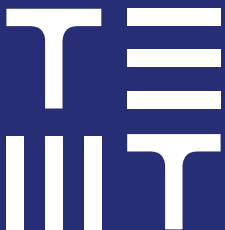


# Mount Saint Mary's Flood Risk Assessment

22.08.2024

**24093-X-XXX-RP-TNT-CE-0002**



**TENT ENGINEERING**

**Site Address:**

Mount Saint Mary's,  
Dundrum Road,  
Dundrum,  
Dublin 14

**Client:**

Dún Laoghaire–Rathdown County  
Council

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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

## ACCEPTANCE (BY OTHERS)

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

Accepted by \_\_\_\_\_

### Office address:

Tent Engineering Ltd.  
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## REVISION(S)

Rev.	Description	Date
00	1st Issue	22.08.2024

## AUTHOR(S)

### Name

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Civil Engineer



## REVIEWER(S)

### Name

**Diarmuid Healy**  
Co-Founder, Director  
Structural Engineer



BEng (hons) CEng MIEI FStructE

# 1 Executive Summary

Tent Engineering is appointed to provide a Flood Risk Assessment suitable for planning for a residential development at Mount Saint Mary's, Dundrum Road, Dundrum, Dublin 14.

The development is delivering 129 units within three blocks. The blocks vary in height, reaching up to 6 storeys.

- Block A comprises 33 one-bedroom units designed for 2 occupants, 17 two-bedroom units designed for 3 occupants and 15 two-bedroom units designed for 4 occupants.
- Block B features 35 one-bedroom units designed for 2 occupants, 6 two-bedroom units designed for 3 occupants and 15 two-bedroom units designed for 4 occupants.
- Block C comprises 4 one-bedroom units designed for 2 occupants and 4 two-bedroom units designed for 4 occupants.

All associated external amenity space, car parking space, cycle storage, 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 2 decades and new improved flood defences have been installed since. No

reoccurring floods have been recorded in the vicinity of the site.

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 a residential development at Mount Saint Mary's, Dundrum Road, Dundrum, Dublin 14.

The subject red line boundary encompasses a greenfield site. No existing dwelling is present on the site. Consequently, demolition works are not required.

## 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.

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

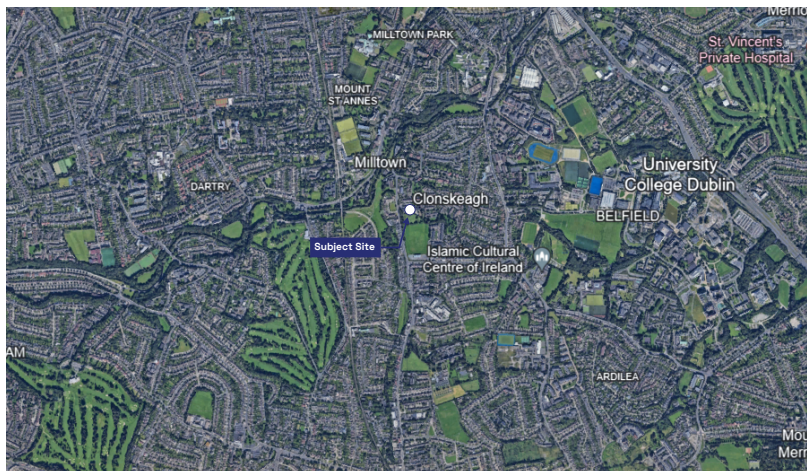
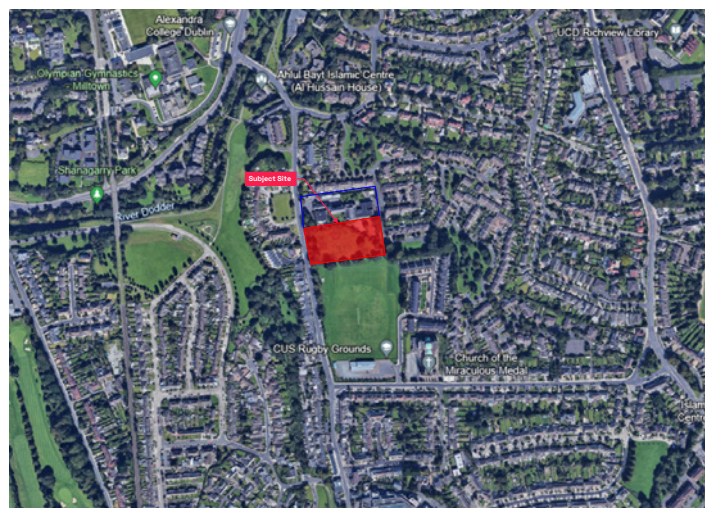


