



## Site Specific Flood Risk Assessment

Project: 20.170

Dundrum Central  
Development

March 2022

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Prepared by:

**BMCE**

52-54 Lower Sandwith Street  
Dublin 2  
D02WR26

Prepared for:

**Land Development Agency**



BARRETT MAHONY  
CONSULTING ENGINEERS  
CIVIL & STRUCTURAL  
www.bmce.ie



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## 1. INTRODUCTION

### 1.1 PROJECT DESCRIPTION

The Land Development Agency intend to apply to An Bord Pleanála (the Board) for a 10 year permission for a Strategic Housing Development with a total application site area of c.9.6 ha, on lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14.

The development will consist of the demolition of existing structures associated with the existing use (3,736 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (677 sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, provision of a new vehicular, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

The development with a total gross floor area of c. 106,770 sq m (c. 106,692 sq m excluding retained existing buildings), will consist of 977 no. residential units comprising:

- 940 no. apartments (consisting of 53 no. studio units; 423 no. one bedroom units; 37 no. two bedroom (3 person) units; 317 no. two bedroom (4 person) units; and 110 no. 3 bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 6 storeys in height (with a lower ground floor to Block 03 and Block 10, resulting in part 7 storey), together with private (balconies and private terraces) and communal amenity open space provision (including courtyards and roof gardens) and ancillary residential facilities;
- 17 no. duplex apartments (consisting of 3 no. 2 bedroom units and 14 no. 3 bedrooms units located at Blocks 02, 08 and 09), together with private balconies and terraces.
- 20 no. two and three storey houses (consisting of 7 no. three bedroom units and 13 no. 4 bedrooms units) and private rear gardens located at Blocks 02, 08 and 09).

The development will also consist of 3,889 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (reception/staff area) to provide a café unit (78 sq m);
- 1 no restaurant unit (307 sq m) located at ground floor level at Block 03;
- 6 no. retail units (1,112 sq m) located at ground floor level at Blocks 03, 06 and 07;
- 1 no. medical unit (245 sq m) located at ground floor level at Block 02;
- A new childcare facility (463 sq m) and associated outdoor play area located at ground floor level at Block 10; and

- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,684 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from the existing access off Dundrum Road, as revised, and from a new access also off Dundrum Road to the south of the existing access.

The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, pathways and boundary treatments, street furniture, wetland feature, part-basement, car parking (547 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for district heating and pumping station); waste management provision; SuDS measures (including green roofs); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.



Fig 1.1 Aerial View of the Site (Delineated in Red)

## 1.2 PURPOSE OF THE REPORT

This report has been prepared as part of the SHD Application for the Dundrum Central development. The purpose of this report is to identify and analyse the flood risk on the subject site and surrounding areas due to the proposed development.

There is also an Infrastructure Report and civil engineering drawings accompanying this planning application, which should be read in conjunction with this report.

### 1.3 DLRCC REPORT OF THE CHIEF EXECUTIVE, 9TH OF JULY 2021, ON THE PAC SUBMISSION TO THE BORD

Set out below are Barrett Mahony responses to the items raised in the DLRCC Drainage Planning Report in relation to the submitted SSFRA report. This section is abstracted from Appendix B of the Chief Executives report. DLRCC text is shown in italics.

1. *The applicant has proposed to discharge 18 l/s to the Dundrum Slang instead of the greenfield runoff of 10 l/s. If possible, the applicant should discharge only 10 l/s to the Dundrum Slang, and direct the remaining discharge to another outfall from the site.*

Response: The west side of the proposed development site, which drains towards the River Slang, has greenfield runoff of 10 l/s. The revised drainage design has reduced the discharge to the Dundrum Slang down to a figure of 7 l/s. Therefore, the proposed development will not increase the predicted 1% AEP flow in the River Slang. See Section 3.2.3 of this report for more information.

2. *It is acknowledged that the applicant has submitted a SSFRA Which discusses how overland flows Will be dealt with both within and adjacent to the site. However, they have not provided a drawing to demonstrate this, The applicant is requested to submit a drawing identifying and showing details Of safe overland flow routes both within and Without the site. The overland flow route plan should identify drop kerbs or ramps requested for channeling the flow, should address low point areas in the site and should detail how properties, both within the development and on adjacent lands, will be protected in the event of excessive overland flows.*

Response: A drawing dealing with overland flows has been prepared and is part of the planning application package. Barrett Mahony drg no. C1025. Refer to Section 3.4.4.1 of this report for a drawing extract & further information on the controlled handling of overland flows proposed in the site.

3. *The applicant is requested to demonstrate how the proposed overland flow storage areas will operate during such an event.*

Response:

The overland flows are typically directed to attenuation tanks and the detention basin, by-passing the main buried drainage system. These SuDS features are designed for a 100 year storm + 20% climate change. Flow is also directed into the considerable areas of green space on site where infiltration & storage can take place augmented by the proposed addition of soakaways provided to cater for the unlikely event of an overland flow. Overland flow will occur along kerbed road. Kerb beak-outs and grated manholes are provided to re-direct flows, should they occur. Overland flow on to the Dundrum Road (and possibly the River Slang) are prevented.

## 2. SITE TOPOGRAPHY

A detailed topographical survey of the existing site has been prepared. There is considerable variation in ground levels across the site. In broad terms the main part of the site slopes down gradually from the southwest corner towards the northeast corner, from +45.21m OD down to +38.76m OD. The western portion of the site slopes down towards the Dundrum Road entrance at +38.44m OD. These low points are the furthest locations from the high topography in the south corner at a distance of 410m and 430m away respectively. Figure 1 shows typical spot levels across the site.

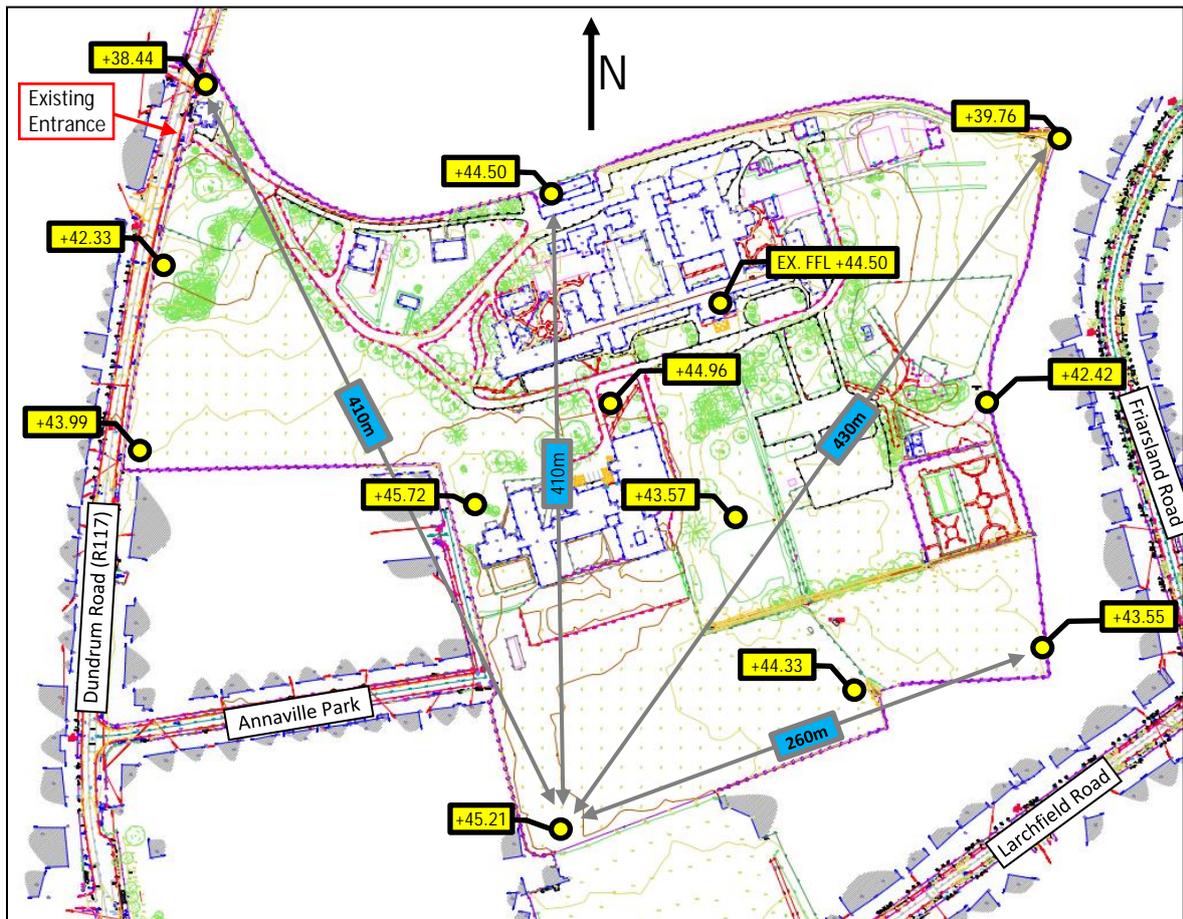


Fig 2. Summary of the Existing Site Topography Superimposed on the Topographical Survey Drawing. (Ordnance Datum Levels).

