use

This assessment demonstrates that the site is not at risk of flooding from any source and does not increase flood risk elsewhere. All proposed development is sited in Flood Zone C, meaning there is no policy-based restriction on land use within the site boundary.

5.2.2 Design Levels

In line with OPW stated requirements and in compliance with Section 50 design criteria, the soffit of the proposed watercourse crossing has been set at **92.91 mOD**; higher than the minimum 300 mm freeboard to the 1% AEP + CC flood level, as shown in Table 5.1. Section 50 consent has been applied for and received from the OPW as part of this assessment and is included in Appendix F.

It is noted that, while not a stated requirement, the proposed watercourse crossing will have a minimum top / deck level of 93.16 mOD. It is therefore set above both the 0.1% AEP and 0.1% AEP + CC flood levels and, as such, will be resilient to all design flood events.

Table 5.1: Proposed Watercourse Crossing Details

Location	Type	1% AEP + CC Flood Level (mOD)	Min. Soffit Level (mOD)	Freeboard (mm)
Unnamed Watercourse	Clear Span Pedestrian Bridge	92.60	92.91	310

5.2.3 Access Levels

In line with best practice outlined in the OPW Guidelines, access to and egress from the development should be within Flood Zone C (i.e., outside the 0.1% AEP fluvial flood extents) at a level of 92.63 mOD or greater.

The minimum top / deck level on the bridge is **93.16 mOD**, and floodwater is shown to be held in the channel. Safe access to and egress from the proposed development will therefore be possible during an extreme flood event.

5.3 Maintenance Requirements

5.3.1 Watercourse Maintenance

The owner / occupier(s) of the site shall be required to include general watercourse and culvert maintenance, which will reduce the risk of blockage at downstream culverts and screens and maintain the capacity of the channels. The following measures are intended to inform any future maintenance programme for watercourses and culverts:

- Maintenance should consist of removal of any items within the channel that can impede its flow including (small) trees, excess vegetation, etc.
- Riverbanks should be due adequate attention which would normally consist of removal of brambles, bushes, and stiff vegetation; these reduce flow capacity and can encourage collection of debris increasing the risk of blockages. Grass and nettles do not always need removing as they will lay flat during high flows.
- Weed growth should be removed from the centre of the channel as this will impede the flow and increase water levels up stream. Hand picking is best but cutting off under the water level is acceptable if it is done on an annual basis.
- Build-up of silt in watercourse channels and at culvert inlets should be removed and disposed of appropriately.
- Cyclical (minimum annual) visual inspection of culvert inlets and screens and removal of debris as required, ensuring debris removed is not deposited in an area likely to fall back into the channel.

5.4 Summary of Flood Risk and Mitigation

Table 5.2 summarises the mechanisms of flooding identified during this study, their associated hazards and consequence, as per the guidance set out in the OPW Guidelines, and proposed measures to mitigate the predicted risk.

Table 5.2: Summary of Risks and Mitigation

Identified Flood Mechanism	Consequence	Summary & Mitigating Measures
Fluvial flooding	Risk to life and property	All proposed development is situated in Flood Zone C. Design levels provide more than the required minimum freeboard to adjacent flood levels.
Effect of Climate Change	Risk to life and property	Finished development levels ensure a standard of protection exceeding 0.1% AEP + CC flood levels.
Effect of Culvert Blockage	Risk to life and property	Risk of flooding from culvert blockage has been deemed to be negligible.
Effect of the Development	Increased risk to adjacent lands and developments	All proposed development is situated in Flood Zone C and can therefore have no impact elsewhere.

5.5 Residual Risk

Consideration has been given regarding flooding caused by events or greater than the design standard.

Table 5.3: Residual Impacts

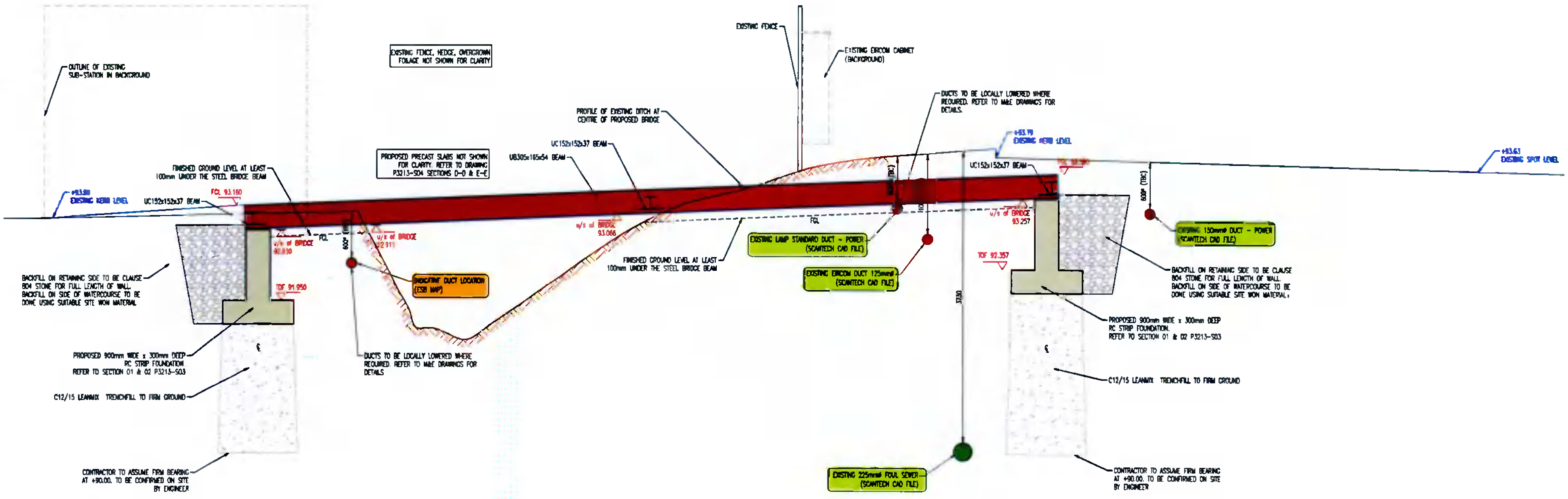
Description of Risk	Hazard	Residual Impact
Underestimation of 1% AEP / 0.1% AEP flood level	Inundation of the site for a design event	Extreme flood events well in excess of the design event would cause increased flooding to the site, the extent of which would be dependent on the flood magnitude. Critical design levels (FFLs) provide in excess of 300 mm freeboard to the 1% AEP + CC design flood level, and it is considered highly improbable that the degree of freeboard would be exceeded by a flood event.

Appendix A

Site Drawings

GENERAL NOTES

1. ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECT'S, CIVIL & STRUCTURAL DRAWINGS.



SECTION A–A
SECTION THROUGH PROPOSED BRIDGE
SCALE 1:50

P.C. CONCRETE

1. (arrow) INDICATES SPAN OF 150mm THK. PC. UNITS.
2. P.C. UNITS TO BE DESIGNED AND MANUFACTURED BY AN APPROVED SUPPLIER TO SUPPORT TO FOLLOWING SERVICE LOADINGS
   IMPOSED - 4.0 kN/m² (FOOTBRIDGE)
   DEAD - 2.4 kN/m² (EX. SELF WEIGHT)
3. THE P.C. UNITS SUPPLIER SHALL PROVIDE THE CONSULTING ENGINEERS WITH DRAWINGS AND CALCULATIONS FOR COMMENT 7 WORKING DAYS PRIOR TO MANUFACTURE.
4. CONCRETE TO BE DESIGNED FOR EXPOSURE CLASS XC4.

CONCRETE

1. ENGINEER TO INSPECT REINFORCEMENT PRIOR TO POURING.
2. 75mm COVER TO REINFORCEMENT.
3. 50mm BLINDING TO BE PROVIDED BELOW REINFORCED CONCRETE IN CONTACT WITH THE GROUND.
4. CONCRETE GRADES
   C40/50 - RETAINING WALL / FOUNDS (EXPOSURE CLASS XF4)
   C12/15 - BLINDING / TRENCHFILL (EXPOSURE CLASS X0)
5. VIBRATE & CURE CONCRETE.
6. CONTRACTOR TO TAKE CUBES AS DIRECTED BY THE ENGINEER.
7. ALL CONCRETE CONSTRUCTION TO BE IN ACCORDANCE WITH BS EN 1992-1

STRUCTURAL STEELWORK

1. ALL STRUCTURAL STEELWORK SHALL BE GRADE S355J0 DESIGNED TO IS EN 1993-1 AND DELIVERED IN ACCORDANCE WITH BS EN 10025 UNLESS NOTED OTHERWISE.
2. ALL STRUCTURAL STEELWORK SHALL BE IN ACCORDANCE WITH 'THE NATIONAL SPECIFICATION FOR STRUCTURAL STEELWORK 4TH EDITION'
3. ALL STEEL TO BE HOT DIP GALVANISED TO EN ISO 1461 TO SATISFY C3 CORROSION ENVIRONMENT AND A HIGH DURABILITY
4. ALL STRUCTURAL WELDS SHALL BE A MINIMUM OF 6mm FILLET WELD UNLESS NOTED OTHERWISE.
5. ALL BOLTS TO BE MIN. M20 GRADE 8.8 PLATED UNLESS NOTED OTHERWISE.
6. CONTRACTOR TO ALLOW FOR ALL BASEPLATES ENDPLATES CLEATS BRACKETS & STIFFENERS REQUIRED TO FORM STRUCTURE.
7. ALL CONNECTIONS TO BE CONTRACTOR DESIGNED.
8. STEELWORK FABRICATOR TO SUPPLY FABRICATION DRAWINGS TO CONSULTING ENGINEERS FOR COMMENT 7 WORKING DAYS PRIOR TO FABRICATION.