Fig 2.2 - Site Location in Relation to the Local Road Network



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

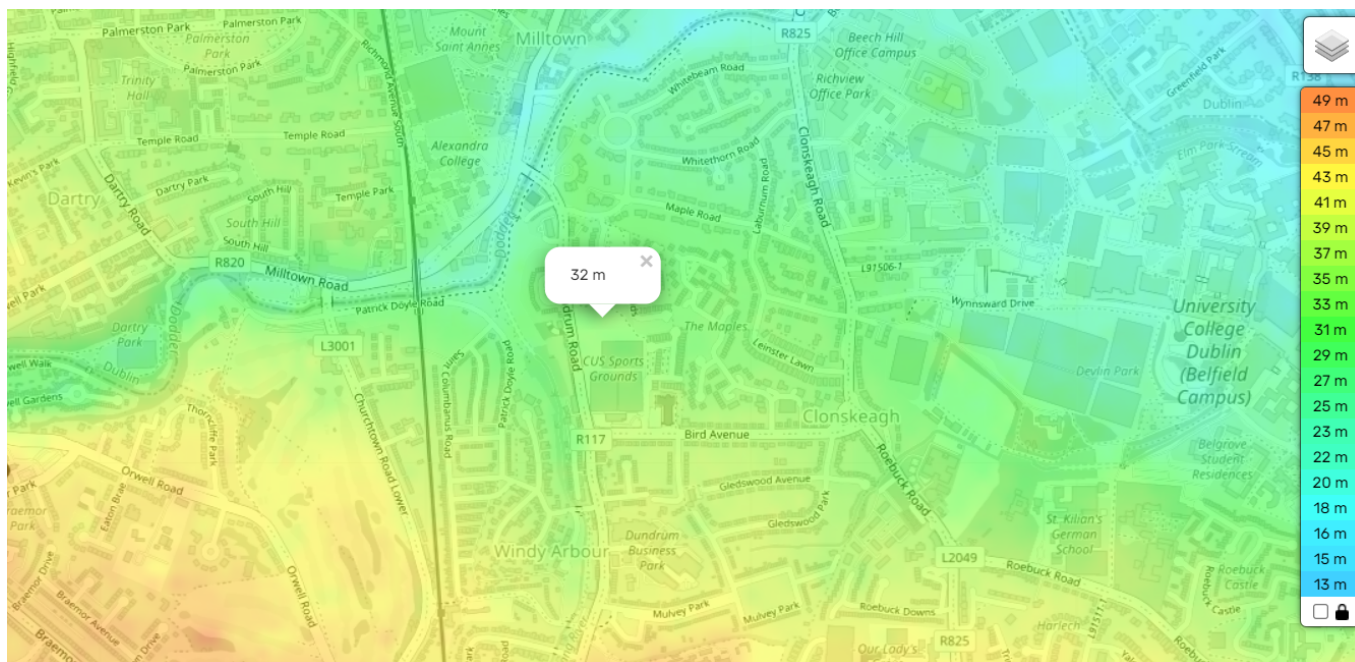


This is to be confirmed by a conclusive Site Investigation Survey prior to post-planning works.

### 3.4 Topography and FFL

The site is flat (c. 32mAOD), which mitigates risk of flooding. The Topographic map below shows the existing ground profile.

Fig. 3.3 - Topography Map



No basement or substructure is currently present. The proposed ground level remains similar or higher compared to the existing site level.

## 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**

Figure 4.1 - Classification of Vulnerability of Different Types of Development

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

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

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.