The proposed site levels typically follow the existing site topography. Building levels have been adjusted to ensure gravity drainage to the site discharge points where possible.

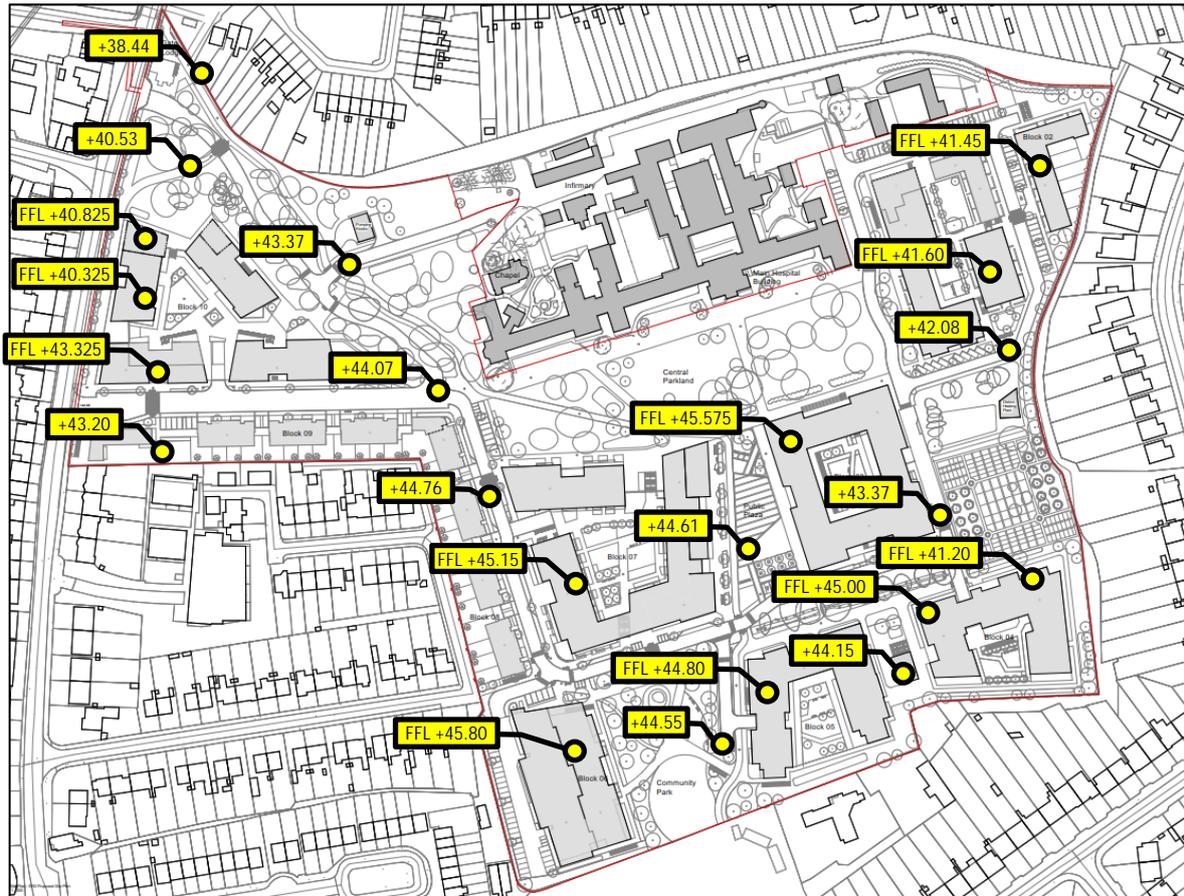


Fig 3. Summary of the Proposed Site Levels (Ordnance Datum Levels).

### 3. SITE SPECIFIC FLOOD RISK ASSESSMENT

#### 3.1 INTRODUCTION

The flood risk assessment outlined below is carried out in accordance with the OPW publication "The Planning System and Flood Risk Assessment Guidelines for Planning Authorities".

The stages involved in the assessment of flood risk are listed in these publications as follows:

- Stage 1: Flood Risk Identification
- Stage 2: Initial Flood Risk Assessment
- Stage 3: Detailed Flood Risk Assessment

The OPW publication also outlines a Sequential Approach for determining whether a particular development is appropriate for a specified location in terms of flood risk. The categorization of the subject site in terms of the OPW's sequential approach is further outlined in Section 3.2 below.

#### 3.2 STAGE 1: FLOOD RISK IDENTIFICATION

Stage 1 identifies whether there are any flooding or surface water management issues related to the site, i.e. it identifies whether a flood risk assessment is required.

##### 3.2.1 Flood Maps

There are Office of Public Works (OPW) and Dún Laoghaire-Rathdown County Council (DLRCC) Flood Hazard Maps available for fluvial flooding for the area around the River Slang. The north and western part of the site are included in these flood maps, but the southern and eastern side, which are further from the River Slang, are not included. Pluvial and coastal flood maps are not available for the subject site. Available information on flooding is contained in Appendix 2 and 3 of this report. These contain fluvial flood risk information from the OPW and DLRCC. The maps indicate that there is no flood risk on the subject site.

There is also further information contained in Appendix 13 of the DLRCC County Development Plan 2016-2022 which has been allowed for in this report.

##### 3.2.2 Fluvial Flooding

The site divides into two natural catchments based on the site topography and direction of falls as shown in Figure 4.

##### Natural Catchment 1 – River Slang catchment:

The western site boundary is 55m approx. from the River Slang, which runs towards towards the River Dodder 1km away. The fluvial flood depth of the river in a 0.1% AEP event adjacent to the site, shown in Figure 5, is below the level of the subject site and, therefore, the site is not considered to be at risk from River Slang flooding. The green field surface water runoff from the western portion of the site drains into the River Slang (see Natural Catchment Area 1 in Figure 4).

##### Natural Catchment 2 – Open channel drainage ditch:

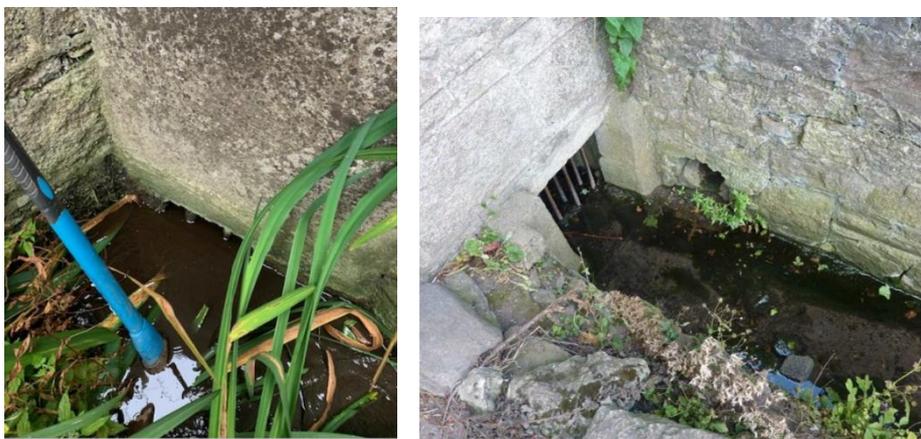
A drainage ditch flows through the site towards the eastern boundary where it exits through a grated opening in the wall at location 'X' in Figure 4. The ditch is typically 600mm wide at the base with steeply sloping sides. It is between 600mm & 1000mm deep along it's length. It originates in the centre of the site at a discharge point from site land drainage. A buried SW sewer enters the site from Rosemount Green and also connects to the channel. The drainage ditch then runs northwards along the outside of the boundary wall and connects to a surface water sewer near the

northeast corner of the site. There is also an opening at location 'Y' close to this sewer connection, which is the low point of this eastern catchment and takes local land drainage from the adjacent fields through another grated opening in the wall. The bulk of the site as shown in Figure 4 drains naturally towards this ditch and there is no evidence of flooding associated with this drainage ditch or further downstream. The new surface water drainage system has been designed to control the site run-off, see section 3.2.3 for more information.

There are no reports of flooding in this ditch in the past. A flow measurement survey was carried out on the drainage ditch flow at location 'X' between the 25th Feb & the 13th May 2021. The max depth recorded in the ditch was 140mm.



