

169-177 Merrion Road  
Student Accommodation  
Flood Risk Assessment

19.08.2024

24042-X-XXX-RP-TNT-CE-0007



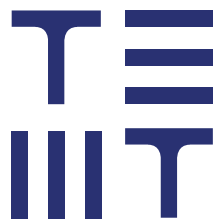
TENT ENGINEERING

**Site Address:**

Gowan Motors Compound site  
169-177 Merrion Road  
Dublin 4

**Client:**

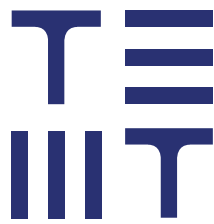
1 Merrion Compound Land Limited



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## Revision and Review

This report has been prepared for the sole benefit, use and information of the client. The liability of Tent Engineering with respect to the information contained in this report will not extend to any third party.

### PURPOSE

P1	Information
P2	Coordination
P3	Planning
P4	Building Control
P5	Pre-tender
P6	Tender
P7	Construction

### REVISION(S)

Rev.	Description	Date
00	1st Issue	27.05.2024
01	2 <sup>nd</sup> Issue	19.08.2024

### ACCEPTANCE (BY OTHERS)

S	Issued
A	Accepted
B	Accepted subject to comments
C	Rejected
D	Acceptance not required

### AUTHOR(S)

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Accepted by

### REVIEWER(S)

#### Name

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Structural Engineer



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# 1 Executive Summary

Tent Engineering is appointed to provide a Flood Risk Assessment suitable for planning for Merrion Road Student Accommodation.

The site is brownfield, no demolition works are required and no existing basement is present. The subject proposals seek planning permission for a Large Scale Residential Development delivering 200 no. student beds within two blocks. The blocks range in height up to 6 storeys. Block A and block B will share a single storey basement. All associated internal and external amenity space, cycle parking, landscaping, bin stores, service provision and vehicular and pedestrian accesses are also proposed.




According to the OPW flood maps, the site is not located within a potential flood zone. Following the site specific information available on flood maps, there is no low, medium or high flood risk shown on our site.

Past historic flood events near our site date back more than 5 decades and new improved flood defences have been installed since, with no recent flood events recorded.

Our site is considered to be within Flood Zone C. The justification test is not needed. The proposed site level remains similar compared to the existing site level and no additional flood defence measures are necessary.

Surface water on site will be adequately dealt with as per the proposed Civil infrastructure report and drawings, that form part of this planning application. The proposed on-site impermeable areas are actively drained and discharge to a combined sewer. Attenuation storage volume is provided through green blue roofs with limited discharge velocity.

Proposals contained or forming part of this report represent the design intent and may be subject to minor alterations and adjustments through detailed design. Where such adjustments are undertaken as part of the detailed design and are deemed a material deviation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works. Where the proposed works to which this report refers are undertaken more than twelve months following the issue of this report, Tent Engineering shall reserve the right to re-validate findings and conclusions based on at that time latest information, at no cost to Tent Engineering.

Fluvial Risk (1% AEP)*	Tidal Risk (0.5% AEP)**	Climate Change***	Comments
			The proposed site level (equal or higher than existing ground level) is above the level obtained for fluvial flood risk, tidal flood risk and climate change simulation.

Flood Risk summary table

\* 1% AEP is the 100-year returning period event (1 in 100 chance in any given year)

\*\* 0.5% AEP is the 200-year returning period event (1 in 200 chance in any given year)

\*\*\* Potential climate change (increase in rainfall of 20% and sea level rise of 0.5m as recommended by OPW)

## 2 Introduction

### 2.1 Project

Tent Engineering is appointed to provide a Flood Risk Assessment suitable for planning for Merrion Road Student Accommodation.

The site is brownfield, no demolition works are required. The subject proposals seek planning permission for a Large Scale Residential Development delivering 200 no. student beds within two blocks. The blocks range in height up to 6 storeys. Block A and block B will share a single storey basement. All associated internal and external amenity space, cycle parking, landscaping, bin stores, service provision and vehicular and pedestrian accesses are also proposed.