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. It is noted that a reoccurring flood event, located approximately 1100m from our proposed site, exists. However, this distance does not pose a significant risk to our site. There have been 5 recorded river flooding events in the vicinity of the site, with 2 events originating from the River Dodder in 2000 and 3 events originating from the Barnacullia River, 2

Figure 4.1 - Matrix of Vulnerability versus Flood Zone to Illustrate Appropriate Development

	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



in 1957 and 1 in 1963. The causes of these events were primarily due to inadequate flood defences at the time. Since then, significant flood defence measures have been installed by the Council, effectively mitigating the risk.

## 4.5 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.

## 4.6 Fluvial Flooding

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

## 4.7 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.

## 4.8 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.

## 4.9 River Flooding

The River Dodder is located circa 230m away to the north and the River Slang is located circa 100m away to the west of the site. Both river are not prone to flooding after interrogation of OPW Flood Maps. The development is not at risk of river flooding.

## 4.10 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.

Based on a soakaway 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.

## 4.11 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 Dun-Laoghaire County 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.

### 4.12 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

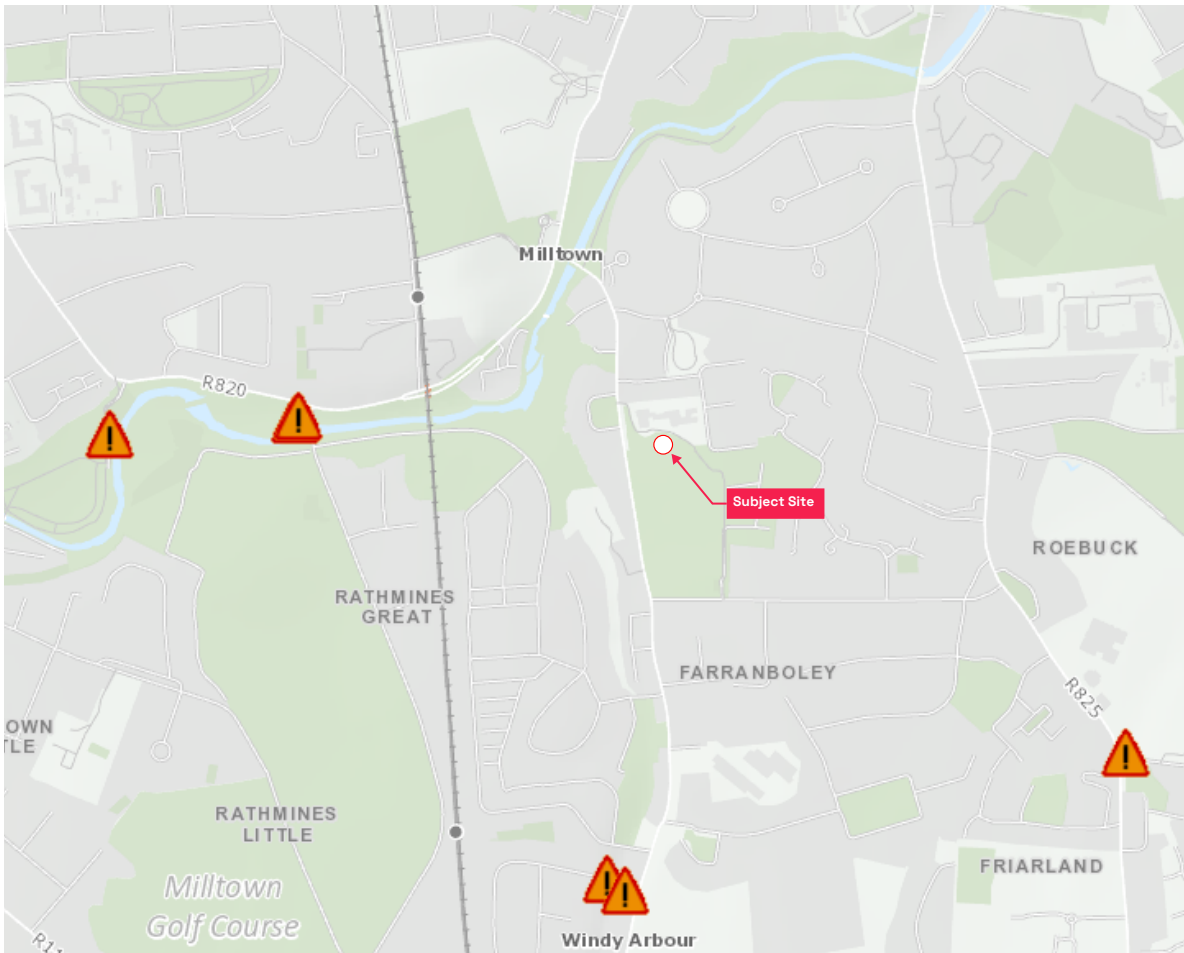
rate, resulting in flood risk. Surcharging sewers can result in overland flows which if originating at a higher elevation than the development site can pose a flood risk.