Fig 4. Aerial View of the Approximate Natural Catchment Areas of the Existing Site



Photos of grated wall opening at Locations X (right) and Y (left)

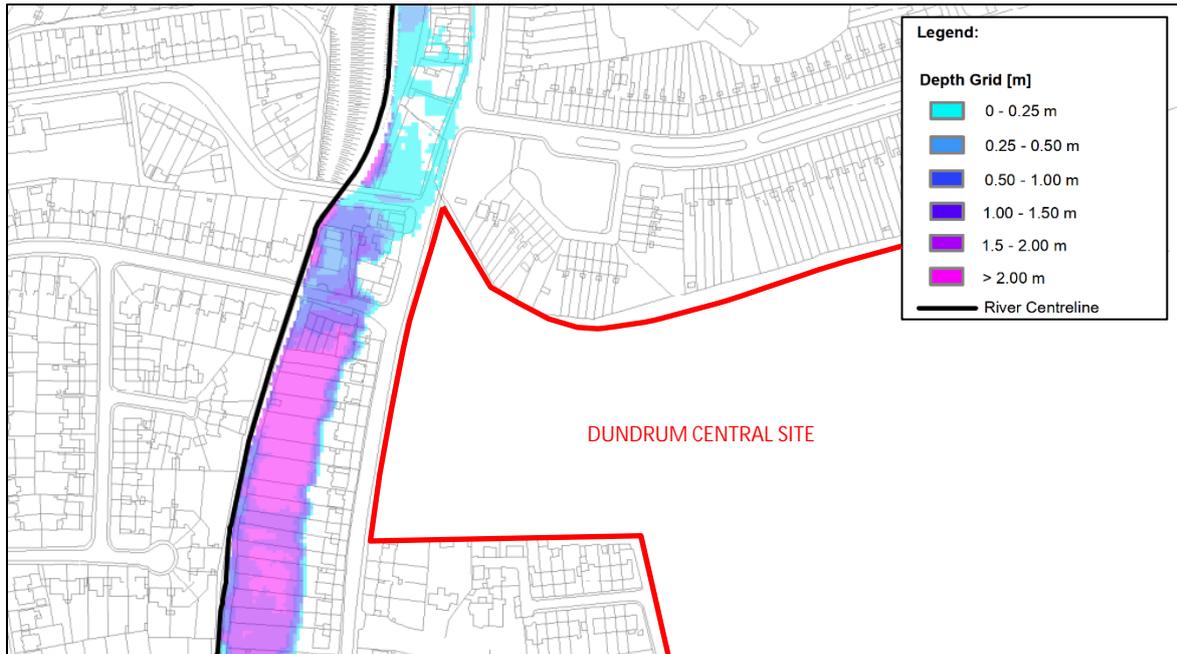


Fig 5. Extract from OPW Flood Risk Map for 0.1% Fluvial Flood Event for the River Slang (1 in 100 year). Dundrum Central Site is Delineated in Red.

### 3.2.3 Pluvial Flooding

The existing combined drainage system on site will be decommissioned and removed. All rain falling on the drained areas of the new development will be collected in the new surface water drainage system to prevent any excess surface entering the River Slang or the drainage ditch which runs through the site. The system is designed without flooding for a 100 year storm, +20%cc in accordance with GSDS requirements. Therefore, the risk of pluvial flooding within the site is negligible. While there is no record of pluvial flooding occurring on the site, the OPW flood maps have identified the flooding risk to Dundrum Road from the River Slang.

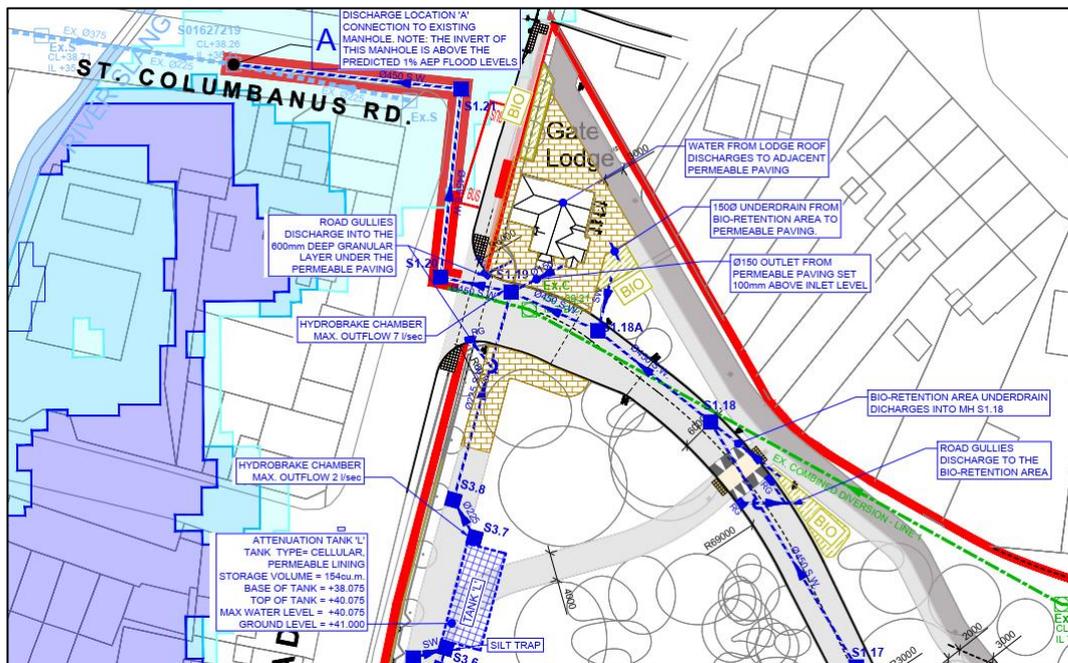


Fig 6. SW Connection Point to Existing Manhole Next to the River Slang

The site divides into three surface water drainage catchments (Catchment A, B1 and B2) as shown in Figure 7. Catchment A area follows the Natural Catchments 1 area in Figure 4 as closely as possible, while Catchments B1 and B2 areas combined follows Natural Catchment 2 area as closely as possible. The proposed surface water system will discharge to the public SW network at three locations.

#### Catchment 'A' draining into the River Slang:

The first connection is discharging into a manhole on a 225mm SW sewer which connects to the River Slang on St. Columbanus Road. The 1% predicted flood level in the Slang at this location +36.43 which is below the invert of the manhole. See Figure 6 above and drawing DCD-BMD-00-00-C-1020 (Buried Surface Water Drainage Layout) for more information.

The greenfield run-off rate  $Q_{bar}$  for Natural Catchment Area 1 (see Figure 4) is estimated to be 10 l/s. SW drainage flow from the proposed development is controlled and attenuated so as to not exceed  $Q_{bar}$  values. The max flow into the River Slang from the proposed development Catchment 'A' (see figure 7) for a 100 year storm + 20% cc is 7 l/s, which is less than the  $Q_{bar}$  for Natural Catchment Area 1 (figures obtained from the Infrastructure Report accompanying this application). The predicted 1% AEP flow in the River Slang is 8600 l/s or 8.6m<sup>3</sup>/s, the proposed development will reduce this by 3 l/s.

#### Catchments 'B1' & 'B2' draining into the eastern side open channel drainage ditch:

The remaining surface water from the site will be discharged into the drainage ditch running across the site and along the eastern boundary (Catchment B1 and B2). B1 connects to the ditch inside the site close to location X in Figure 4. B2 connects at location 'Y'. The SW discharge rate for the drained areas of Catchment B1 and B2 for a 100 year storm + 20% cc is 22 l/s, which is less than the  $Q_{bar}$  for the Natural Catchment Area 2 of 25 l/s. This has been achieved by using a combination of SuDS measures such as: bioretention areas, a detention basin, tree pits, permeable paving and attenuation tanks, and limiting the discharge flow using hydro brakes. Therefore, the proposed development will result in a 12% decrease of SW discharging into the drainage ditch compared to the existing situation.

#### Exiting Buildings & Roads on Site

Rainwater on existing buildings and roads on site discharges to a combined drainage system which discharges to a combined sewer on the Dundrum Road. This discharges to a pumping station north of the site adjacent to the River Dodder. Eliminating rainwater flows into the combined sewer will reduce the risk of overflows into the River Dodder. Foul Drainage flows into the sewer will be at a controlled rate also to the reduce the risk of overflows.

#### Summary:

The total discharge for the drained areas of the proposed development is 29 l/s. which is less than the natural catchment  $Q_{bar}$  for the overall site of 35 l/s. Therefore, the site is not increasing the flood risk to adjoining or downstream areas.