Fig 2.1 - Site Location in Relation to the Regional Road Network

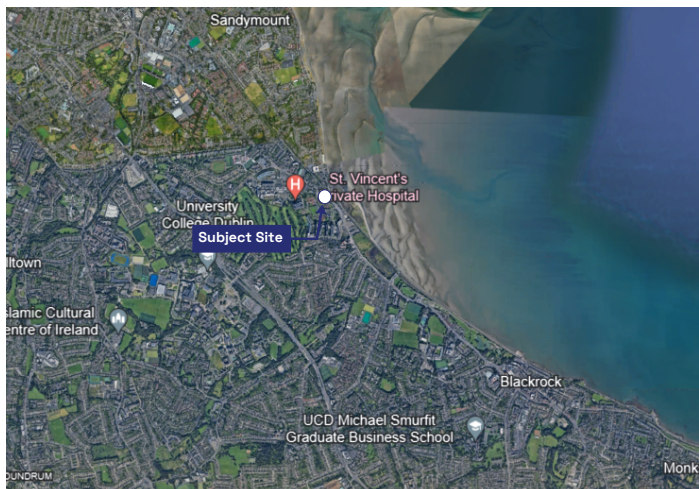


Fig 2.2 - Site Location in Relation to the Local Road Network



### 2.2 Scope of Assessment

According to the OPW flood maps, the site is not located within a potential flood zone. Following the site specific information available on flood maps, there is no low, medium or high flood risk shown on our site.

The proposed site is considered to be in Flood Zone C. A stage 2 justification test is not needed. This indicates that the risk of flooding from rivers and sea is low. The stage 1 assessment is to be undertaken in accordance with the requirements of the Planning System and Flood Risk Management System.

The assessment:

- Investigates all potential risks of flooding to the site
- Considers the impact the development may have elsewhere with regards to flooding

The assessment reviews the following:

- OPW flood maps for ground water, rivers, and sea flooding
- Planning System and Flood Risk Management System information dated November 2009
- National Preliminary Flood Risk Assessment dated 2011
- Geological Survey Ireland (GSI) online map
- Historic Flood Events

## 3 Existing Site Details

### 3.1 History and current use

The site is a brownfield site. The site is currently in temporary use for a site office and parking during the construction of a nearby development by the Client. No permanent structures are present on site.

### 3.2 Existing Watercourses

There is a small stream that is not susceptible to flooding circa 250m from our site. The larger waterway of the River Dodder is located approximately 1.75km away to the West, with its flood extends not reaching near our proposed site.

### 3.3 Existing Networks

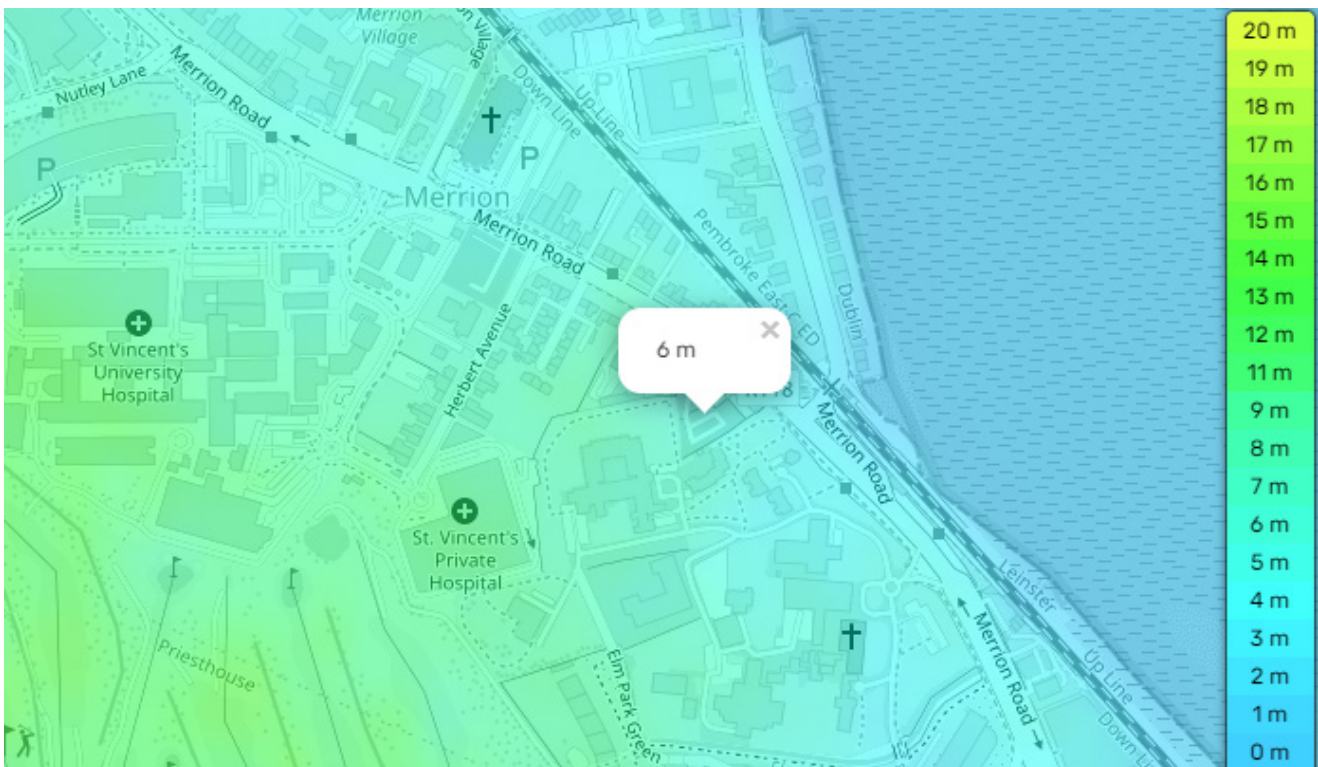
No diversions are believed to be required. This is to be confirmed by a conclusive Site Investigation Survey prior to post-planning works.