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 sloped, this is of no further added flood risk to our proposed site.

### 4.13 Flooding from the site

The design team is responsible for ensuring that the new development does not increase

Fig. 5.1 - Past Flood Events in Vicinity of Site



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.

## 5 Mitigation

### 5.1 Fluvial and Tidal Floods

No additional flood mitigation is required.

### 5.2 Groundwater Floods

No additional flood mitigation is required.

### 5.3 Surface Water to the site

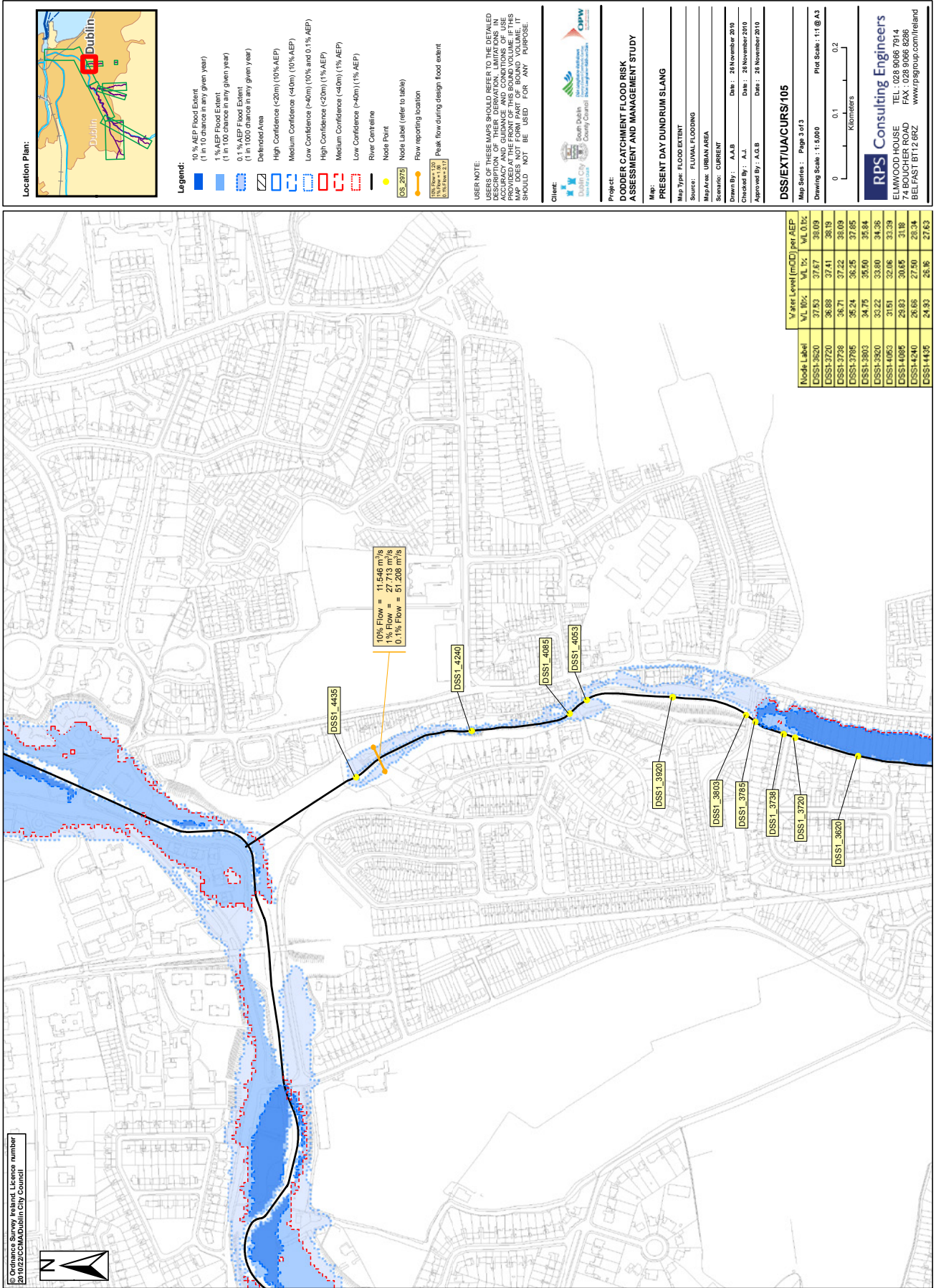
No additional flood mitigation is required.