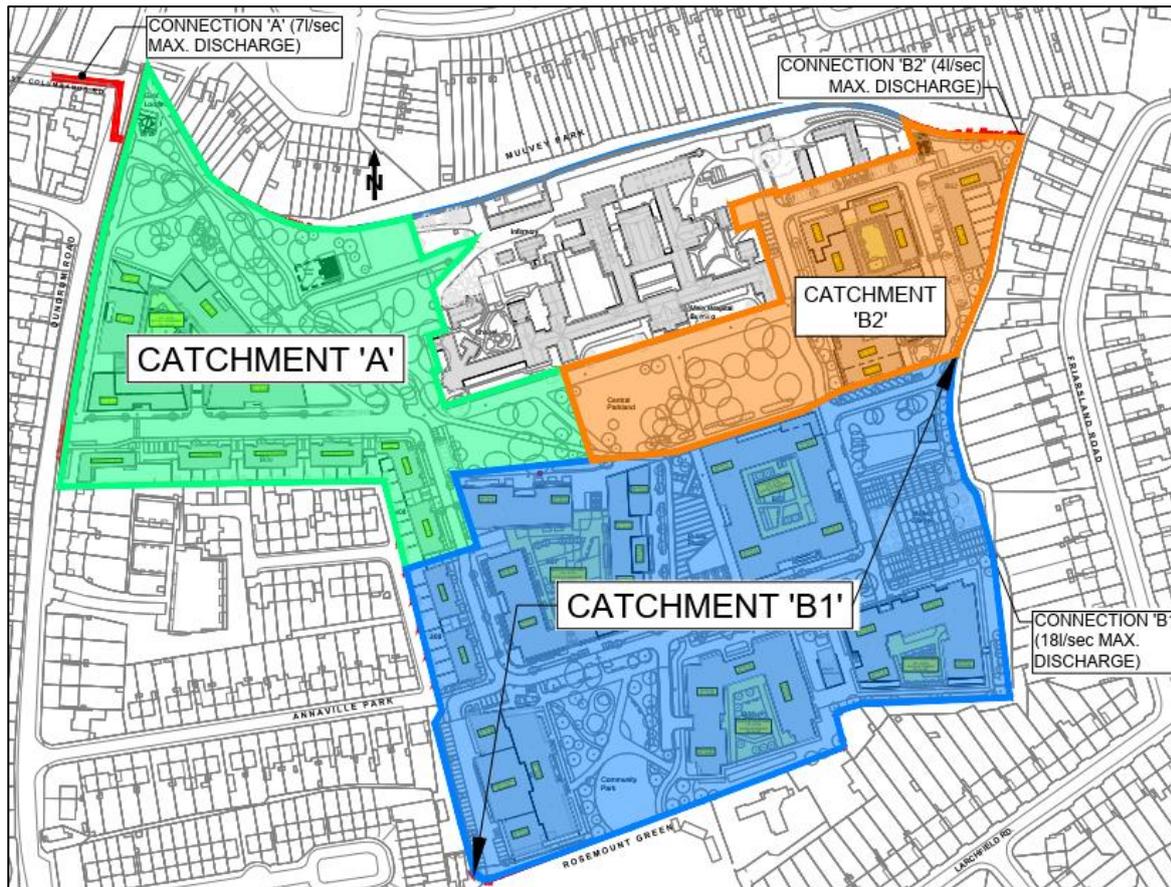


Fig 7. Dundrum Central Site Proposed SW Catchment Areas

Detailed information on the surface water drainage system & all associated calculations can be found in the Infrastructure Report and in the drawings accompanying this application.

### 3.2.4 Groundwater

Groundwater was recorded in 13 no. boreholes and 12 no. trial pits during the site investigation. This is likely to be groundwater perched on top of the impermeable clays which cover the site beneath a thin layer of topsoil & made ground. Basements and half-basements in the proposed development will be waterproofed externally with an outer tanking to prevent groundwater ingress.

### 3.2.5 Coastal Flooding

The site is 2.9km at its shortest distance to the sea at Sandymount Strand, there is no risk from coastal flooding to the proposed development.

## 3.3 FLOOD RISK CLASSIFICATION OF THE DEVELOPMENT

### 3.3.1 Flood Zones

Geographical areas are similarly divided into three categories, based on their risk of river and tidal flooding. The three categories are 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 i.e. all areas which are not within zone A or B).

The subject site is in Flood Zone C, as there is no indication of any part of the site being within an area where the probability of flooding from rivers or the sea is greater than 1 in 1000.

### 3.3.2 Vulnerability Class

As outlined in the OPW publication, new developments are divided into three categories which are as follows:

- 'Highly Vulnerable Development' – hospitals, schools, houses, student halls of residence etc.;
- 'Less Vulnerable Development' – retail, commercial, industrial, agriculture etc.; and
- 'Water-compatible Development' – docks, marinas, amenity open space etc.

The proposed development falls under the heading of Highly Vulnerable Development due to the presence of residential units across the site.

### 3.3.3 Development Classification

The matrix below, which is an extract from the OPW document, states whether a particular development is deemed 'Appropriate' for a geographical location. The site in question is deemed Appropriate.

Table 6.1: Matrix of vulnerability versus flood zone

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water compatible development	Appropriate	Appropriate	Appropriate

### 3.4 STAGE 2: INITIAL FLOOD RISK ASSESSMENT

The initial flood risk assessment should ensure that all relevant flood risk issues are assessed in relation to the decisions to be made and potential conflicts between flood risk and development are addressed. It should assess the adequacy of existing information and any flood defences.

#### 3.4.1 Examination of potential flooding sources that can affect the site.

The possible sources of flood water are assessed in the table below using the “Source – Pathway – Receptor Model”.

Table 6.2: The possible sources of flood water

Source	Pathway	Receptor	Likelihood	Consequence	Risk
Tidal Note	Overtop Breach	People Property	Very Unlikely	High	Negligible
Fluvial Note	Overtop Breach	People Property	Unlikely	High	Negligible
Pluvial Surface water	Overflow / Blockage	People Property	Likely	Moderate	Low
Groundwater	Rising groundwater levels	People Property	Unlikely (Note 1)	Low	Low

Note 1: All basements and half-basements on site will be fully waterproofed.

#### 3.4.2 Appraisal of the availability and adequacy of existing information and flood zone maps

##### 3.4.2.1 Tidal/Fluvial

Good data is available on possible flooding of the surrounding area to the site in the Western CFRAM Study by the OPW. The study is a requirement of the EU ‘Floods’ Directive (2007/60/EC). The PFRA map is also available and considers flood risk arising from any major source of flooding, including natural sources such as river, sea, groundwater and rainfall as well as infrastructural sources such as urban drainage systems, reservoirs, water supply systems ESB and Waterways Ireland Infrastructure.

The relevant maps are contained in Appendix 2 and Appendix 3 and show that the site is located outside of any area at risk of tidal or fluvial flooding.

#### 3.4.3 Determination of what technical studies are appropriate

Given the comprehensive nature of the existing information available regarding flooding, it is not considered necessary to carry out any further analysis of fluvial / tidal flooding or of the sewer network serving the area. The proposed development will help to alleviate some local pluvial flooding and reduce site runoff towards the Dundrum Road and the River Slang which is susceptible to fluvial flooding.

#### 3.4.4 Description of what residual risks will be assessed and how they might be mitigated.

##### 3.4.4.1 Pluvial Flooding & Overland Flows

The unlikely event of a serious blockage of the surface water drainage system on site will lead to overland flow in the site from the point of blockage. The site slopes downhill and rainwater on

impermeable surfaces from any surcharging manhole will be channelled along kerbed edges to break outs in the kerb and into existing attenuation tanks or other SuDS features as shown on Barrett Mahony drg no. C1025. An extract from this is shown below in Figure 8. Overland flows are therefore contained within the site in a controlled manner without risk to the residential buildings on site.