### 3.4 Topography and FFL

The site is moderately flat, to no adverse effect of flood risk. The Topographic map below shows the existing ground profile, indicating a general mild slope from the West (high ground) to the East (low ground).

No basement or substructure is currently present. A new single storey, shared basement below block A and block B is proposed, to be tanked and water proofed by specialist design and contractor. The proposed ground level remains similar or higher compared to the existing site level.

Fig 3.1 - Topographic Map





# 4 Site & Flood Risk

## 4.1 Planning and Flood Risk

The Planning System and Flood Risk Management System (2009) provides guidance on how flood risk should be assessed during the planning and development process. There are three types of levels of flood zones defined:

### – Flood Zone A

The probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding and 0.5% or 1 in 200 for coastal flooding)

### – Flood Zone B

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 and 0.5% or 1 in 200 for coastal flooding)

### – Flood Zone C

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). Flood zone C covers all areas of the plan which are not in zones A or B.

Vulnerability class	Land uses and types of development which include*:
<b>Highly vulnerable development (including essential infrastructure)</b>	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children's homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.</p>
<b>Less vulnerable development</b>	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
<b>Water-compatible development</b>	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>

\*Uses not listed here should be considered on their own merits

Following scrutiny of the OPW flood maps and floodinfo.ie, it has been identified that the existing site is not located within an area with documented potential flood risk.

## 4.2 Flood Zone Compatibility

The proposed development is considered to be a 'Highly Vulnerable Development'. The site is located within Flood Zone C, which results in the site being appropriate without further mitigations.

## 4.3 Justification Test

A justification test is not required to be undertaken at this stage.

## 4.4 Historic Flood Events

The OPW provides records for predictive and historic flood maps. These land maps have been consulted and interrogated regarding documented flood events in the vicinity of the subject site. One location circa 50m from our proposed site has had recorded flood events.

It is noted that there are 7no recorded events, with 1no in 1957, 5no in 1963, and 1no in 1971. It is pointed out that a number of defence assets were put in place since these events and no flood occurrence has been documented in the last 53 years. Therefore, the past events are no longer a risk to our site and should not be considered as such.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

## 5 Hydrological Assessment

This study briefly assesses the risk from different types of flooding to the development and the risk of flooding of the proposed building, taking into consideration climate change, as well as how flood risks should be managed.

### 5.1 Fluvial Flooding

The site is located in Flood Zone C, and at low risk from fluvial flooding.

### 5.2 Pluvial Flooding

From the available information on the OPW Flooding Maps, there is no documented potential pluvial flood risk in the direct vicinity of the subject site. Surface water on site will be dealt with appropriately as outlined in our civil planning submission to ensure no local flooding nor site run-off occurs.

### 5.3 Tidal Flooding

Tidal flooding is the inundation of low lying areas, especially prevalent during exceptionally high tide events such as at full and new moons or rare storm events. The site is located within Flood Zone C and has a proposed level that is not lower than the existing ground level. The development is at the lowest risk from tidal flooding.