- CONTRACTOR TO NOTE ALL WORKS ASSOCIATED WITH THE BRIDGE CONSTRUCTION IS IN CLOSE PROXIMITY AND OVER THE OPEN DRAIN/WATERCOURSE
- CONTRACTOR TO NOTE ALL WORKS ASSOCIATED WITH THE BRIDGE CONSTRUCTION ARE IN CLOSE PROXIMITY TO ESB CABLES & SUBSTATION

REV.	DATE	DESCRIPTION	BY	APPR.
G	[illegible]	[illegible] LEVELS ADDED	PR	PMcM
F	[illegible]	ISSUED FOR TENDER	PR	PMcM
E	[illegible]	DRAWING UPDATED	PR	PMcM
D	[illegible]	[illegible] COMMENTS ADDED	PR	PMcM
C	[illegible]	DRAWING UPDATED	PR	PMcM
B	[illegible]	DRAWING UPDATED	PR	MK
A	[illegible]	NOTE ADDED	K	MK

DRAWING STATUS: TENDER

CLIENT: TU DUBLIN

[illegible]: PEDESTRIAN BRIDGE AIRTON CLOSE

DRAWING TITLE: SECTION A-A & DETAILS

PROJECT No.	DRAWING No.	REV. No.
P-3213	S-03	G

SCALE	SHEET	DATE
AS_SHOWN	A1	07.05.19

DRAWN BY	CHECKED BY	APPROVED BY
JA	MK	PMcM

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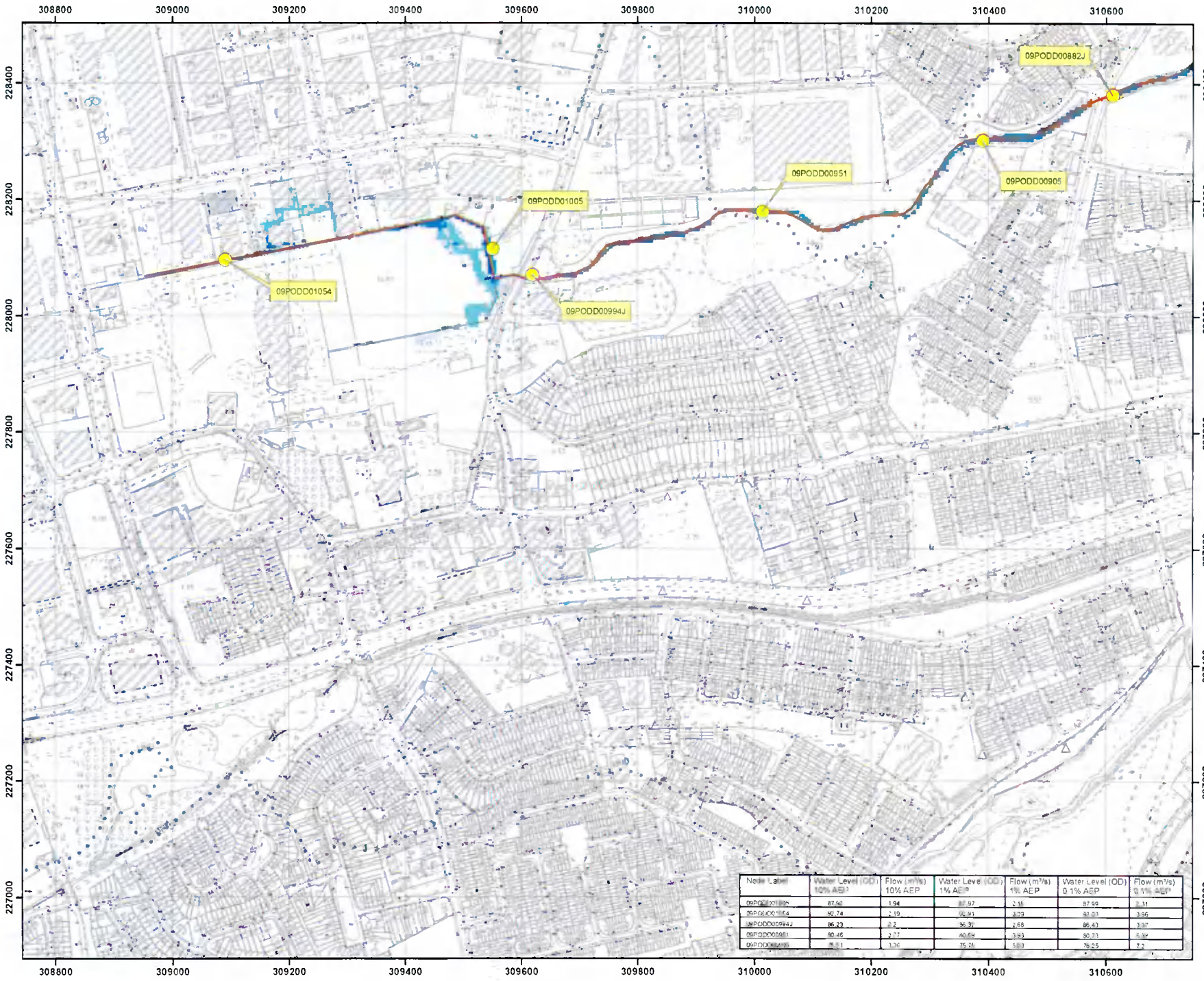
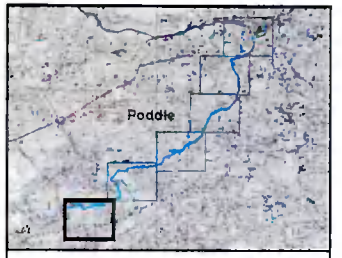
The Mill Building, Newtown Link Road, Greenhills, Drogheda, Co. Louth
t. 041 2137 050 e. info@mcmahonengineers.com

Appendix B

OPW / SDCC Flood Mapping



Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09PODD00882J	87.60	1.94	87.97	2.16	87.99	3.31
09PODD00951	92.74	2.19	92.91	3.09	93.01	3.96
09PODD00994J	86.23	2.2	86.36	2.66	86.43	3.97
09PODD00961	80.46	2.27	80.64	3.93	80.73	5.39
09PODD01005	75.81	1.36	75.74	5.83	76.25	7.2



IMPORTANT USER NOTE
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV	NOTE:	DATE

CFRAM

OPW
The Office of Public Works
Jonathan Swift Street
Trim
Co Meath

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Elmwood House
74 Boucher Road
Belfast
BT12 6RZ
T +44(0) 28 90 667914
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W www.rpsgroup.com
E

Map:	Poddle River Fluvial Flood Extents
Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	F.M.C. Date : 11 August 2016
Checked By :	A.S. Date : 11 August 2016
Approved By :	S.P. Date : 11 August 2016
Drawing No. :	E09POD_EXFCD_F0_01
Map Series :	Page 1 of 6
Drawing Scale :	1:6,050 @A3

4.6.2 Pluvial Flooding

Flooding of land from surface water runoff is caused by intense rainfall events lasting several hours. Areas at risk from pluvial flooding are likely to be at risk from surface water flooding. The indicative pluvial map provided on myplan.ie shows the OPW PFRA study. An excerpt from the Tallaght area is shown in Figure 4-3. The map has been used to identify development areas at particular risk of pluvial flooding. Predictive pluvial flood mapping has been produced under the River Poddle Flood Alleviation Scheme which is presented in Figure 4-4. The Poddle pluvial mapping is the most detailed pluvial data available and should be considered firstly when assessing pluvial flood risk. In areas not covered by the Poddle scheme consideration needs to be given to historic flood data and the OPW PFRA mapping.

The OPW historical records for the area show that previous flooding events were mainly caused by fluvial flooding although surface water could have been a contributing factor in these events. Poorly planned developments or inadequately designed surface water drainage systems can increase the risk of surface water flooding and exacerbate the extent of fluvial flooding. New developments or redevelopment of existing sites adhering to the policies on the management of surface water will ensure the risk of pluvial flooding is managed.

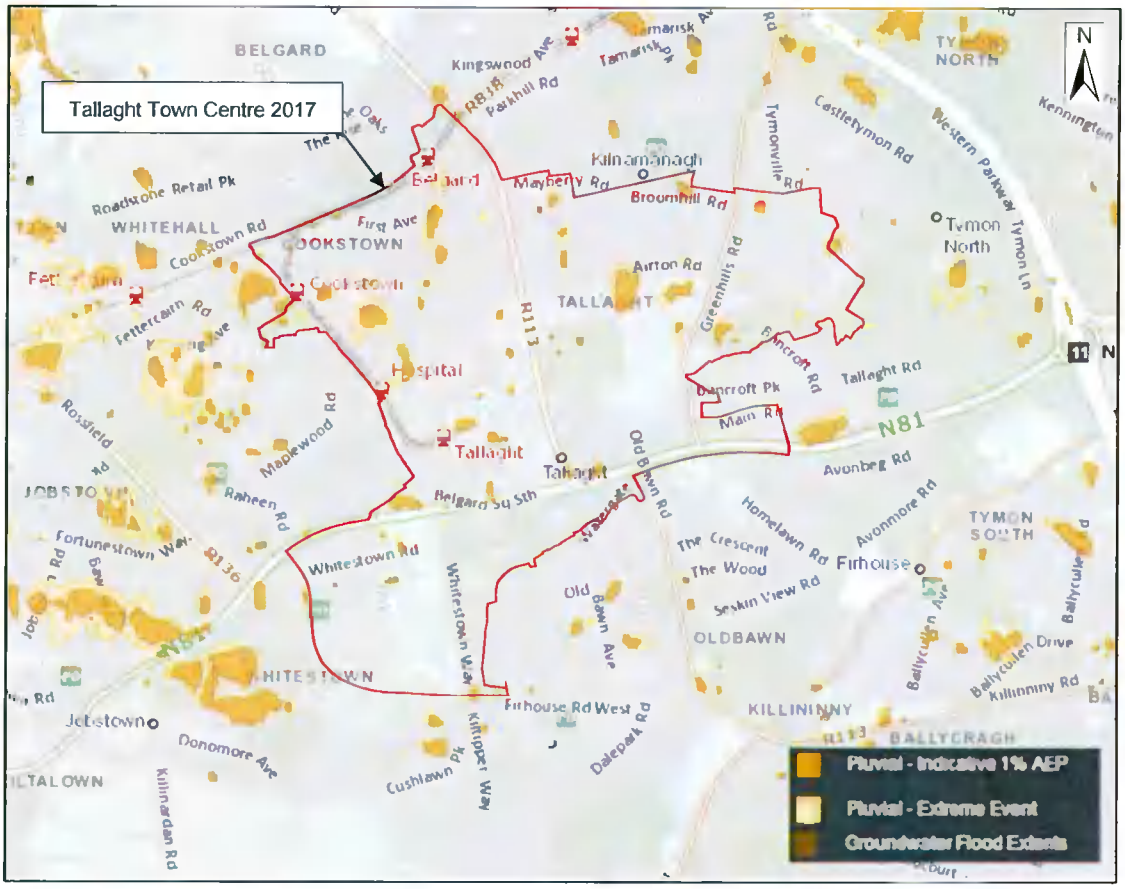


Figure 4-3: OPW PFRA Flood mapping (myplan.ie)

Figure 4-4: Poddle FAS- Predictive Pluvial Flooding

Appendix C

Hydraulic Modelling

PREAMBLE

As no existing modelled data was available for the unnamed watercourse at the site, a site-specific detailed hydraulic model suitable to the scale and nature of the proposed development and associated risk, was developed for the site.