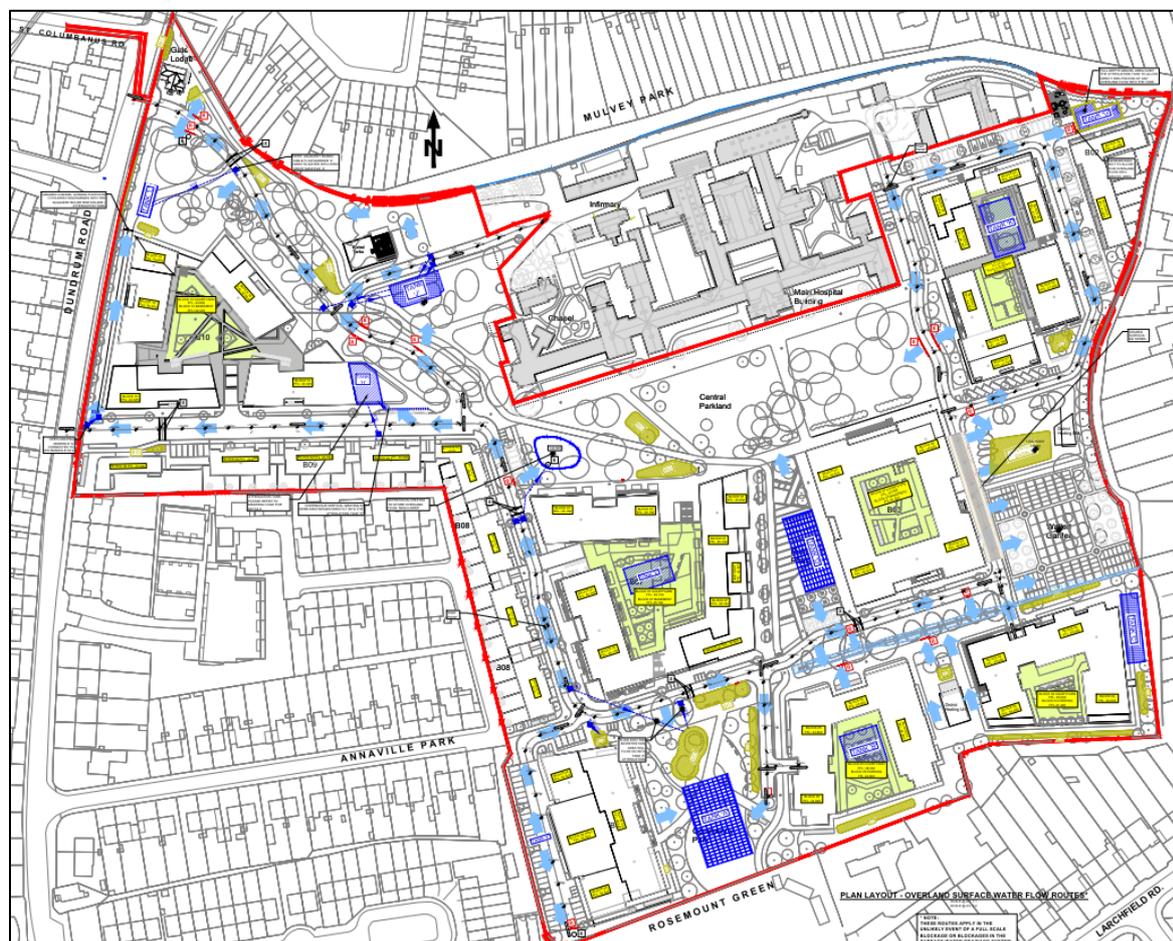


Fig 8. Controlled overland Flow Routes in the event of a Surface Water drainage blockage  
(Extracted from BM drg no. c1025 – See Appendix 4)

#### 3.4.4.2 Fluvial Flooding

There is fluvial flooding to the Dundrum Road in a 0.1% AEP event, and to Highfield Road (opposite the main entrance to the subject site for a 10% AEP event. It is proposed to install new road gullies at the site entrance to prevent any uncontrolled surface water entering Dundrum Road, and subsequently the River Slang. Both the River Slang and Dundrum Road are below the adjacent Dundrum Central site levels, and therefore the site is not at risk from any localised River Slang flooding on the Dundrum Road.

#### 3.4.4.3 Flood Risk Mitigation Measures on site

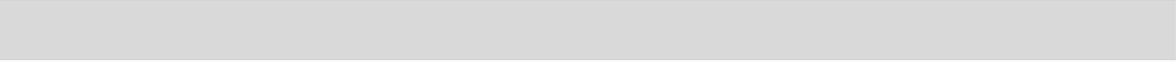
House floor levels and apartment floor levels are set 150mm above the surrounding ground level to minimise flood risk. All basements and half-basements on site will be waterproofed. The top of basement, half-basements and undercroft car park entrance ramps will be set 100mm above the surrounding ground levels to avoid backflow of surface water down the ramps.

#### 4. CONCLUSION

The flood risk assessment has been carried out in accordance with the OPW publication "The Planning System and Flood Risk Assessment Guidelines for Planning Authorities". An assessment has been carried out. The developed site is shown not to be at a significant risk from flooding and to not create a significant risk to adjoining areas or downstream. In summary:

1. River Slang: The site lies outside the predicted 1 in 1000 year flood extent of flooding on this river.
2. Surface Water Drainage:
  - a. The system is designed for a 100yr storm + 20% climate change without flooding.
  - b. The surface water drainage from the site to the surface water sewer network will discharge at rates no greater than the existing greenfield runoff rates thereby not increasing the risk of flooding to adjoining areas or downstream from the site.
  - c. Overland flow routes in the event of a significant & unlikely blockage of the surface water drainage system have been considered. Overland flows are contained within the site in a controlled manner without risk to the residential buildings on site.
3. Standard mitigation measures will apply on site. House and apartment floor levels are set 150mm above the surrounding ground level to minimise flood risk. All basements on site will be waterproofed. The top of basement car park entrance ramps will be set 100mm above the surrounding ground levels to avoid backflow of surface water down the ramps.

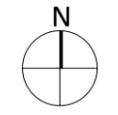
Therefore, the development is deemed acceptable from a flood risk assessment perspective.



## Appendix 1

# Proposed Site Layout

**Notes:**  
 Do not scale from this drawing. Use figured dimensions in all cases.  
 Verify dimensions on site and report any discrepancies to the Architect immediately.  
 This drawing is to be read in conjunction with the Architect's Specification.  
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**Drawing Note:**



**PLANNING LEGEND**

SYMBOL	DESCRIPTION
	Site Boundary Line
	Site Ownership Line
	Location of Site Notice

**OSI Licence No.**  
 CYAL50196301

**Projection / Spatial Reference:**  
 Projection: IRENET95\_Irish\_Transverse\_Mercator

**Centre Point Coordinates:**  
 X,Y= 717142.300532,729100.30992

**Reference Index:**  
 Map Series / Map Sheets  
 1:1,000 / 3329-22  
 1:1,000 / 3392-02

REV	DATE	BY	CHK'D	DESCRIPTION



**Client Details:**  
 Land Development Agency

**Project Details:**  
 Dundrum Central Development  
 Dundrum Road  
 Dublin 14

**Drawing Title:**  
 Site Plan, Proposed, SHD

Job No. <b>P19-233D</b>	Sheet Size <b>A0_Landscape</b>	Scale (Std) <b>1:500</b>
Issue Date <b>14/03/22</b>	Drawn By <b>C. McNamara</b>	Reviewed By <b>P. Celiy</b>
Block / Purpose of Issue <b>S3</b>	<b>SHD Planning Application</b>	
Project Originator/Zone/Level/Type/Role Classification Number <b>DCD-RAU-02-SW_XX-DR-A-1002</b>		Revision <b>P03.08</b>