### 5.4 Surface Water from site

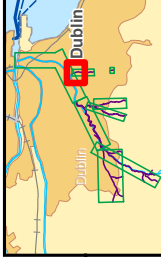
This is robustly addressed in our surface water strategy. A green-blue roof provides attenuation storage volume with a limited discharge velocity. Aco-drains or similar avoid storm water build-up at door openings. Soakaways reduce surface water buildup and prevent localized flooding. Tree pits use soil and root zones to absorb, store, and filter stormwater, reducing runoff and enhancing groundwater recharge.

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



**Location Plan:**




**Legend:**

**Depth Grid [m]**

- 0 - 0.25 m
- 0.25 - 0.50 m
- 0.50 - 1.00 m
- 1.00 - 1.50 m
- 1.5 - 2.00 m
- > 2.00 m

River Centreline

**Client:**



**Project:**  
DODDER CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

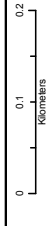
**Map:**  
DUNDRUM SLANG

**Map Type:** 2D/3D  
**Return Period:** 5 Yr AEP EVENT  
**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

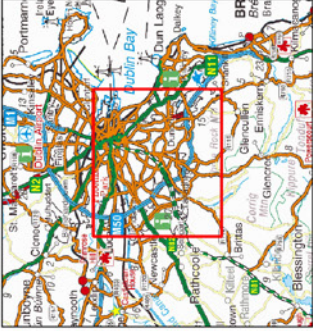
**Figure No.:**  
DSS/EXT/UA/DEP/1000/105A

**Map Series:** Page 3 of 3  
**Drawing Scale:** 1:5,000    **Print Scale:** 1:1 @ A3



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**Location Plan:** 

**LEGEND**

- AFB Boundary
- IED Sites
- Designated for Drinking Water Abstraction
- Designated for Drinking Water Abstraction
- Recreational Wetters
- SAC Water Dependent
- SAC Water Dependent
- SAC Water Dependent
- SPA Water Dependent
- Modelled River Centreline
- 10% AEP Fluvial
- 1% AEP Fluvial
- 0.1% AEP Fluvial