### 5.4 River Flooding

There are no canals or rivers within close vicinity of the site (the River Dodder is approximately 1.75km away). The development is not at risk of river flooding.

### 5.5 Groundwater flooding

In cases where ground water flooding occurs, it tends to be more persistent than other sources of flooding, typically lasting for weeks or months rather than hours or days. Groundwater flooding does not generally pose a significant risk to life due to the slow rate at which the water level rises; however, it can cause significant risk and damages to property if not considered accordingly.

An intrusive ground investigation has not yet been carried out at the site. Therefore, accurate site specific groundwater levels are unknown. Based on soil infiltration tests on an adjacent site (deemed similarly applicable to our site) indicates a ground water table with water strike levels at considerable depth (>1.5m) below existing ground level. This is of no added flood risk to our proposed development.

### 5.6 Road and Network Flooding

From the available information there are no records of road drainage flooding in the direct vicinity of our proposed site.

No obvious records of flooding associated with our proposed site have been identified, other than mentioned in 'Historic Flood Events'.

Sewerage flooding is excluded from the study as they are typically localised and hence would generally cause limited damage. Sewer flooding typically arises from blockage or other unpredictable incidents, and so it cannot be readily projected where they would be likely to occur, and hence where significant flood risk due to this source might exist.

Providing Irish Water and Dublin City Council maintain their drainage networks, it is assumed that the site will remain at low risk from public sewer and road drainage and infrastructure failures.

## 5.7 Flooding to the site

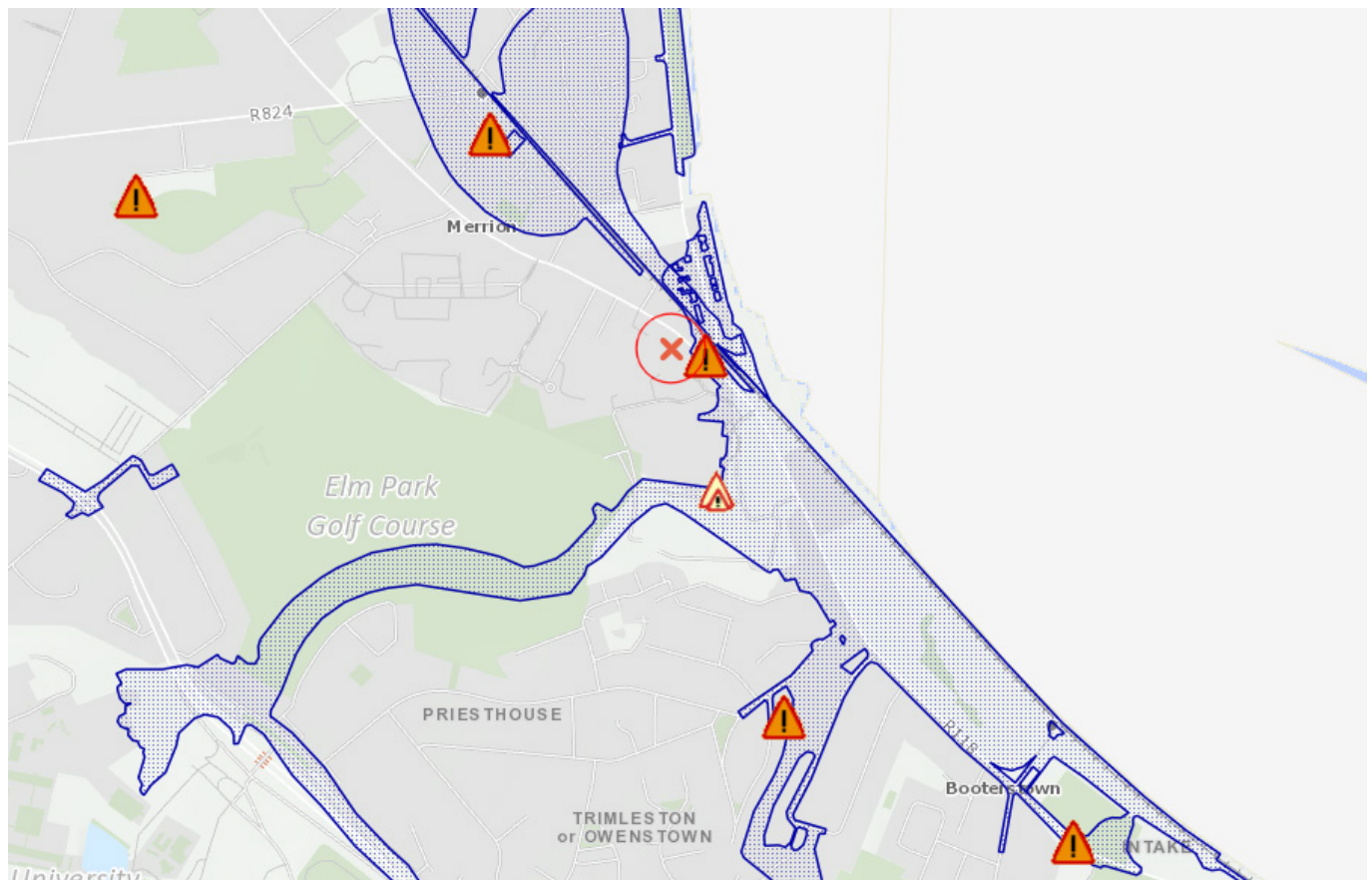
Surface water flooding can be caused when rainwater during extreme rainfall events does not drain away through the normal drainage system or soak into the ground at the desired rate, resulting in flood risk. Surcharging sewers can result in overland flows which if originating at a higher elevation than the development site can pose a flood risk.