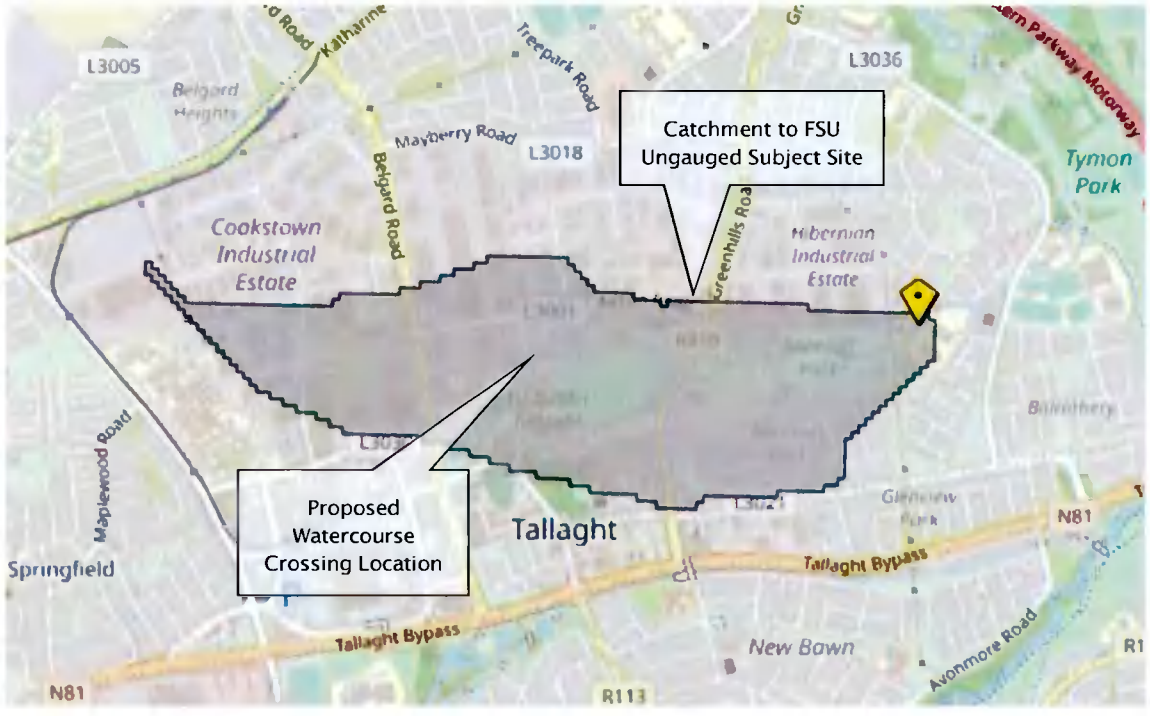
HYDROLOGICAL ASSESSMENT

The estimation of peak flow for the required design annual probability has been necessary to determine the inflow for input to a steady state hydraulic model. A precautionary principle has been adopted for the hydrological analysis.

A CFRAM flood map node is located directly upstream of the proposed crossing location. Flows for the 1% AEP and 0.1% AEP flood events at this node are noted on the flood map.

For comparison and confirmation of suitability of CFRAM flows, the derivation of the 1% AEP event peak flow was determined using the Institute of Hydrology (IoH) 124 and Flood Studies Supplementary Report (FSSR) methodologies. The proposed watercourse crossing location was reviewed on the OPW Flood Studies Update (FSU) portal which provided an ungauged catchment downstream of the site of c. 1 km² which is below the threshold of 5 km² for which the FSU is not applicable. However, to apply a precautionary approach to the hydrological calculations, the FSU catchment shown in Figure C.1 was used.

Figure C.1: Watercourse Crossing Catchment



Appendix B.

Table C.2 presents the 1% AEP and 1% AEP including allowance for climate change (CC) flows. In line with best available OPW guidance, a climate change allowance of 20% for the Mid-Range Future Scenario (MRFS) has been applied to design flows. It is noted that the unnamed watercourse is not shown on available OPW arterial drainage data so no further increase in flow estimates is required.

In line with industry best practice and to apply a precautionary approach, the most conservative flow estimate from the CFRAM flood map of **3.71 m³/s** (including allowance for climate change) has been adopted for the design of the watercourse crossing.

Hydrological calculation summaries and relevant CFRAM flood mapping are included in Appendix B.

Table C.2: Flow Summary

Method	1% AEP Flow (m³/s)	1% AEP + CC Flow (m³/s)
CFRAM Flood Map	3.09	3.71
FSSR	0.91	1.09
IoH124	0.92	1.10

HYDRAULIC MODEL SIMULATION

A location specific detailed 1D model has been developed for the site using HEC RAS (version 5.0) software to confirm the design flood level and impact of the proposed crossing.

The area of interest has the potential to be affected by flooding from the watercourse that flows through the site. A topographical survey of the watercourse reach was undertaken that included detailed cross sections through the channels and ground levels on both watercourse banks.

The modelling approach for the existing scenario is summarised as follows:

- The watercourse has been modelled using detailed cross section survey data derived from ground based topographical survey.
- The natural floodplain has been modelled using site-specific topographical survey combined with OSI height data.
- No structures (culverts, weirs etc.) are present in the watercourse reach under consideration.
- Design flows for the 1% AEP event has been calculated using a range of methodologies and the most conservative applied as outlined previously.
- 1D modelling is deemed suitable in this instance as the site-specific model and CFRAM flood mapping demonstrate that flood flows are held 'in-channel' at the proposed crossing location.

The modelling approach for the proposed scenario is summarised as follows:

- The proposed watercourse crossing (subject to OPW Section 50 consent) has been added to the existing scenario model.
- The cumulative impact of the proposed bridge on upstream and downstream flood levels is assessed by the hydraulic model.
- The model is also used to assess the impact on the velocity in the watercourse as a result of the proposed watercourse crossing.

Figure C.3 is an extract from the hydraulic model, showing surveyed and interpolated cross sections overlain on colour-coded topographical data.

Roughness

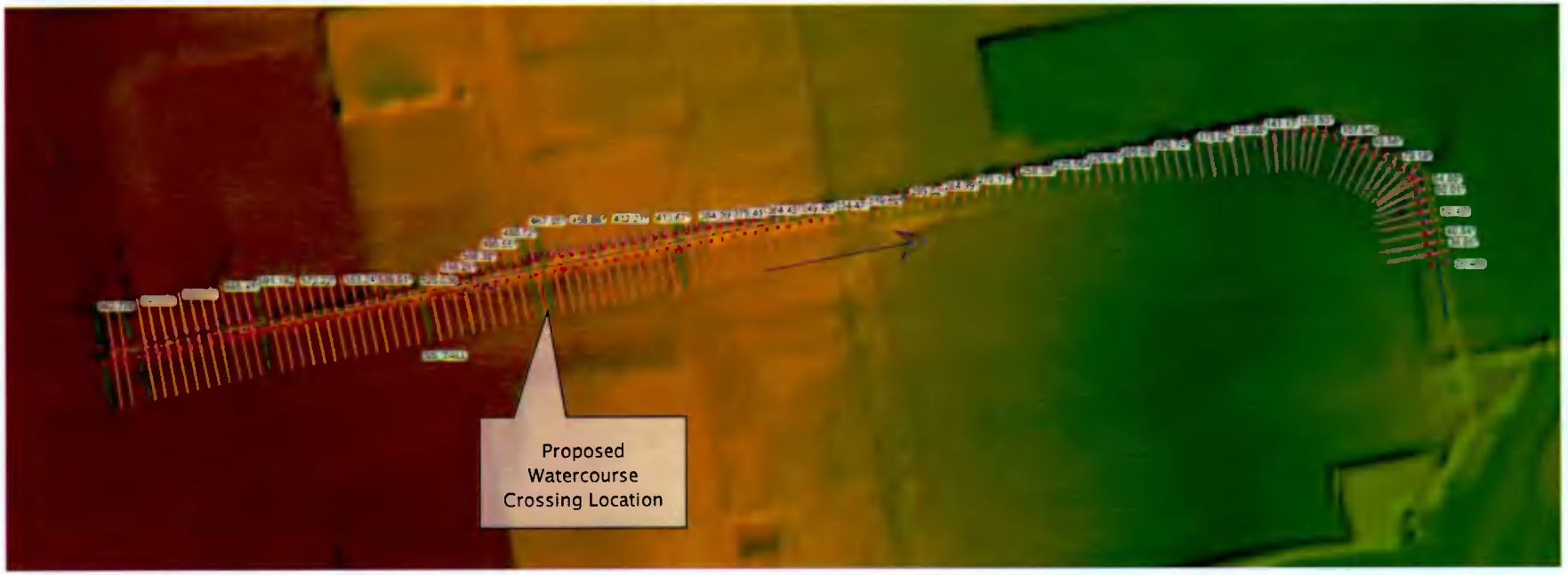
Roughness is represented through adoption of a Mannings 'n' value as follows:

- Channel 0.04 (generally uniform channel conditions)
- Overbank 0.05 to 0.06 (dependant on land cover)

Boundary Conditions

'Normal' boundary conditions were used as part of hydraulic model. Watercourse survey was captured sufficiently far downstream that any error in the downstream boundary would not impact design flood levels, as confirmed by model sensitivity testing.

Figure C.3: Plan of River Model



Assumptions and Limitations of Modelling

The representation of any complex system by a model requires a number of assumptions to be made. In the case of the hydraulic model developed for the purposes of the study it is assumed that:

- The topographic survey accurately represents the surface topography and associated flow paths and provides a representative channel geometry.
- The design flows are an accurate representation of flows of a given return period.
- Roughness does not vary with time.

The primary limitations of the study are noted as follows:

- Site drainage has not been modelled.
- No allowance for infiltration has been made within the model.
- The model does not represent any topographic features smaller than the minimum resolution of the underlying terrain model derived for the site.

Appendix D

Hydrological Calculations

Project	TU Dublin, Tallaght
Ref	M02174-01
Watercourse	Tymon River (FSU Station 09_1029_1)
Date	27/09/2021

McCloy Consulting

Purpose: To estimate design flows for an Irish catchment by the FSSR No. 6 3-Variable Eqn method

This spreadsheet is suitable for estimating design flows on small catchments (less than 20 km^2) using the FSSR no. 6 3-Variable equation for QBAR plus the FSR (FSSR14) regional growth curves.

AREA	*Max from FSU / Height Data*	1.027	km2
SAAR4170	*From FSU*	752	mm
WRAP class:	*From WRAP maps / FSU BFISOIL*	3	
SOIL		0.4	

QBAR	0.35	m3/s

Map Region	Ireland (GDSDS)

Return period (years)	Growth Curve Factor (based on 'Map Region')	Design flow (m^3/s)	Specific runoff (l/s/ha)
2	0.92	0.32	3.13
30	0.00	0.00	0.00
50	2.33	0.81	7.93
100	2.61	**0.91**	8.88
500	3.33	1.16	11.31
1000	3.54	**1.24**	12.04

Outcomes are exclusive of the effect of climate change, estimated seperately

Project	TU Dublin, Tallaght
Ref	M02174-01
Watercourse	Tymon River (FSU Station 09_1029_1)
Date	27/09/2021

Purpose: To estimate a design flow for a catchment in the Irish hydrological region by the Institute of Hydrology Report 124 (IoH 124) "Flood Estimation on Small Catchments" method.

This spreadsheet is suitable for estimating design flows on small rural catchments (less than 25 km^2) using the IH Report 124 equation for QBAR plus the FSR regional growth curves. Rural can be taken as meaning URBAN less than 0.05, or equivalently URBEX. This sheet does not adopt the <5 sq km alternative method (for plot scale equations) in order to ensure a conservative approach to flood estimation.