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

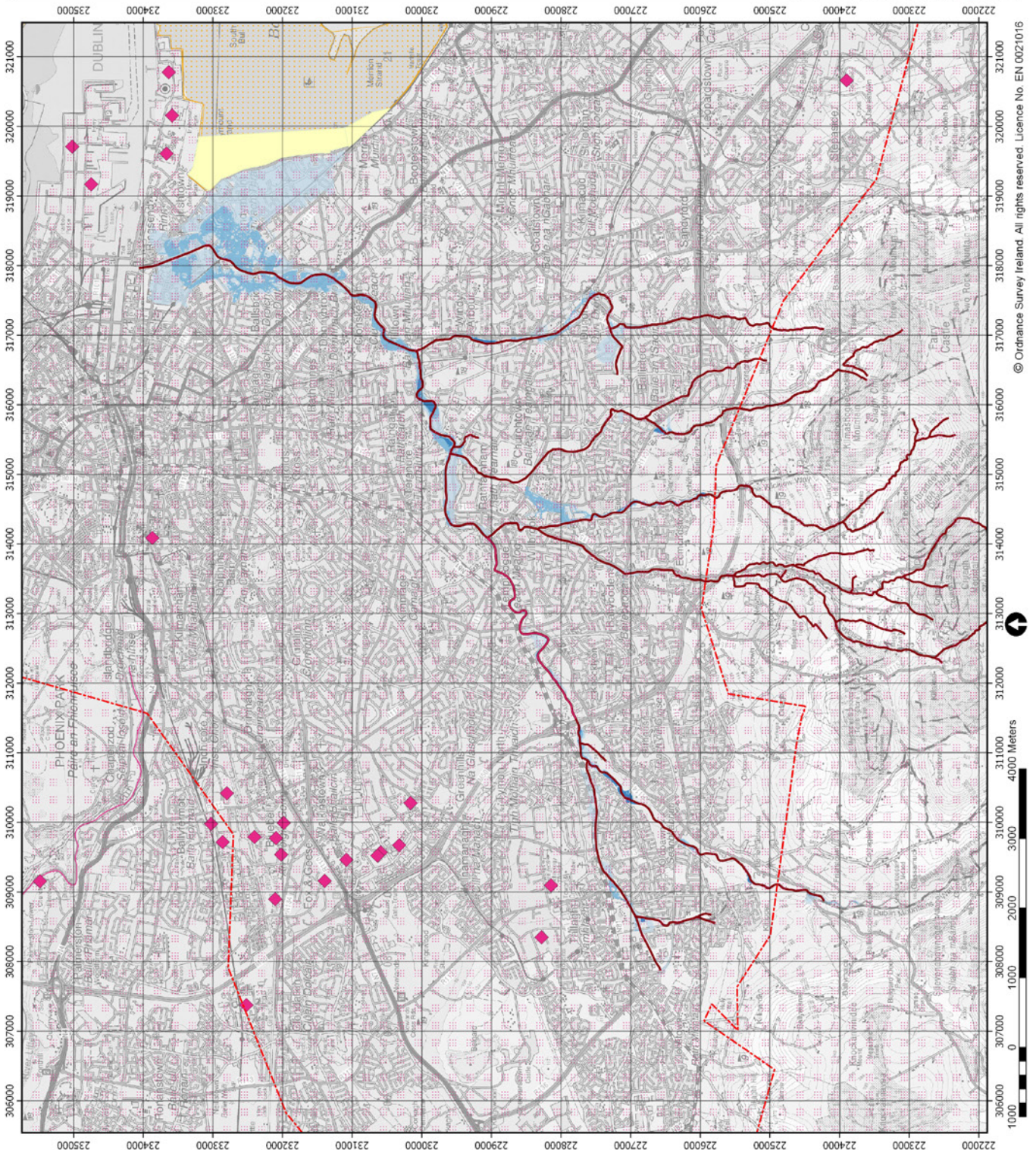
**OPW**  
The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath

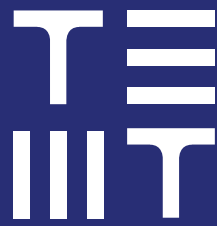
**Project:**  
**DODDER STUDY**

**Map:** **DUBLIN CITY**  
**FLUVIAL GENERAL RISK - ENVIRONMENT**

**Map Type:** FLUVIAL  
**Source:** FLOWAL  
**Map Area:** HPW  
**Scenario:** CURRENT  
**Drawn by:** IH  
**Checked by:** MC  
**Approved by:** JM  
**Date:** Sep - 2016  
**Date:** Sep - 2016  
**Date:** Sep - 2016

**Map No.:** E09DCCD\_RVFCDD\_F0\_01  
**Revision:** F0  
**Map Scale:** 1:50,000  
**Plot Scale:** 1:1 @ A3





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