As the surrounding developments are deemed to have appropriate on-site drainage, no past flood events are reported, and the general topography of the area is only mildly sloping, this is of no further added flood risk to our proposed site.

## 5.8 Flooding from the site

The design team is responsible for ensuring that the new development does not increase the flood risk elsewhere. The proposed surface water drainage network shall be designed to provide adequate capacity to convey all flows arising from the proposed development so as not to cause damage to the environment, ecosystems, buildings, essential services or adjoining developments and services. This is robustly addressed in our surface water strategy, ensuring minimum risk of volume and contaminant run-off from our site.

Fig 5.1 - OPW Flood Map



## 6 Mitigation

### 6.1 Fluvial and Tidal Floods

No additional flood mitigation is required.

### 6.2 Groundwater Floods

No additional flood mitigation is required.

### 6.3 Surface Water to the site

No additional flood mitigation is required.

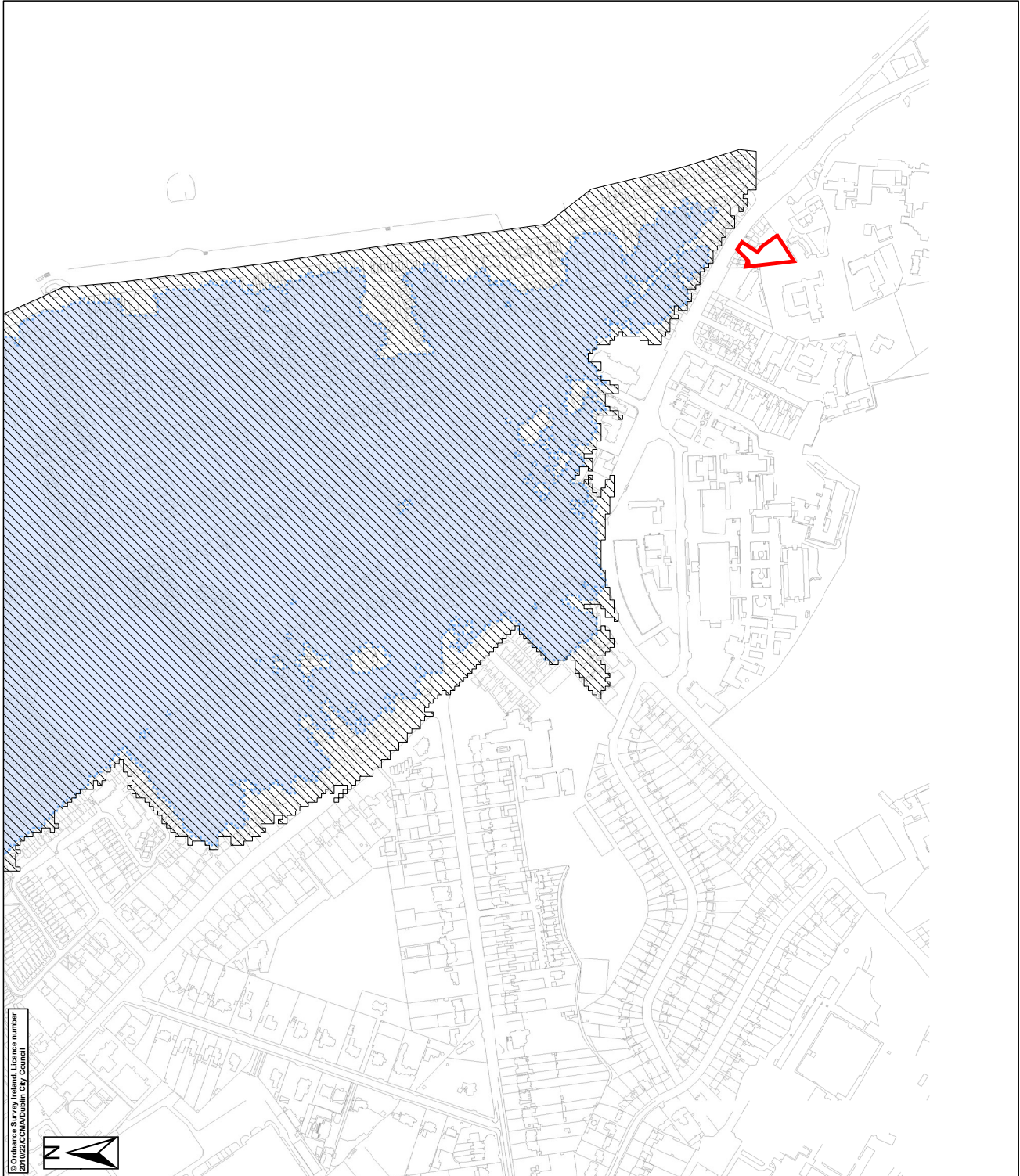
### 6.4 Surface Water from site

This is robustly addressed in our surface water strategy. A green blue roof provides attenuation storage volume with a limited discharge velocity. Aco-drains or similar avoid storm water build-up at door openings.

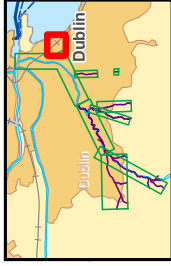
The design team is not to increase the flood risk towards others as a result of the works. The residual risk can be considered low and no additional mitigation is required.