AREA	*Max from FSU / Height Data*	1.027	km2
SAAR4170	*From FSU*	752	mm
WRAP class:	*From WRAP maps / FSU BFISOIL*	3	
SOIL		0.4	

QBAR	0.35	m3/s

Map Region	Ireland (GDSDS)

Return period (years)	Growth Curve Factor (based on 'Map Region')	Design flow (m^3/s)	Specific runoff (l/s/ha)
2	0.92	0.32	3.14
30	2.11	0.74	7.22
50	2.33	0.82	7.96
100	2.61	**0.92**	8.92
500	3.33	1.17	11.37
1000	3.54	**1.24**	12.10

Outcomes are exclusive of the effect of climate change, estimated seperately

Appendix E

Site Visit Photographs

Photo Location 1:

View of Upstream of Proposed Bridge Location

Photo Location 2:

View of Downstream of Proposed Bridge Location

Appendix F

OPW Section 50 Consent

OPW Oifig na nOibreacha Poiblí Office of Public Works

Mr. Paul Singleton
McCloy Consulting
Unit 12, The Beat Centre
Stephenstown Industrial Estate
Balbriggan
Co Dublin

paul@mccloyconsulting.ie

Our Ref: 358 - 2021

Re: Section 50 Application – A new culvert in TU Dublin.

Dear Mr. Singleton,

I refer to the above Section 50 application received by this office.

The documentation submitted has been examined and I recommend that the consent of the Commissioners of Public Works under Section 50 of The Arterial Drainage Act, 1945 be given for the proposed culvert as follows:

A 3m wide single span pedestrian bridge, with a clearance of channel bed of 1.67m (channel bed level 91.24mAD and underside soffit level of 92.91mAD. As per that detailed on dwg S-03, Rev No G.

It should be noted that consent is given only for the purpose of Section 50 and does not absolve the recipient of responsibility for any adverse effects caused by this installation to any third party.

The Commissioners of Public Works are not responsible and accept no liability for any loss or damage whatsoever caused because of this development.

Yours sincerely,

Karen Donovan
Engineering Services Administration Unit
25th November 2021

Appendix 3

Appropriate Assessment Screening Report

scott cawley

Appropriate Assessment Screening Report

for a Proposed Footbridge at TU Dublin, Tallaght, Dublin 24.

prepared for TU Dublin

Scott Cawley, College House, 71 – 73 Rock Road, Blackrock, Co. Dublin, A94 F9X9, Ireland

Tel+353(1)676-9815 Fax +353(1) 676-9816

Document Control

Project Title	TU Dublin Footbridge		**Project No.**	210107
Document Title	Appropriate Assessment Screening Report		**Status**	Draft
Revision	**Issue Date**	**Author**	**Reviewed By**	**Approved By**
I1	29/10/2021	LG	NB	AS
I2	04/11/2021	LG	NB	AS/LH

Table of Contents

1 Introduction

This report, which contains information required for the competent authority (in this instance South Dublin County Council) to undertake a screening for Appropriate Assessment (AA), has been prepared by Scott Cawley Ltd. on behalf of the applicant. It provides information on, and assesses the potential for, the proposed development to impact on the Natura 2000 network (hereafter referred to as European sites)[1]. The proposed development consists of a new footbridge from car park of the university campus to Airton Close at TU Dublin – Tallaght and Airton Close, Dublin 24.

This AA Screening report has been produced in response to South Dublin County Council's Request for Further Information, Item 7, for the proposed development at TU Dublin, Tallaght, Dublin 24, Reg. Ref. SD21A/0104. Item 7 states:

> *7. The applicant is requested to submit an Appropriate Assessment Screening Report.*

An AA is required if significant effects on European sites arising from a proposed development cannot be ruled out at the screening stage, either alone or in combination with other plans or projects. It is the responsibility of the competent authority to make a decision as to whether or not the proposed development is likely to have significant effects on European sites, either individually or in combination with other plans or projects.

For the reasons set out in detail in this AA Screening Report, an **Appropriate Assessment of the proposed development is not required in this instance** as it can be concluded, on the basis of objective information, that the proposed development, either individually or in combination with other plans or projects, will not have a significant effect on any European sites.

2 Methodology

2.1 Guidance

This Appropriate Assessment Screening Report has been prepared with regard to the following guidance documents, as relevant:

- *OPR Practice Note PN01. Appropriate Assessment Screening for Development Management* (Office of the Planning Regulator, 2021)
- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, 2010 revision)
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10

[1] The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as European sites - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

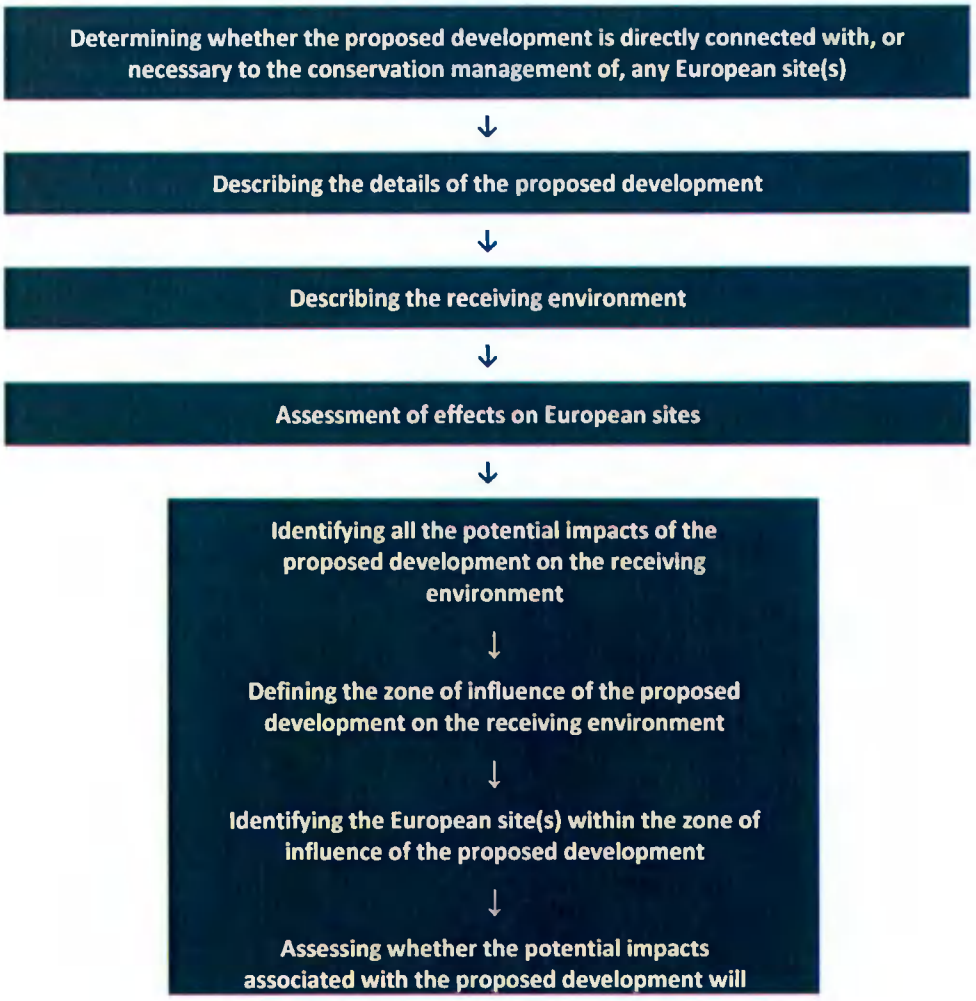
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission, 2001)
- *Communication from the Commission on the precautionary principle* (European Commission, 2000), and
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2019)

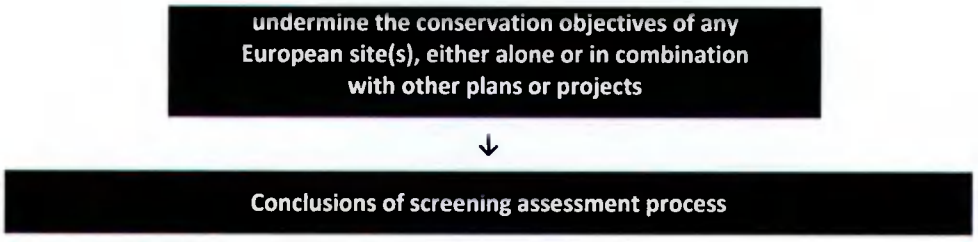
2.2 Assessment Methodology

The above referenced guidance sets out a staged process for carrying out Appropriate Assessment. To determine if an Appropriate Assessment is required, documented screening is required. Screening identifies the potential for effects on the conservation objectives of European sites, if any, which would arise from a proposed plan or project, either alone or in combination with other plans and projects (i.e. likely significant effects).

Significant effects on a European site are those that would undermine the conservation objectives supporting the favourable conservation condition of the Qualifying Interest (QI) habitats and/or the QI/Special Conservation Interest (SCI) species of a European site(s).

Screening for Appropriate Assessment involves the following steps:





If the conclusions at the end of screening are that there is no likelihood of significant effects occurring on any European sites as a result of the proposed plan or project, either alone or in combination with other plans and projects, then there is no requirement to undertake an Appropriate Assessment.

In establishing which European sites are potentially at risk (in the absence of mitigation) from the proposed development, a source-pathway-receptor approach was applied. In order for an impact to occur, there must be a risk enabled by having a source (e.g. water abstraction or construction works), a receptor (e.g. a European site or its QI(s) or SCI(s)[2]), and a pathway between the source and the receptor (e.g. pathway by air for airborne pollution, or a pathway by a watercourse for mobilisation of pollution). For an impact to occur, all three elements must exist; the absence or removal of one of the elements means there is no possibility for the impact to occur.

The identification of source-pathway-receptor connection(s) between the proposed development and European sites essentially is the process of identifying which European sites are within the Zone of Influence (ZoI) of the proposed development, and therefore potentially at risk of significant effects. The ZoI is the area over which the proposed development could affect the receiving environment such that it could potentially have significant effects on the QI habitats or QI/SCI species of a European site, or on the achievement of their conservation objectives[3].

The identification of a source-pathway-receptor link does not automatically mean that significant effects will arise. The likelihood for significant effects will depend upon the characteristics of the source (e.g. extent and duration of construction works), the characteristics of the pathway (e.g. direction and strength of prevailing winds for airborne pollution) and the characteristics of the receptor (e.g. the sensitivities of the European site and its QIs/SCIs). Where uncertainty exists, the precautionary principle[4] is applied.

[2] The term qualifying interest is used when referring to the habitats or species for which an SAC is designated; the term special conservation interest is used when referring to the bird species (or wetland habitats) for which an SPA is designated.

[3] As defined in the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018)

[4] The precautionary principle is a guiding principle that derives from Article 191 of the Treaty on the Functioning of the European Union and has been developed in the case law of the European Court of Justice (e.g. ECJ case C-127/02 – Waddenzee, Netherlands).

The guidance document *Communication from the Commission on the Precautionary Principle* (European Commission, 2000) notes that the precautionary principle *"covers those specific circumstances where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection"*.