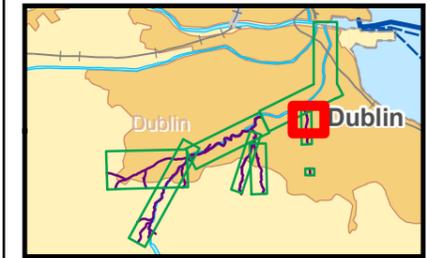


## Appendix 2

### OPW Flood Maps



**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

**USER NOTE:**

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

**Client:**



**Project:**

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

**Map:**

**DUNDRUM SLANG**

Map Type: DEPTH

Return Period: 10% AEP EVENT

Source: FLUVIAL FLOODING

Map Area: URBAN AREA

Scenario: CURRENT

Drawn By : A.A.B Date : 2 December 2010

Checked By : A.J Date : 2 December 2010

Approved By : A.G.B Date : 2 December 2010

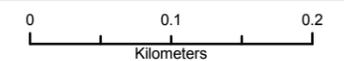
**Figure No. :**

**DSS/EXT/UA/DEP/10/105G**

Map Series : Page 1 of 1

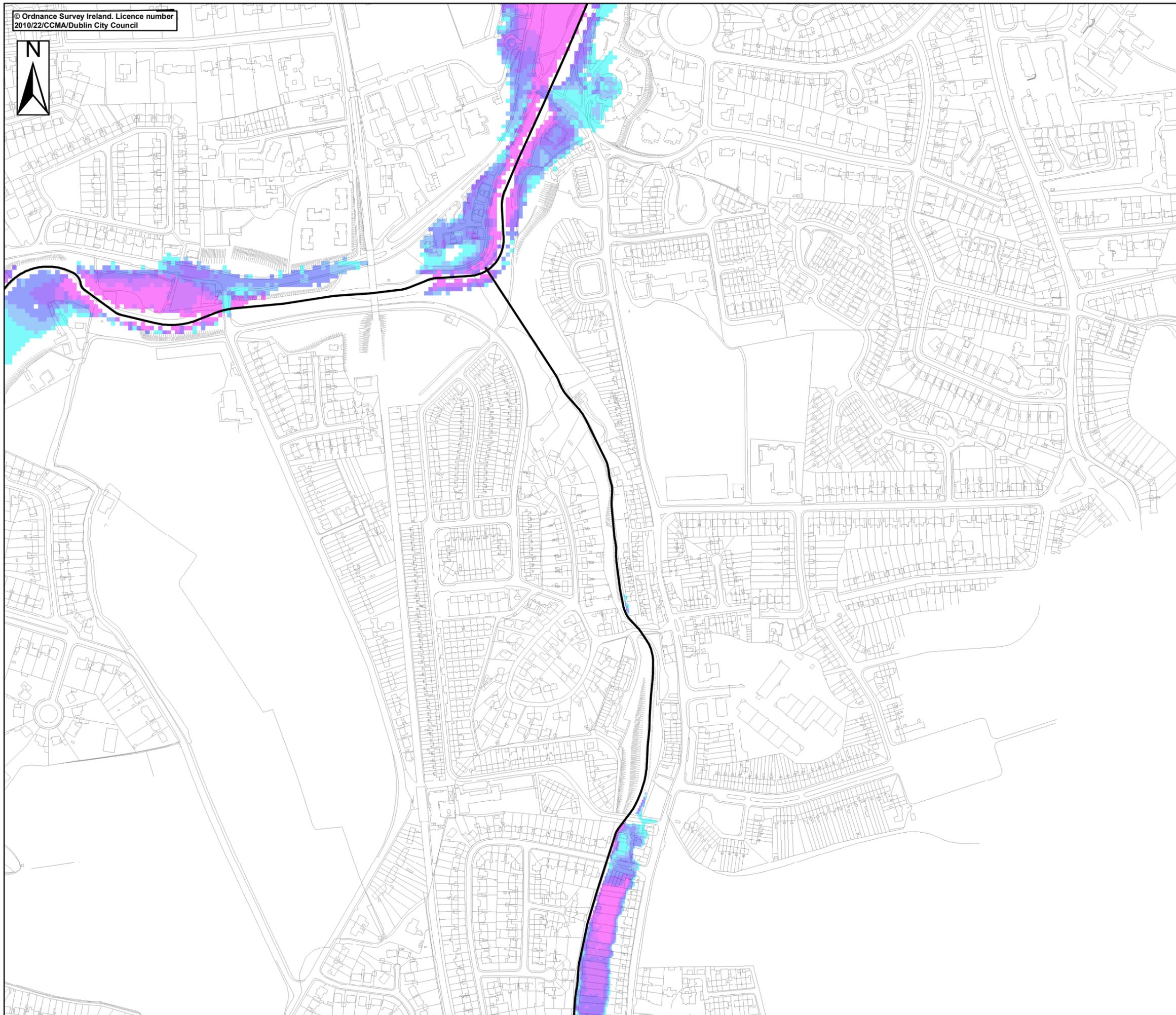
Drawing Scale : 1: 5,000

Plot Scale : 1:1 @ A3

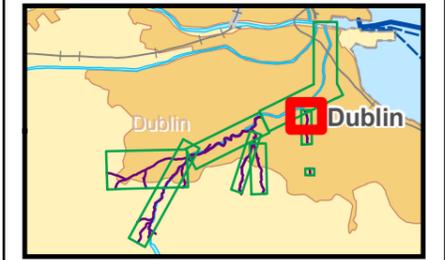


**RPS Consulting Engineers**

ELMWOOD HOUSE 74 BOUCHER ROAD BELFAST BT12 6RZ  
TEL : 028 9066 7914  
FAX : 028 9066 8286  
www.rpsgroup.com/Ireland



**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

**USER NOTE:**

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

**Client:**



**Project:**

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

**Map:**

**DUNDRUM SLANG**

Map Type: DEPTH

Return Period: 1% 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

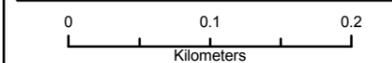
Approved By : A.G.B Date : 26 November 2010

**Figure No. :**

**DSS/EXT/UA/DEP/100/105D**

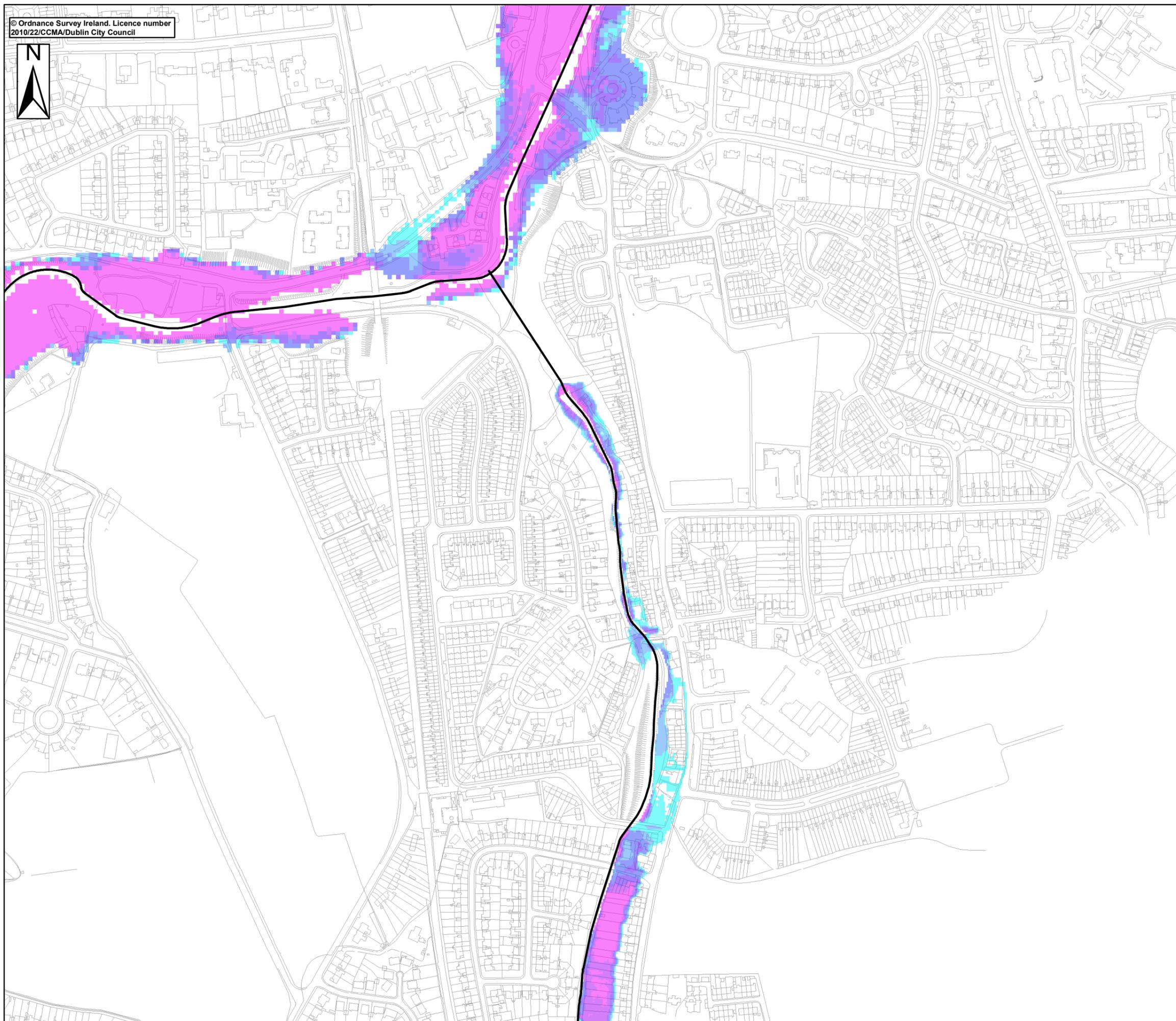
Map Series : Page 3 of 3

Drawing Scale : 1: 5,000 Plot Scale : 1:1 @ A3



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ELMWOOD HOUSE TEL : 028 9066 7914  
74 BOUCHER ROAD FAX : 028 9066 8286  
BELFAST BT12 6RZ www.rpsgroup.com/Ireland



**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

**USER NOTE:**

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

**Client:**



**Project:**

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

**Map:**

**DUNDRUM SLANG**

Map Type: DEPTH

Return Period: 0.1% 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

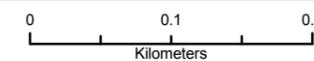
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**DSS/EXT/UA/DEP/1000/105A**