The final design of the drainage networks shall be in accordance with the relevant codes and regulations as set-out by the Office of Public Works, Dublin City Council, Building Regulations and Irish Water.





Location Plan:



**Legend:**

- 10 % AEP Flood Extent  
(1 in 10 chance in any given year)
- 1 % AEP Flood Extent  
(1 in 100 chance in any given year)
- 0.1 % AEP Flood Extent  
(1 in 1000 chance in any given year)
- Defended Area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (<40m) (10% and 0.1% AEP)
- High Confidence (<20m) (1% AEP)
- Medium Confidence (<40m) (1% AEP)
- Low Confidence (<40m) (1% AEP)
- River Centreline
- Note Point
- Note Label (refer to table)
- Flow reporting location
- Peak flow during design flood extent

**USER NOTE:**

THIS FLOOD RISK MAP WAS DERIVED FROM THE DETAILED DESCRIPTION OF THE DRAINAGE SYSTEM AND THE ASSUMPTIONS OF THEIR DERIVATION. LIMITATIONS IN THE ACCURACY AND GUIDANCE AND CONDITIONS OF USE OF THIS MAP ARE NOTED IN THE DRAINAGE SYSTEM REPORT. THIS MAP DOES NOT FORM PART OF BOUND VOLUME. IT SHOULD NOT BE USED FOR ANY PURPOSE.

**Client:**

Dublin City Council

South Dublin County Council

ORW

**Project:**

DODDER CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

**Map:**

PRESENT DAY DODDER

Map Type: FLOOD EXTENT

Source: FLUVIAL FLOODING

Map Area: URBAN AREA

Scenario: CURRENT

Drawn By: A.A.B

Date: 26 November 2010

Checked By: A.J.