Applying the precautionary principle in the context of screening for appropriate assessment requires that where there is uncertainty or doubt about the risk of significant effects on a European site(s), it should be assumed that significant effects are possible and AA must be carried out.

2.3 Desktop Data Review

The desktop data sources used to inform the assessment presented in this report are as follows (accessed on the 10th September 2021):

- Online data available on European sites and protected habitats/species as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie[5], including conservation objectives documents
- Online data available on protected species as held by the National Biodiversity Data Centre (NBDC) from www.biodiversityireland.ie
- Information on the surface water network and surface water quality in the area available from www.epa.ie
- Information on groundwater resources and groundwater quality in the area available from www.epa.ie and www.gsi.ie
- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie
- Information on the location, nature and design of the proposed development supplied by the applicant's design team

3 Provision of Information for Screening for Appropriate Assessment

The following sections provide information to facilitate the Appropriate Assessment screening of the proposed development to be undertaken by the competent authority.

A description of the proposed development and the receiving environment is provided to identify the potential ecological impacts. The environmental baseline conditions are discussed, as relevant to the assessment of ecological impacts where they may highlight potential pathways for impacts associated with the proposed development to affect the receiving ecological environment (e.g. geological, hydrogeological and hydrological data).

The potential impacts are examined in order to define the potential zone of influence of the proposed development on the receiving environment. This then informs the assessment of whether the proposed development will result in significant effects on any European sites; i.e. affect the conservation objectives supporting the favourable conservation condition of the European site's QIs or SCIs.

3.1 Description of the Proposed Development

The proposed development consists of a new gated footbridge from car park of the university campus to Airton Close at TU Dublin – Tallaght and Airton Close, Dublin 24. The proposed development site is located at ITM grid ref 709072, 728128, see Figure 1 below.

It is proposed to fabricate, supply and install new pedestrian footbridge and gate to design indicated in planning application Reg. Ref. SD21A/0104. Low level landscape and trees to be planted either side of footbridge is proposed. Existing trees will be retained where possible.

Surface water

During the construction phase of the proposed development, surface water is to be collected via existing road gulleys in the car park. These gulleys discharge to the River Poddle.

During the operational phase of the proposed development, the construction of the footbridge will include the installation of 150mm ACO drains along the footbridge which will discharge to the River Poddle.

[5] The following SAC and SPA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2019_12 and SPA_ITM_2019_12.

Foul water

Given the nature of the proposed development, it will not generate foul water.

Figure 1: Indicative red line boundary of the proposed development

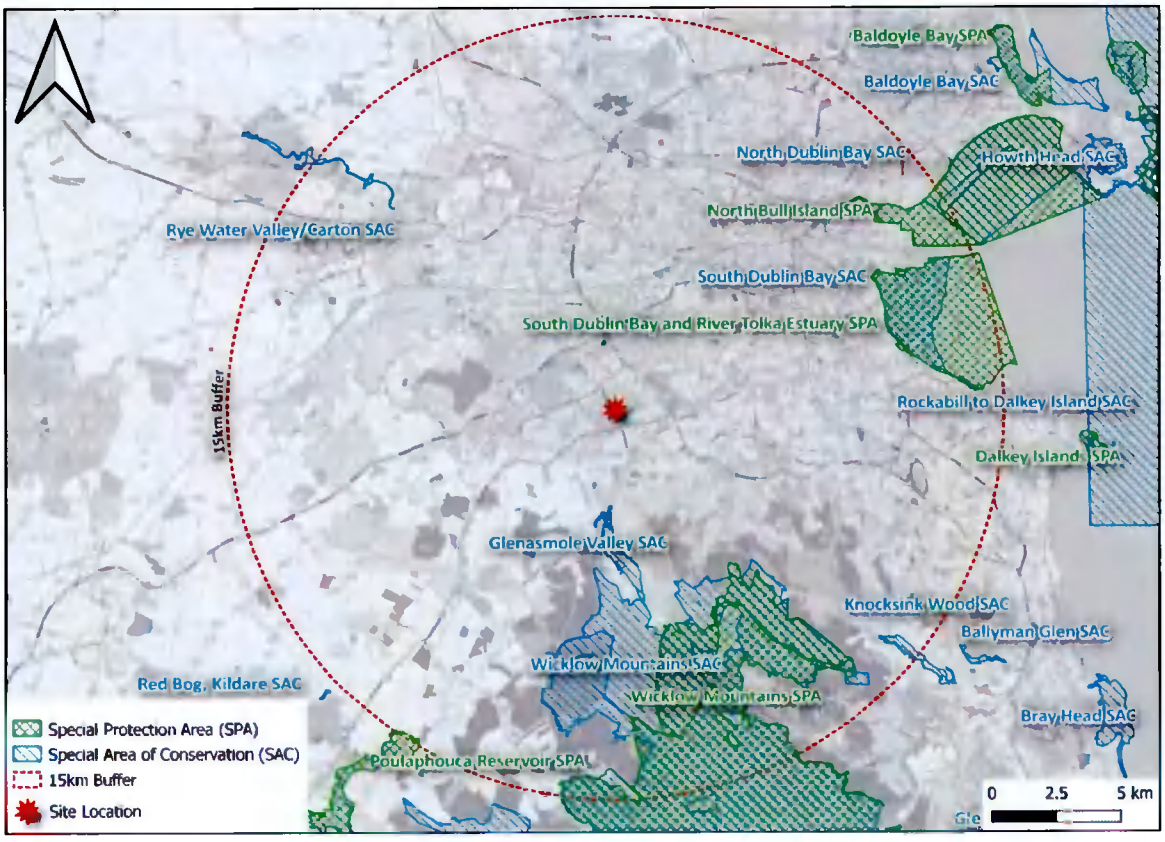
3.2 Overview of the Receiving Environment

3.2.1 European sites

There are no European sites within or directly adjacent to the boundaries of the proposed development site. There are six Special Areas of Conservation (SACs) and four Special Protection Areas (SPAs) within c. 15km of the proposed development. The nearest European site to the proposed development is Glenasmole Valley SAC; c. 3.7km to the south, in the Dublin Mountains.

All of the European sites present in the vicinity of the proposed development are shown on Figure 2 below. The QIs/SCIs of the European sites in the vicinity of the proposed development are provided in Appendix I.

Figure 2: European sites in the vicinity of the proposed development



3.2.2 *Habitats*

The proposed site is centred on grid reference O 09131 28104. The proposed site comprises of buildings and artificial surfaces (BL3) consisting of a car park as part of TU Dublin lands and a treeline (WL2) along the northern boundary consisting of unmanaged elm *Ulmus spp.,* ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* along the bank of the drainage ditch. The footbridge will cross the River Poddle.

3.2.3 *Flora and Fauna Species*

A data search of a custom polygon of approx. 2km radius from the proposed development site returned the following records of qualifying/special conservation interest fauna species.

- Common kingfisher *Alcedo atthis*
- European golden plover *Pluvialis apricaria*
- Hen harrier *Circus cyaneus*
- Merlin *Falco columbarius*
- Whooper swan *Cygnus cygnus*
- European Otter *Lutra lutra*

The nearest European sites for which common kingfisher is a species of special conservation interest is located *c.* 40km north-west of the proposed development site in River Boyne and River Blackwater SPA. Given the distance between this SPA and the proposed development site, and given kingfisher territories

tend to cover at least 1km of river, but may extend over 3/5 km[6], any kingfisher present within the local area would not form part of or provide a supporting role to any SPA population.

The nearest European sites for which European golden plover is a species of special conservation interest is located *c.* 11km east in South Dublin Bay and River Tolka Estuary SPA. The core range of golden plover is 3km, with maximum range of 11km[7]. While the proposed development site is in range of the South Dublin Bay and River Tolka Estuary SPA, given the proposed development is located over a narrow, shallow section of the river which is culverted to the east and to the west, linking a car park to an adjacent area of hard surfaces and buildings, it is unsuitable to support golden plover.

The nearest European sites for which hen harrier is a species of special conservation interest is located *c.* 75km west of the proposed development site in Slieve Bloom Mountains SPA. Given the distance between this SPA and the proposed development site, and given the core foraging range from nest site during the breeding season of hen harrier is 2km, with maximum range of 10km, and generally within 1km distance between alternative nest sites[7], any hen harrier present within the local area would not form part of or provide a supporting role to any SPA population. Additionally, the proposed development is located over a narrow, shallow section of the river which is culverted to the east and to the west, linking a car park to an adjacent area of hard surfaces and buildings, it is unsuitable to support hen harrier.

The nearest European sites for which merlin is a species of special conservation interest is located *c.* 7.4km south-east of the proposed development site in the Wicklow Mountain SPA. Given the distance between this SPA and the proposed development site, and given the foraging range from nest site during breeding season in within 5km and distance between alternative nest sites are generally within 500m, but can be up to 1.5km[7], any merlin present within the local area would not form part of or provide a supporting role to any SPA population. Additionally, the proposed development is located over a narrow, shallow section of the river which is culverted to the east and to the west, linking a car park to an adjacent area of hard surfaces and buildings, it is unsuitable to support merlin.

The nearest European sites for which whooper swan is a species of special conservation interest is located *c.* 73km north-west of the proposed development site in Lough Derravarragh SPA. Given the distance between this SPA and the proposed development site, and given whooper swan foraging range from night roost during winter season has a core range of less than 5km[7], any whooper swan present within the local area would not form part of or provide a supporting role to any SPA population. Additionally, the proposed development is located over a narrow, shallow section of the river which is culverted to the east and to the west, linking a car park to an adjacent area of hard surfaces and buildings, it is unsuitable to support whooper swan.

The nearest European sites for which European otter is a qualifying interest is located *c.* 6.1km south of the proposed development site in the Wicklow Mountains SAC. Otter territories are within the range of *c.* 7.5km for females and can reach up to 21 km for males via hydrological pathways[8]. The River Dodder and Liffey Estuary provide the key pathway to Wicklow Mountains SAC, whereas the proposed development will discharge into the River Poddle. Wicklow Mountains SAC is located within a different sub-catchment (Dodder_SC_010) to the proposed development (Poddle_SC_10). As such, the hydrological pathway between the Wicklow Mountains SAC and the proposed development site is *c.* 36km meaning any populations of otter within the footprint of the proposed development site would not form part of or provide a supporting role to the SAC population. Additionally, the proposed development is located over a

[6] RSPB (2021) Wildlife Guides - Kingfisher https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/kingfisher/breeding-feeding-territory/ [Accessed 27/10/2021]

[7] Scottish Natural Heritage (2016) Guidance: Assessing connectivity with Special Protection Areas (SPAs). Version

[8] Ó Néill, L., Veldhuizen, T., de Jongh, A. and Rochford, J. (2009). *Ranging behaviour and socio-biology of Eurasian otters (Lutra lutra) on lowland mesotrophic river systems*. European Journal of Wildlife Research: 55: 363-370.

narrow, shallow section of the river which is culverted to the east and to the west, linking a car park to an adjacent area of hard surfaces and buildings and is unsuitable to support European otter.