Map Series : Page 3 of 3

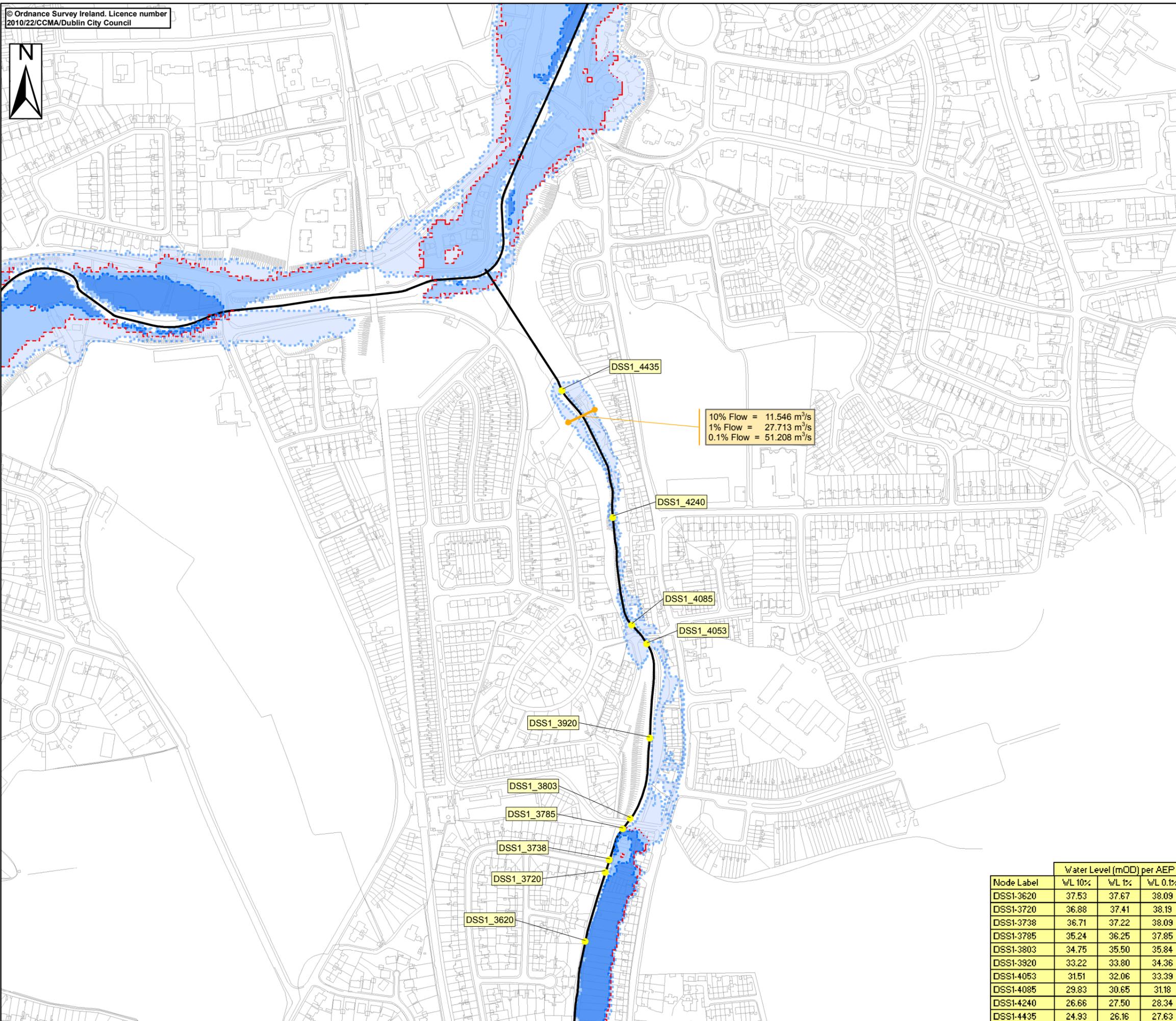
Drawing Scale : 1 : 5,000

Plot Scale : 1:1 @ A3

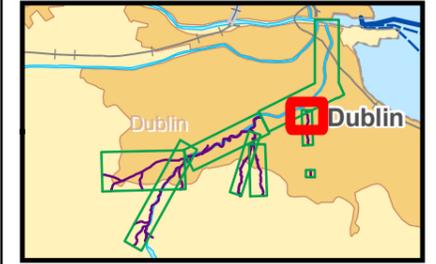


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ELMWOOD HOUSE TEL : 028 9066 7914  
74 BOUCHER ROAD FAX : 028 9066 8286  
BELFAST BT12 6RZ www.rpsgroup.com/Ireland



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
  - Node Point
  - OS\_2975 Node Label (refer to table)
  - Flow reporting location
- 10% Flow = 1.20  
 1% Flow = 1.56  
 0.1% Flow = 2.17

USER NOTE:

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Client:



Project:

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

Map:

**PRESENT DAY DUNDRUM SLANG**

Map Type: FLOOD EXTENT

Source: FLUVIAL FLOODING

Map Area: URBAN AREA

Scenario: CURRENT

Drawn By : A.A.B Date : 26 November 2010

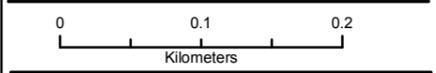
Checked By : A.J. Date : 26 November 2010

Approved By : A.G.B Date : 26 November 2010

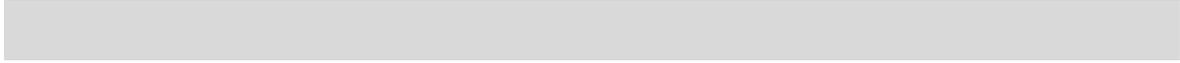
**DSS/EXT/UA/CURS/105**

Map Series : Page 3 of 3

Drawing Scale : 1 : 5,000 Plot Scale : 1:1 @ A3



Node Label	Water Level (mOD) per AEP		
	WL 10%	WL 1%	WL 0.1%
DSS1-3620	37.53	37.67	38.09
DSS1-3720	36.88	37.41	38.19
DSS1-3738	36.71	37.22	38.09
DSS1-3785	35.24	36.25	37.85
DSS1-3803	34.75	35.50	35.84
DSS1-3920	33.22	33.80	34.36
DSS1-4053	31.51	32.06	33.39
DSS1-4085	29.83	30.65	31.18
DSS1-4240	26.66	27.50	28.34
DSS1-4435	24.93	26.16	27.63

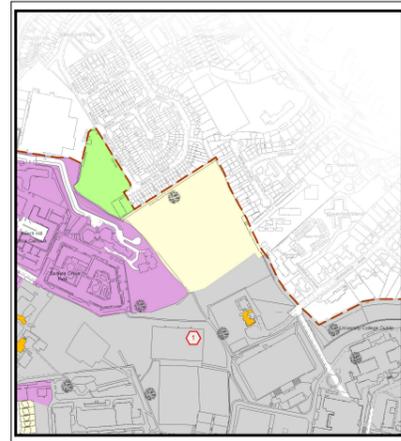
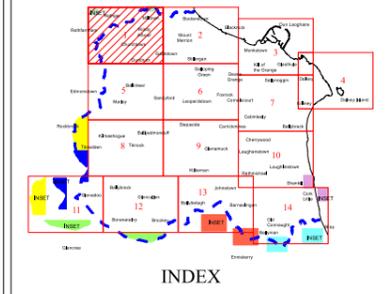