Date: 26 November 2010

Approved By: A.G.B

Date: 26 November 2010

Figure No.:

DRIEXT/UA/CURS/01

Map Series: Page 12 of 12

Drawing Scale: 1:1,000

Plot Scale: 1:1 @ A3

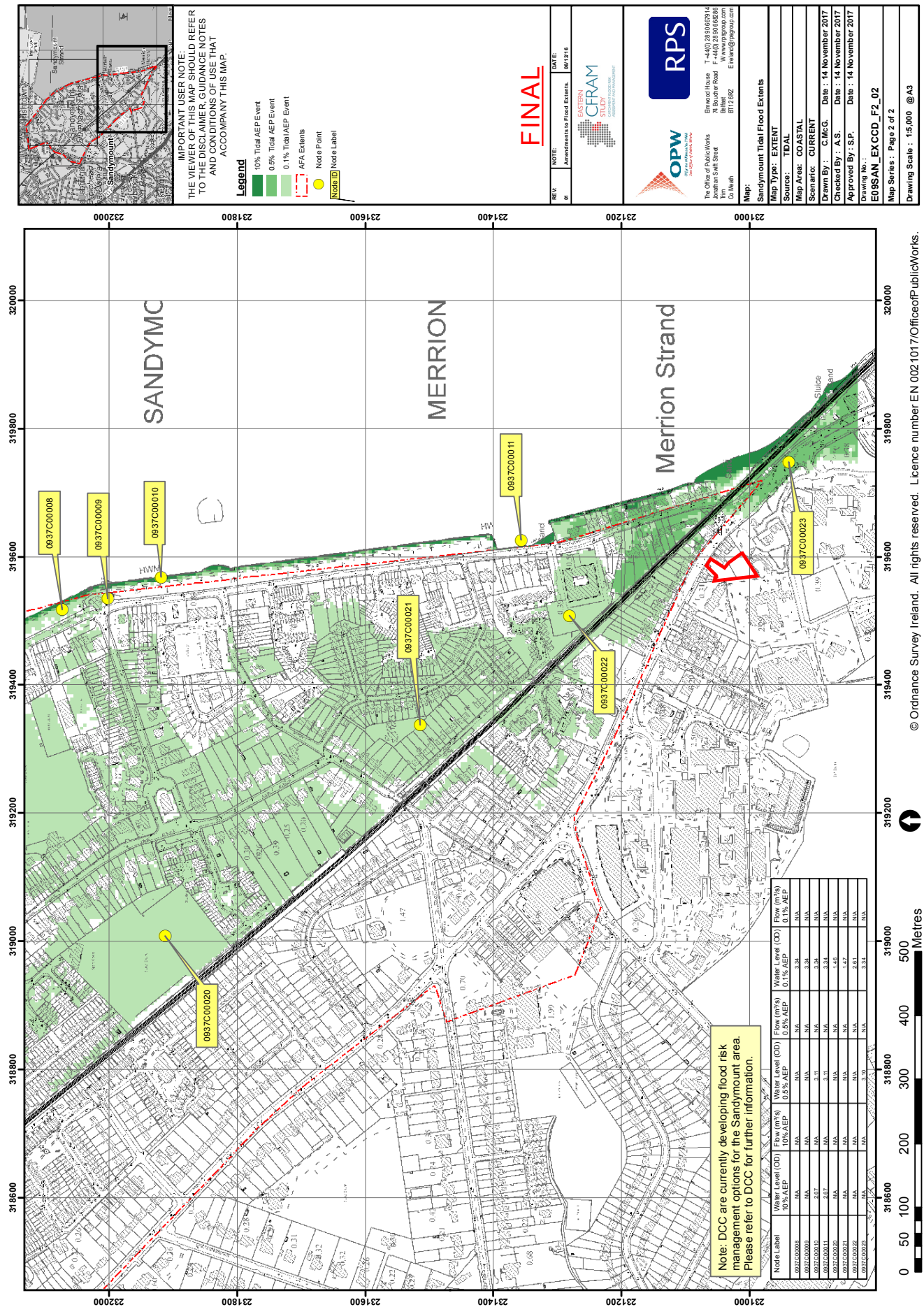
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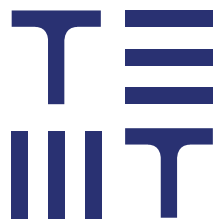
**RPS Consulting Engineers**

ELMWOOD HOUSE TEL: 028 9066 7914

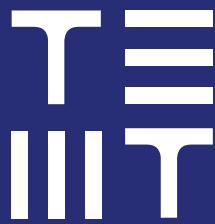
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