31 The NBDC database search returned records of the following non-native invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended):

- American skunk-cabbage *Lysichiton americanus*
- Giant hogweed *Heracleum mantegazzianum*
- Japanese knotweed *Fallopia japonica*
- Three-cornered garlic *Allium triquetrum*

32 There were no records for invasive flora species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) within the indicative redline boundary of the proposed development site or within 1km of the proposed development site.

3.2.4 Hydrology

33 The proposed development site is located within the Liffey and Dublin Bay catchment and the Dodder sub-catchment. According to the EPA Envision Map Viewer, the Poddle River (Poddle_010) runs along the northern boundary of TU Dublin Campus. The Poddle River converges with the River Liffey *c.* 10km downstream. The River Liffey discharges into a complex of marine and intertidal European sites in Dublin Bay *c.* 5.5km downstream from where the Poddle River converges with the River Liffey.

34 According to EPA online Envision Maps, the water quality of the surface, transitional and coastal water is as follows:

- The River Poddle (Poddle_010) is classified as of "Poor" water quality status (i.e. Q3) *c.* 4.9km downstream of the proposed development site at 'The Priory, Kimmage Road' Station as of 2007;
- The River Liffey is classified as of "Poor" water quality status (i.e. Q3) *c.* 2.8km from where the Poddle River converges with the River Liffey;
- The Upper Liffey Estuary is classified as "Eutrophic" transitional water;
- The Lower Liffey Estuary is classified as "Unpolluted" transitional water; and,
- Dublin Bay is classified as "Unpolluted" coastal water.

35 The River Liffey is classified as "at risk of not achieving good status" under the Water Framework Directive (WFD) risk scoring system.

3.2.5 Hydrogeology

36 The Groundwater Body (GWB) underlying the proposed development site is the "Dublin" GWB and is described as "Poorly productive bedrock". The proposed development site is located above a "locally important aquifer - Bedrock which is Moderately Productive only in Local Zones". Geological Survey of Ireland (GSI) data indicates that the site is located in an area of "*Low*" vulnerability with regards to the ease with which groundwater may be contaminated by human activities. According to the EPA envision mapping the GWB underlying the proposed development site is currently classified as having "*Good*" Water Framework Directive status.

37 The general groundwater flow direction for the Dublin GWB is towards the coast and also towards the River Liffey and Dublin City[9].

[9] GIS (2021) Summary of initial Characterisation of Dublin GWB. Available from:

3.2.6 *Soils & Geology*

According to information on soil and bedrock conditions in the GSI Mapviewer database[10], the site is composed of dark limestone and shale bedrock, with soils to the north of the River Poddle classified as "made/built land" and soils to the south of the River Poddle classified as "deep poorly drained mineral - derived from mainly calcareous parent materials".

Site investigations confirmed the absence of contaminated soil[11].

3.3 Assessment of Effects on European Sites

This section identifies all the potential impacts associated with the proposed development, examines whether there are any European sites within the ZoI of effects from the proposed development, and assesses whether there is any risk of the proposed development resulting in a significant effect on any European site, either alone or in combination with other plans or projects.

In assessing the potential for the proposed development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites are not taken into account.

3.3.1 *Habitat loss and fragmentation*

The proposed development does not overlap with the boundary of any European site. Therefore, there are no European sites at risk of direct habitat loss impacts.

As the proposed development does not traverse any European sites there is no potential for habitat fragmentation to occur.

The proposed development site does not have the potential to support populations of any fauna species linked with the QI/SCI populations of any European site(s).

As the proposed development will not result in habitat loss or habitat fragmentation within any European site, there is no potential for any in combination effects to occur in that regard.

3.3.2 *Habitat degradation as a result of hydrological impacts*

Surface water run-off and discharges from the proposed development will drain to the existing local surface water drainage network. Given the nature of the proposed development, it will not generate foul water. Therefore, the Zone of Influence (ZoI) of potential effects on water quality from the proposed development could extend to Dublin Bay.

Surface Water

Surface water run-off and discharges from the proposed development will enter the downstream receiving environment via the existing surface water drainage network.

Considering the following, the proposed development will not have any measurable effects on water quality in Dublin Bay or the Irish Sea:

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https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/DublinGWB.pdf [Accessed: 10/09/2021]

[10] GSI (2021). *Geological Survey Ireland Spatial Resources*. Geological Survey Ireland, Department of Communications, Climate Action and Environment. Available from https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228 [Accessed: 15/09/2021]

[11] Site Investigations Ltd. (2007) *Site Investigation for Phase 1 of a Proposed Development at the Institute of Technology, Tallaght, County Dublin*

- The scale and location of the proposed development relative to the receiving surface water network
- The relatively low volume of any surface water run-off or discharge events from the proposed development site, relative to the receiving surface water and marine environments, and
- The level of mixing, dilution and dispersion of any surface water run-off/discharges from the proposed development site in the receiving watercourses, Dublin Bay and the Irish Sea

49 Therefore, there is no possibility of the proposed development undermining the conservation objectives of any of the qualifying interests or special conservation interests of the European sites in, or associated with, Dublin Bay as a result of surface water run-off or discharges.

In Combination

50 There is potential for "in-combination" effects on water quality in Dublin Bay from any other projects carried out within the functional areas of the Dublin City Development Plan 2016-2022 (Dublin City Council, 2016), the Dún Laoghaire-Rathdown County Development Plan 2016-2022 (Dún Laoghaire-Rathdown County Council, 2016), the Fingal Development Plan 2017-2023 (Fingal County Council, 2017), South Dublin County Council Development Plan 2016-2022 (South Dublin County Council, 2016), or any other land use plans which could influence conditions in Dublin Bay via rivers and other surface water features.

51 The Eastern & Midland Regional Assembly, Regional Spatial & Economic Strategy 2019-203112 (Eastern & Midland Regional Assembly, 2019) includes a range of policy objectives relevant to the protection of European sites and the protection of water quality in Dublin Bay, to which the relevant planning authorities must have regard to in the preparation and adoption of their development plans (included in Appendix II).

52 The planning authority for the proposed development is South Dublin County Council (SDCC). Plans and developments within Dublin City County must comply with the following policy objectives of the South Dublin County Council Development Plan 2016 – 2022 relevant to the protection of European sites and the protection of water quality in Dublin Bay:

> **HCL12 Objective 1** - To prevent development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the County and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive.
>
> **HCL12 Objective 2** - To ensure that projects that give rise to significant direct, indirect or secondary impacts on Natura 2000 sites, either individually or in combination with other plans or projects, will not be permitted unless the following is robustly demonstrated in accordance with Article 6(4) of the Habitats Directive and S.177AA of the Planning and Development Act (2000 – 2010) or any superseding legislation:
>
> 1. There are no less damaging alternative solutions available; and
> 2. There are imperative reasons of overriding public interest (as defined in the Habitats Directive) requiring the project to proceed; and
> 3. Adequate compensatory measures have been identified that can be put in place.
>
> **IE Policy 1 Water & Wastewater** - It is the policy of the Council to work in conjunction with Irish Water to protect existing water and drainage infrastructure and to promote investment in the water and drainage network to support environmental protection and facilitate the sustainable growth of the County.

[12] Eastern & Midland Regional Assembly (2019) *Regional Spatial & Economic Strategy 2019-2031*

IE1 Objective 1 - To work in conjunction with Irish Water to protect, manage and optimise water supply and foul drainage networks in the County.

IE1 Objective 2 - To work in conjunction with Irish Water to facilitate the timely delivery of ongoing upgrades and the expansion of water supply and wastewater services to meet the future needs of the County and the Region.

IE Policy 2 Surface Water & Groundwater - It is the policy of the Council to manage surface water and to protect and enhance ground and surface water quality to meet the requirements of the EU Water Framework Directive.

IE2 Objective 1 - To maintain, improve and enhance the environmental and ecological quality of our surface waters and groundwater by implementing the programme of measures set out in the Eastern River Basin District River Basin Management Plan.

IE2 Objective 3 - To maintain and enhance existing surface water drainage systems in the County and promote and facilitate the development of Sustainable Urban Drainage Systems (SUDS), including integrated constructed wetlands, at a local, district and County level, to control surface water outfall and protect water quality.

IE2 Objective 4 - To incorporate Sustainable Urban Drainage Systems (SUDS) as part of Local Area Plans, Planning Schemes, Framework Plans and Design Statements to address the potential for Sustainable Urban Drainage at a site and/or district scale, including the potential for wetland facilities.

IE2 Objective 5 - To limit surface water run-off from new developments through the use of Sustainable Urban Drainage Systems (SUDS) and avoid the use of underground attenuation and storage tanks.

IE2 Objective 6 - To promote and support the retrofitting of Sustainable Urban Drainage Systems (SUDS) in established urban areas, including integrated constructed wetlands.

53 Plans and developments within the other local authority areas which could influence conditions in Dublin Bay via rivers and other surface water features, also must comply with the policies and objectives relevant to the protection of European sites and water quality. These include the *Dún Laoghaire-Rathdown County Development Plan 2016-2022*, the *Fingal Development Plan 2017-2023*, the *South Dublin County Council Development Plan 2016-2022*, the *Kildare County Development Plan 2017-2023* (Kildare County Council, 2017) and the *Wicklow County Development Plan 2016-2022* (Wicklow County Council, 2016). The relevant policies and objectives in those plans for the protection of European sites and water quality are included in Appendix II.

54 As noted under the surface water section above, Dublin Bay is currently unpolluted and the proposed development will not result in any measurable effect on water quality in Dublin Bay. There are also protective policies and objectives in place at a strategic planning level to protect water quality in Dublin Bay.

55 Therefore, and having regard to the policies and objectives referred to under the relevant development plans, it is concluded that the possibility of any other plans or projects acting in combination with the proposed development to give rise to significant effects on any European site in, or associated with, Dublin Bay can be excluded.

3.3.3 Habitat degradation as a result of hydrogeological impacts

56 The proposed development lies within the Dublin Groundwater Body (Dublin GWB). The only European site within the Dublin GWB that is designated for groundwater dependant habitats and/or species is the Rye Water Valley/Carton SAC. All of the qualifying interests of the Rye Water Valley/Carton SAC, the priority Annex I habitat Petrifying springs and the two whorl snail species, are dependent upon the existing condition and functioning of the groundwater regime. Based on information published by Geological

Survey Ireland (GSI) on the Dublin GWB13, 'The general groundwater flow direction in this aquifer is towards the coast and also towards the River Liffey and Dublin City'. As the proposed development will not interact directly with the underlying groundwater body, and lies down gradient of the Rye Water Valley/Carton SAC, it cannot influence groundwater conditions in the European site.

Therefore, there is no possibility of the proposed development undermining the conservation objectives of any of the qualifying interests or special conservation interests of any European sites, either alone or in combination with any other pans or projects, as a result of hydrogeological effects.