## Appendix 3

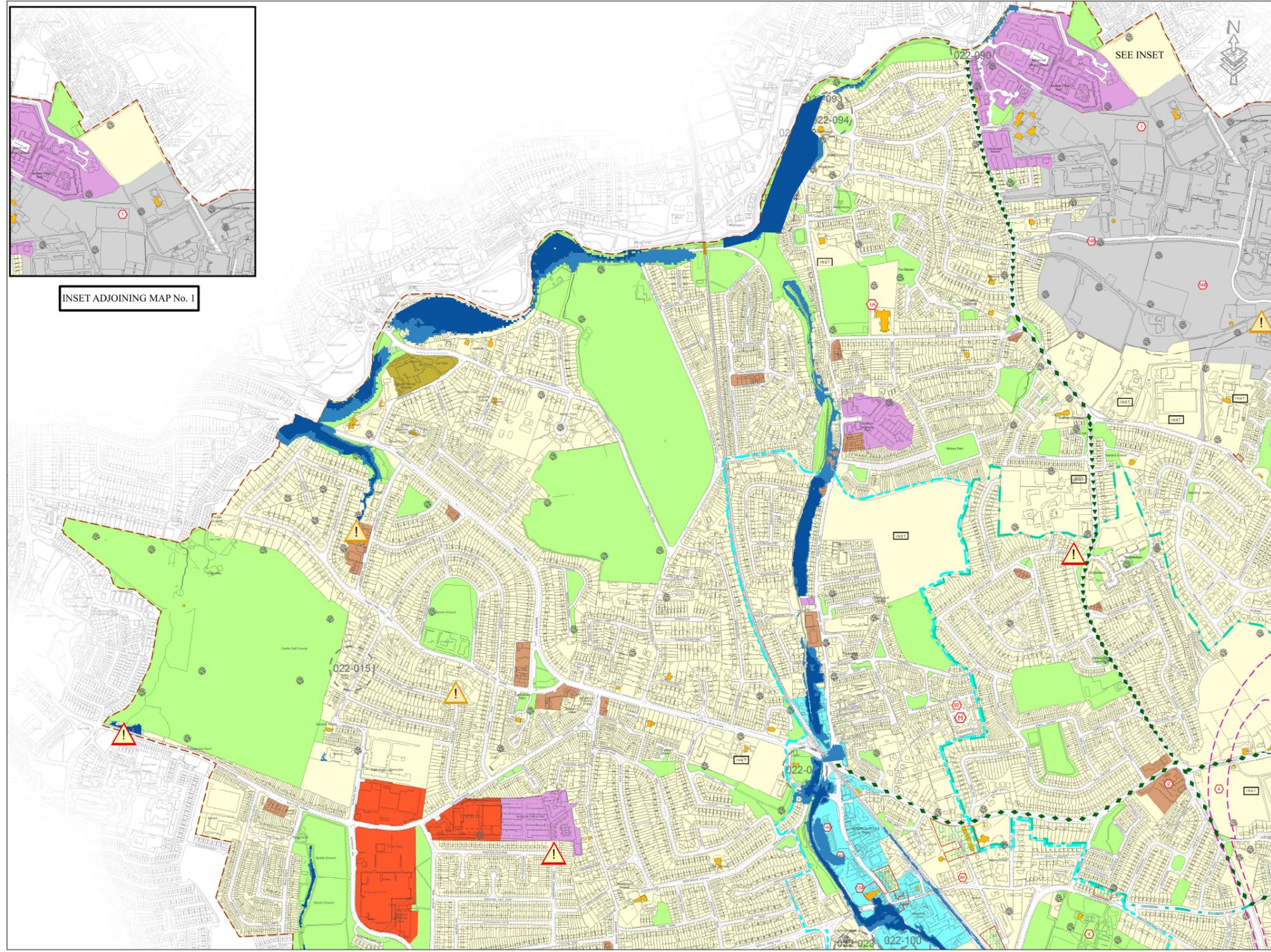
### DLR Flood Map

# COMHAIRLE CHONTAE DHÚN LAOGHAIRE-RÁTH AN DÚIN DÚN LAOGHAIRE-RATHDOWN COUNTY COUNCIL

## Flood Zone Maps



INSET ADJOINING MAP No. 1



-  Hotspots
-  Hotspots Predicted
-  Flood Zone A
-  Flood Zone B
-  County Boundary



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Planning and Organisational  
Innovation



Comhairle Contae County Council

M Henchy  
Director

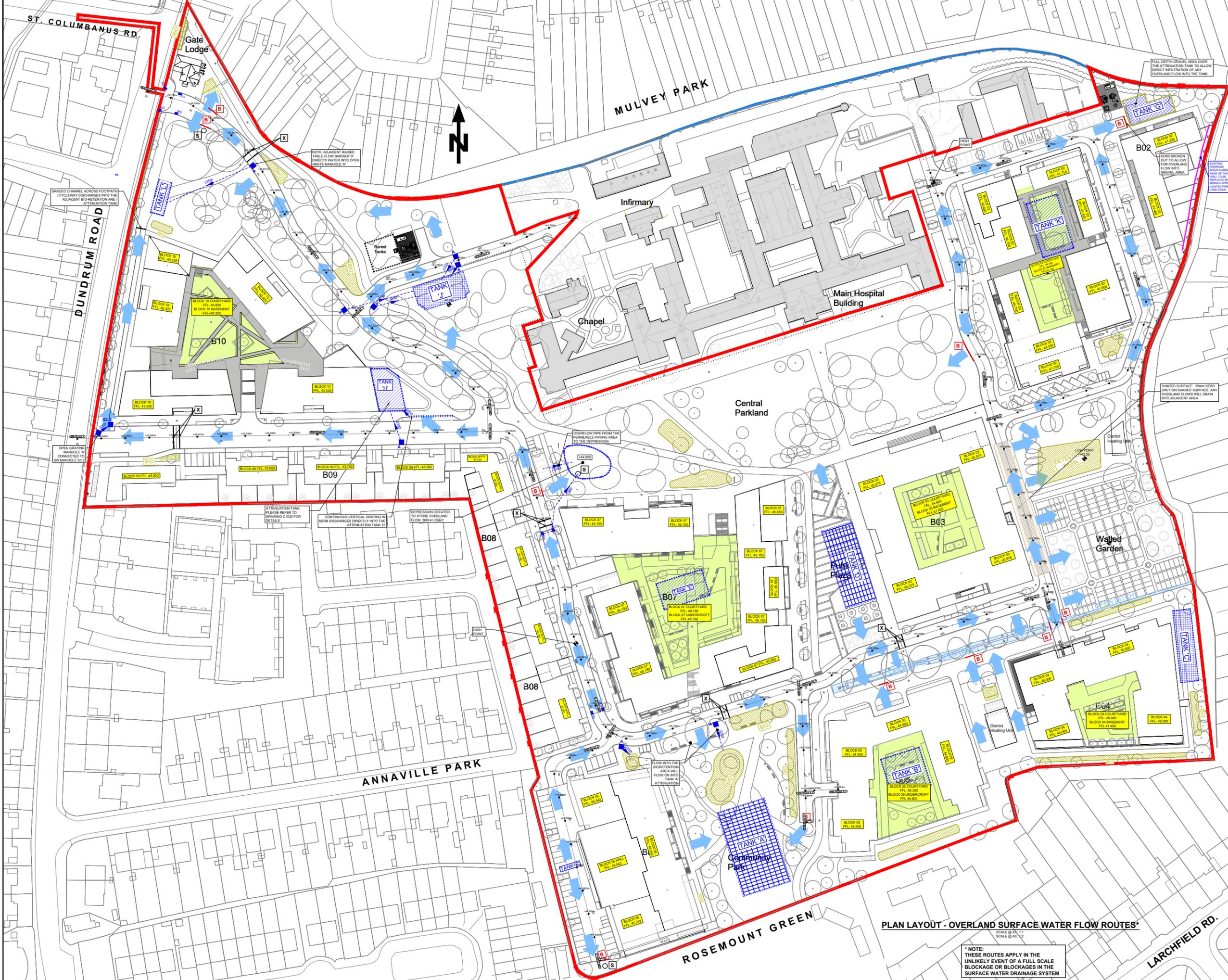
### Flood Zone Maps

Senior Planner: D. Irvine	Acting Chief Technician: M. Hevehan
Prepared By: Louise McGauran	Drawn By: B. Mwenelupembe
Date: March 2016	Scale: 1:5,000
	Map No. MAP1



## Appendix 4

# Proposed Surface water Overland Flow Routes



- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECTS DRAWINGS FURNISHED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
  - CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.
- CIVIL LEGEND**
- 1.2M x 2M x 0.2M DEEP MANHOLE WITH FULL OPEN GRATING TO ALLOW FOR OVERLAND FLOW. PROVIDE 1.2M LONG KERB BREAKOUT IF THE MANHOLE IS LOCATED OFF THE ROAD EDGE.
  - 1.2M x 2M x 0.2M DEEP MANHOLE WITH FULL OPEN GRATING TO ALLOW FOR OVERLAND FLOW. PROVIDE 1.2M LONG KERB BREAKOUT IF THE MANHOLE IS LOCATED OFF THE ROAD EDGE.
  - 2m DIAMETER x 2m DEEP STONE FILLED SOMMAIRY
  - BIORETENTION AREA
  - RAISED CROSSING ACTS AS A BARRIER TO OVERLAND FLOW
  - BURIED ATTENUATION TANK

PL4	09.03.22	ISSUED FOR COMMENT	WK
PL3	07.01.22	ISSUED FOR COMMENT	WK
ISSUE	DATE	DESCRIPTION	BY
Project Engineer: POB		Project Director: JPC	
<b>PLANNING</b>			
<b>LAND DEVELOPMENT AGENCY</b>			
PROJECT TITLE		BM PROJECT No.	
DUNDRUM CENTRAL DEVELOPMENT		20.170	
REFERENCE		SUITABILITY	
DRAWING TITLE		REVISION	
SURFACE WATER OVERLAND FLOW ROUTES			
DRAWING REFERENCE		STATUS	
DCD-BMD-00-00-DR-C-1025		PL4	

**PLAN LAYOUT - OVERLAND SURFACE WATER FLOW ROUTES\***

\* NOTE: THESE ROUTES APPLY IN THE UNLIKELY EVENT OF A FULL SCALE BLOCKAGE OR BLOCKAGES IN THE SURFACE WATER DRAINAGE SYSTEM

## **Barrett Mahony Consulting Engineers**

### **Dublin:**

Sandwith House,  
52-54 Lower Sandwith Street,  
Dublin 2,  
D02 WR26, Ireland.  
Tel: +353 1 677 3200

### **London:**

12 Mill Street,  
London, SE1 2AY,  
United Kingdom  
Tel: +44 203 750 3530.

### **Sofia:**

19 Yakubitsa Street,  
Lozenets,  
Sofia 1164,  
Bulgaria  
Tel: +359 2 494 9772

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