3.3.4 Habitat degradation as a result of introducing/spreading non-native invasive species

There were no records for invasive flora species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) within the indicative redline boundary of the proposed development site or within 1km of the proposed development site.. Therefore, there is no risk of spread to downstream European sites.

3.3.5 Disturbance and displacement impacts

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m[14]. For birds, disturbance effects would not be expected to extend beyond a distance of c.300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance.[15] There are no European sites within the disturbance ZoI; the next nearest European site to the proposed development is *c.*3.7km away. There are also no habitat areas within the disturbance ZoI of the proposed development that support populations of qualifying/special conservation interest species of any European site. [16]

As the proposed development will not result in the disturbance/displacement of the qualifying/special conservation interest species of any European site, there is no potential for any in combination effects to occur in that regard.

3.3.6 Summary

The potential impacts associated with the proposed development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the qualifying interest/special conservation interests of any European sites. Therefore, the proposed development is not likely to have significant effects on any European sites.

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[13] https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/DublinGWB.pdf

[14] This is consistent with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

[15] The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. *Wildfowl* (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

[16] There is a need to consider use of habitat areas outside of an SPA by SCI bird species where they support the SCI populations and the site's conservation objectives. These habitat areas can comprise alternative roosting sites, foraging areas, staging grounds or migration routes and can, but not necessarily exclusively, be situated within the immediate hinterland of the SPA, or in areas ecologically connected to it.

62 As the proposed development itself will not have any effects on the QIs/SCIs or conservation objectives of any European sites, and taking into account the policies and objectives of the statutory plans referred to above, it is concluded that there is no potential for any other plan or project to act in combination with it to result in significant effects on any European sites.

63 The potential impacts of the proposed development on the receiving environment, their ZoI, and the European sites at risk of significant effects are summarised in Table 1 below. In assessing the potential for the proposed development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites are not taken into account.

Table 1 Summary of Analysis of Likely Significant Effects on European sites

Potential Direct, Indirect In Combination Effects and the ZoI of the Potential Effects	Are there any European sites within the ZoI of the proposed development?
Habitat loss Habitat loss will be confined to the lands within the proposed development boundary.	No There are no European sites within the proposed development boundary
Habitat degradation as a result of hydrological impacts Habitats and species downstream of the proposed development site and the associated surface water drainage discharge points, and downstream of offsite wastewater treatment plants.	No There are no European sites at risk of hydrological effects associated with the proposed development
Habitat degradation as a result of hydrogeological impacts Groundwater-dependant habitats, and the species those habitats support, in the local area that lie downgradient of the proposed development site.	No There are no European sites at risk of hydrogeological effects associated with the proposed development
Habitat degradation as a result of introducing/spreading non-native invasive species Habitat areas within, adjacent to, and potentially downstream of the proposed development site.	No There are no European sites at risk of the spread/introduction of invasive species as a result of the proposed development
Disturbance and displacement impacts Potentially up to several hundred metres from the proposed development boundary, dependent upon the predicted levels of noise, vibration and visual disturbance associated with the proposed development, taking into account the sensitivity of the qualifying interest species to disturbance effects	No There are no European sites within the potential zone of influence of disturbance effects associated with the construction or operation of the proposed development

4 Conclusions of Screening Assessment Process

64 Following an examination, analysis and evaluation of the best available information, and applying the precautionary principle, it can be concluded that the possibility of any significant effects on any European sites, whether arising from the project alone or in combination with other plans and projects, can be excluded, for the reasons set out in Section 3.3 above. In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the zone of influence, and their conservation objectives, have been fully considered.

65 Therefore, it is the professional opinion of the authors of this report that the application for consent for the proposed development does not require an Appropriate Assessment or the preparation of a Natura Impact Statement (NIS).

Appendix I

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the vicinity of the proposed development site (see Figure 1)

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Special Area of Conservation (SAC)	
Glenasmole Valley SAC [001209] 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) 7220 Petrifying springs with tufa formation (*Cratoneurion*)* NPWS (2021) *Conservation objectives for Glenasmole Valley SAC [001209].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 3.7km south of the proposed development
Wicklow Mountains SAC [002122] 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths 4060 Alpine and Boreal heaths 6130 *Calaminarian* grasslands of the *Violetalia calaminariae* 6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) 7130 Blanket bogs (* if active bog) 8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) 8210 Calcareous rocky slopes with chasmophytic vegetation 8220 Siliceous rocky slopes with chasmophytic vegetation 91A0 Old sessile oak woods with *Ilex* and Blechnum in the British Isles 1355 *Lutra lutra* (Otter) NPWS (2017) *Conservation Objectives: Wicklow Mountains SAC 002122.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.	*c.* 6.1km south of the proposed development
South Dublin Bay SAC [000210] 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 *Salicornia* and other annuals colonising mud and sand 2110 Embryonic shifting dunes NPWS (2013) *Conservation Objectives: South Dublin Bay SAC 000210.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 11km east of the proposed development

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Rye Water Valley/Carton SAC [001398] 7220 Petrifying springs with tufa formation (*Cratoneurion*)* 1014 Narrow-mouthed Whorl Snail *Vertigo angustior* 1016 Desmoulin's Whorl Snail *Vertigo moulinsiana* NPWS (2021) *Conservation objectives for Rye Water Valley/Carton SAC [001398].* Generic Version 8.0. Department of Housing, Local Government and Heritage.[17]	*c.* 11.5km north-west of the proposed development
Knocksink Wood SAC [000725] 7220 Petrifying springs with tufa formation (Cratoneurion)* 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* NPWS (2021) *Conservation objectives for Knocksink Wood SAC [000725].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 13.3km south-east of the proposed development
North Dublin Bay SAC [000206] 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 *Salicornia* and other annuals colonising mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1395 Petalwort *Petalophyllum ralfsii* 1410 Mediterranean salt meadows (*Juncetalia maritimi*) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 2190 Humid dune slacks NPWS (2013) *Conservation Objectives: North Dublin Bay SAC 000206.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 14.3km north-east of the proposed development
Special Protection Area (SPA)	
Wicklow Mountains SPA [004040] A098 Merlin *Falco columbarius* A103 Peregrine *Falco peregrinus* NPWS (2021) *Conservation objectives for Wicklow Mountains SPA [004040].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 7.4km south-east of the proposed development

[17] The versions of the conservation objectives documents referenced in this table are the most recent published versions at the time of writing

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
South Dublin Bay and River Tolka Estuary SPA [004024] A046 Light-bellied Brent Goose *Branta bernicla hrota* A130 Oystercatcher *Haematopus ostralegus* A137 Ringed Plover *Charadrius hiaticula* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A144 Sanderling *Calidris alba* A149 Dunlin *Calidris alpina* A157 Bar-tailed Godwit *Limosa lapponica* A162 Redshank *Tringa totanus* A179 Black-headed Gull *Chroicocephalus ridibundus* A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* A999 Wetland and Waterbirds NPWS (2015) *Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 11km east of the proposed development
North Bull Island SPA [004006] A046 Light-bellied Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A052 Teal *Anas crecca* A054 Pintail *Anas acuta* A056 Shoveler *Anas clypeata* A130 Oystercatcher *Haematopus ostralegus* A140 Golden Plover *Pluvialis apricaria* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A144 Sanderling *Calidris alba* A149 Dunlin *Calidris alpina* A156 Black-tailed Godwit *Limosa limosa* A157 Bar-tailed Godwit *Limosa lapponica* A160 Curlew *Numenius arquata* A162 Redshank *Tringa totanus* A169 Turnstone *Arenaria interpres* A179 Black-headed Gull *Chroicocephalus ridibundus* A999 Wetlands & Waterbirds NPWS (2015) *Conservation Objectives: North Bull Island SPA 004006*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 14.3km north-east of the proposed development

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Poulaphouca Resovior SPA [004063] A043 Greylag Goose *Anser anser* A183 Lesser Black-backed Gull *Larus fuscus* NPWS (2021) *Conservation objectives for Poulaphouca Reservoir SPA [004063].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 14.9km south-west of the proposed development

Appendix II

Planning polices/objectives relating to the protection of European sites and water quality

Eastern & Midland Regional Assembly, Regional Spatial & Economic Strategy 2019-2031
Regional Policy Objective 3.4 Ensure that all plans, projects and activities requiring consent arising from the Regional Spatial and Economic Strategy are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate. In addition the future strategic development of settlements throughout the Region will have full cognisance of the legal requirements pertaining to sites of International Nature Conservation Interest. **Regional Policy Objective 7.2** To achieve and maintain 'Good Environmental Status' for marine waters and to ensure the sustainable use of shared marine resources in the Region, and to promote the development of a cross-boundary and cross-border strategic management and stakeholder engagement framework to protect the marine environment. **Regional Policy Objective 7.10** Support the implementation of the Water Framework Directive in achieving and maintaining at least good environmental status for all water bodies in the Region and to ensure alignment between the core objectives of the Water Framework Directive and other relevant Directives, River Basin Management plans and local authority land use plans. **Regional Policy Objective 7.11** For water bodies with 'high ecological status' objectives in the Region, local authorities shall incorporate measures for both their continued protection and to restore those water bodies that have fallen below high ecological status and areas 'At Risk' into the development of local planning policy and decision making any measures for the continued protection of areas with high ecological status in the Region and for mitigation of threats to waterbodies identified as 'At Risk' as part of a catchment based approach in consultation with the relevant agencies. This shall include recognition of the need to deliver efficient wastewater facilities with sufficient capacity and thus contribute to improved water quality in the Region. **Regional Policy Objective 7.12** Future statutory land use plans shall include Strategic Flood Risk Assessment (SFRA) and seek to avoid inappropriate land use zonings and development in areas at risk of flooding and to integrate sustainable water management solutions (such as SuDS, nonporous surfacing and green roofs) to create safe places in accordance with the Planning System and Flood Risk Assessment Guidelines for Local Authorities. **Regional Policy Objective 7.15** Local authorities shall take opportunities to enhance biodiversity and amenities and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management measures are planned. **Regional Policy Objective 7.16** Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans. **Regional Policy Objective 7.22** Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks and protected species. **Regional Policy Objective 10.6** Delivery and phasing of services shall be subject to the required appraisal, planning and environmental assessment processes and shall avoid adverse impacts on the integrity of the Natura 2000 network. **Regional Policy Objective 10.7** Local authority core strategies shall demonstrate compliance with DHPLG Water Services Guidelines for local authorities and demonstrate phased infrastructure – led growth that is commensurate with the carrying

capacity of water services and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network.

Regional Policy Objective 10.10

Support Irish Water and the relevant local authorities in the Region to eliminate untreated discharges from settlements in the short term, while planning strategically for long term growth in tandem with Project Ireland 2040 and in increasing compliance with the requirements of the Urban Waste Water Treatment Directive from 39% today to 90% by the end of 2021, to 99% by 2027 and to 100% by 2040.

Regional Policy Objective 10.11

EMRA supports the delivery of the waste water infrastructure set out in Table 10.2, subject to appropriate environmental assessment and the planning process.[18]

Regional Policy Objective 10.12

Development plans shall support strategic wastewater treatment infrastructure investment and provide for the separation of foul and surface water networks to accommodate the future growth of the Region.

Regional Policy Objective 10.15

Support the relevant local authorities (and Irish Water where relevant) in the Region to improve storm water infrastructure to improve sustainable drainage and reduce the risk of flooding in the urban environment and in the development and provision at a local level of Sustainable Urban Drainage solutions.

Regional Policy Objective 10.16

Implement policies contained in the Greater Dublin Strategic Drainage Study (GDSDS), including SuDS.

Regional Policy Objective 10.18

Local authorities shall ensure adequate surface water drainage systems are in place which meet the requirements of the Water Framework Directive and the associated River Basin Management Plans.

Dún Laoghaire-Rathdown County Development Plan 2016-2022

Policy LHB19: Protection of Natural Heritage and the Environment

It is Council policy to protect and conserve the environment including, in particular, the natural heritage of the County and to conserve and manage Nationally and Internationally important and EU designated sites - such as Special Protection Areas, candidate Special Areas of Conservation, proposed Natural Heritage Areas and Ramsar sites - as well as non-designated areas of high nature conservation value which serve as 'Stepping Stones' for the purposes of Article 10 of the Habitats Directive.

Policy LHB20: Habitats Directive

It is Council policy to ensure the protection of natural heritage and biodiversity, including European sites that form part of the Natura 2000 network, in accordance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines.

Policy LHB22: Designated Sites

It is Council policy to protect and preserve areas designated as proposed Natural Heritage Areas, candidate Special Areas of Conservation, and Special Protection Areas. It is Council policy to promote the maintenance and as appropriate, delivery of 'favourable' conservation status of habitats and species within these areas.

Policy EI2: Wastewater Treatment and Appropriate Assessment

It is Council policy to provide adequate wastewater treatment facilities to serve the existing and future population of the County, subject to complying with the Water Framework Directive and the associated River Basin Management Plan or any updated version of this document, 'Water Quality in Ireland 2007-2009' (EPA 2011) or any updated version of the document, Pollution Reduction Programmes for Designated Shellfish Areas, the Urban Waste Water Treatment Directive and the Habitats Directive.

Policy EI3: Surface Water Drainage and Appropriate Assessment

[18] The Greater Dublin Drainage Project, the Ringsend Wastewater Treatment Plant Project, the Athlone Main Drainage Area and the Upper Liffey Valley Sewerage Scheme

It is Council policy to require that a Sustainable Drainage System (SuDS) is applied to any development and that site specific solutions to surface water drainage systems are developed, which meet the requirements of the Water Framework Directive and the associated River Basin Management Plans and 'Water Quality in Ireland 2007-2009' (EPA 2011) or any updated version of the document.

Fingal Development Plan 2017-2023

Objective NH10

Ensure that the Council takes full account of the requirements of the Habitats and Birds Directives, as they apply both within and without European Sites in the performance of its functions.

Objective NH11

Ensure that the Council, in the performance of its functions, takes full account of the objectives and management practices proposed in any management or related plans for European Sites in and adjacent to Fingal published by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

Objective NH15

Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the period of this Plan.

Objective SW04

Require the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.

Objective WQ01

Strive to achieve 'good status' in all waterbodies in compliance with the Water Framework Directive, the Eastern River Basin District Management Plan 2009-2015 and the associated Programme of Measures (first cycle) and to cooperate with the development and implementation of the second cycle national River Basin Management Plan 2017-2021.

Objective WQ04

Protect existing riverine wetland and coastal habitats and where possible create new habitats to maintain naturally functioning ecosystems whilst ensuring they do not impact negatively on the conservation objectives of any European Sites.

Objective WT01

Liaise with and work in conjunction with Irish Water during the lifetime of the plan for the provision, extension and upgrading of waste water collection and treatment systems in all towns and villages of the County to serve existing populations and facilitate sustainable development of the County, in accordance with the requirements of the Settlement Strategy and associated Core Strategy.

Objective WT02

Liaise with Irish Water to ensure the provision of wastewater treatment systems in order to ensure compliance with existing licences, EU Water Framework Directive, River Basin Management Plans, the Urban Waste Water Directive and the EU Habitats Directive.

Dublin City Development Plan 2016-2022

GI23

To protect flora, fauna and habitats, which have been identified by Articles 10 and 12 of Habitats Directive, Birds Directive, Wildlife Acts 1976–2012, the Flora (Protection) Order 2015 S.I No. 356 of 2015, European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

GI24

To conserve and manage all Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas designated, or proposed to be designated, by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

GIO17

To seek the continued improvement of water quality, bathing facilities and other recreational opportunities in the coastal, estuarine and surface waters in the city and to protect the ecology and wildlife of Dublin Bay.

GI20

To seek continued improvement in water quality, bathing facilities and other recreational opportunities in the coastal, estuarine and surface waters in the city, having regard to the sensitivities of Dublin Bay and to protect the ecology and wildlife of Dublin Bay.

SI18

To require the use of Sustainable Urban Drainage Systems in all new developments, where appropriate, as set out in the Greater Dublin Regional Code of Practice for Drainage Works. The following measures will apply:

- The infiltration into the ground through the development of porous pavement such as permeable paving, swales, and detention basins
- The holding of water in storage areas through the construction of green roofs, rainwater harvesting, detention basins, ponds, and wetlands
- The slow-down of the movement of water.

Kildare County Development Plan 2017-2023

NH 4

Support the conservation and enhancement of Natura 2000 Sites including any additional sites that may be proposed for designation during the period of this Plan and to protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site.

NH 5

Prevent development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the county and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive.

NH 6

Ensure an Appropriate Assessment, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest.

WQ 1

Co-operate with the EPA and other authorities in the continued implementation of the EU Water Framework Directive and assist and co-operate with the lead authority for the River Basin Management Plan(s).

WQ 2

Ensure, through the implementation of the River Basin Management Plan(s) and the associated Programmes of Measures and any other associated legislation, the protection and improvement of all drinking water, surface water and ground waters throughout the county.

WQ 6

Protect recognised salmonid water courses in conjunction with Inland Fisheries Ireland such as the Liffey catchment, which are recognised to be exceptional in supporting salmonid fish species.

WW 4

Ensure that adequate wastewater services will be available to service development prior to the granting of planning permission. Applicants who are proposing to connect to the public wastewater network should consult with Irish Water regarding available capacity prior to applying for planning permission.

WW 12

Ensure that existing and permitted private wastewater treatment plants are operated in compliance with their wastewater discharge license, in order to protect water quality.

Wicklow County Development Plan 2016-2022

NH2

No projects giving rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this plan (either individually or in combination with other plans or projects).

Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be: a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.

NH3

To contribute, as appropriate, towards the protection of designated ecological sites including candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs); Wildlife Sites (including proposed Natural Heritage Areas); Salmonid Waters; Flora Protection Order sites; Wildfowl Sanctuaries (see S.I. 192 of 1979); Freshwater Pearl Mussel catchments; and Tree Preservation Orders (TPOs). To contribute towards compliance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines, including the following and any updated/superseding documents:

- EU Directives, including the Habitats Directive (92/43/EEC, as amended)7 , the Birds Directive (2009/147/EC)8 , the Environmental Liability Directive (2004/35/EC)9 , the Environmental Impact Assessment Directive (85/337/EEC, as amended), the Water Framework Directive (2000/60/EC) and the Strategic Environmental Assessment Directive (2001/42/EC).
- National legislation, including the Wildlife Act 197610, the European Communities (Environmental Impact Assessment) Regulations 1989 (SI No. 349 of 1989) (as amended), the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011) and the European Communities (Environmental Liability) Regulations 200811.
- National policy guidelines (including any clarifying Circulars or superseding versions of same), including the Landscape and Landscape Assessment Draft Guidelines 2000, the Environmental Impact Assessment Sub-Threshold Development Guidelines 2003, Strategic Environmental Assessment Guidelines 2004 and the Appropriate Assessment Guidance 2010.
- Catchment and water resource management Plans, including Eastern and South Eastern River Basin Management Plan 2009-2015 (including any superseding versions of same).
- Biodiversity Plans and guidelines, including Actions for Biodiversity 2011-2016: Ireland's 2nd National Biodiversity Plan (including any superseding version of same).
- Ireland's Environment 2014 (EPA, 2014, including any superseding versions of same), and to make provision where appropriate to address the report's goals and challenges.

NH4

All projects and plans arising from this plan12 (including any associated improvement works or associated infrastructure) will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and a Stage 2 Appropriate Assessment where necessary, that:

1) The Plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or

2) The Plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type and / or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to

follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or

3) The Plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.

NH5

To maintain the conservation value of all proposed and future Natural Heritage Areas (NHAs) and to protect other designated ecological sites in Wicklow.

Along with cSACs, SPAs and pNHA these include Salmonid Waters; Flora Protection Order sites; Wildfowl Sanctuaries (see S.I. 192 of 1979); Freshwater Pearl Mussel catchments; and Tree Preservation Orders (TPOs).

WI2

To protect existing and potential water resources of the County, in accordance with the EU Water Framework Directive, the River Basin Management Plans, the Groundwater Protection Scheme and source protection plans for public water supplies.

WI12

Ensure the implementation of Sustainable Urban Drainage Systems (SUDS) and in particular, to ensure that all surface water generated in a new development is disposed of on-site or is attenuated and treated prior to discharge to an approved surface water system.

WI6

In order to fulfil the objectives of the Core Strategy, Wicklow County Council will work alongside and facilitate the delivery of Irish Water's Water Services Investment Programme, to ensure that all lands zoned for development are serviced by an adequate wastewater collection and treatment system and in particular, to endeavour to secure the delivery of regional and strategic wastewater schemes. In particular, to support and facilitate the development of a WWTP in Arklow, at an optimal location following detailed technical and environmental assessment and public consultation.

WI7

Permission will be considered for private wastewater treatment plants for single rural houses where:

- the specific ground conditions have been shown to be suitable for the construction of a treatment plant and any associated percolation area;
- the system will not give rise to unacceptable adverse impacts on ground waters / aquifers and the type of treatment proposed has been drawn up in accordance with the appropriate groundwater protection response set out in the Wicklow Groundwater Protection Scheme (2003);
- the proposed method of treatment and disposal complies with Wicklow County Council's Policy for Wastewater Treatment & Disposal Systems for Single Houses (PE ≤ 10) and the Environmental Protection Agency "Waste Water Treatment Manuals"; and
- in all cases the protection of ground and surface water quality shall remain the overriding priority and proposals must definitively demonstrate that the proposed development will not have an adverse impact on water quality standards and requirements set out in EU and national legislation and guidance documents.

WI9

Private wastewater treatment plants for commercial / employment generating development will only be considered where:

- Irish Water has confirmed the site is due to be connected to a future public system in the area6 or Irish Water have confirmed there are no plans for a public system in the area;
- it can clearly demonstrated that the proposed system can meet all EPA / Local Authority environmental criteria; and

- an annually renewed contract for the management and maintenance of the system is contracted with a reputable company / person, details of which shall be provided to the Local Authority.

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