

## Project:

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#### DOCUMENT CONTROL

Project: Development at Gowan House, Naas Road, Dublin 12

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Prepared by:

**BMCE** 

PL2

52-54 Lower Sandwith Street Dublin 2 D02WR26 Prepared for:

Malclose Ltd

No 28 The Drive Graigarvern Lodge Ballybrittas Co. Laois













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#### 1. INTRODUCTION

#### 1.1 PROJECT DESCRIPTION

Malclose Limited intend to apply to Dublin City Council for a 7-year permission for a large-scale residential development principally comprising student accommodation at this 0.962 Ha site at Gowan House, Carriglea Business Park, Naas Road, Dublin 12, D12 RCC4.

Works to upgrade of the access road to the west of the site on an area measuring c. 0.081 Ha are also proposed comprising new surfacing to the carriageway, the provision of inbound and outbound bicycle lanes from the development entrance to the Naas Road, the provision of a controlled pedestrian crossing on the access road at the Naas Road junction, and the provision of a further uncontrolled pedestrian and bicycle crossing linking the subject site with the approved Concorde SHD development (ABP Ref: TA29S.312218) to the west.

On the Naas Road, works are proposed on an area measuring c. 0.086 Ha comprising the realignment and widening of the existing pedestrian footpath along the westbound carriageway of the Naas Road and the provision of linkages from the realigned footpath to the development site, and the provision of new controlled pedestrian crossings across the eastbound and westbound carriages of the Naas Road and the provision of a new uncontrolled crossing of the Luas tracks.

The development site area and roadworks areas will provide a total application site area of c. 1.13 Ha.

The proposed development will principally consist of: the demolition of the existing two-storey office/warehouse building and outbuilding (5,172 sq m); and the construction of a development in two blocks (Block 1 (eastern block) is part 2 No. storeys to part 15 No. storeys over lower ground floor and basement levels with roof plant over and Block 2 (western block) is part 9 No. storeys to part 11 No. storeys over basement with roof plant over) principally comprising 941 No. Student Accommodation bedspaces (871 No. standards rooms, 47 No. accessible studio rooms and 23 No. studios) with associated facilities, which will be utilised for short-term lets during student holiday periods. The 871 No. standard rooms are provided in 123 No. clusters ranging in size from 3 No. bedspaces to 8 No. bedspaces, and all clusters are served by a communal living/kitchen/dining room.

The development also provides: ancillary internal and external communal student amenity spaces and support facilities; cultural and community floor space (1,422 sq m internal and 131 sq m external) principally comprising a digital hub and co-working space with ancillary cafe; a retail unit (250 sq m); public open space; the daylighting of the culverted River Camac through the site; an elevated walkway above the River Camac at ground floor level; a pedestrian bridge link at first floor level between Blocks 1 and 2; vehicular access at the south-western corner; the provision of 7 No. car-parking spaces, 2 No. motorcycle parking spaces and 2 No. set down areas; bicycle stores at ground and lower ground floor levels; visitor cycle parking spaces; bin stores; substations; hard and soft landscaping; green and blue roofs; new telecommunications infrastructure at roof level of Block 1 including antennas and microwave link dishes, 18 No. antennas and 6 No. transmission dishes, together with all associated equipment; boundary treatments; plant; lift overruns; and all associated works above and below ground.

The gross floor area of the development is c. 33,140 sq m comprising c. 30,386 sq m above lower ground and basement level.

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Figure 1.1: Site Location Map

#### 1.2 Scope of this Report

This report outlines the findings of the Site Specific Flood Risk Assessment (SSFRA) carried out for the proposed development at the Gowan Motors site, Carriglea Business Park, Naas Road, Dublin 12. This report is to be submitted to Dublin City Council as part of the Planning Application documents for the proposed development. It takes cognisance of the following relevant guidelines and policies:

- Dublin City Council (DCC) Development Plan 2022 2028 Strategic Flood Risk Assessment.
- Department of the Environment Heritage and Local Government (DEHLG) and the Office of Public Works (OPW) Guidelines for Planning 2009 on 'The Planning system and Flood Risk Management'.
- The Planning and Development Act 2000.

This report should be read in conjunction with the following drawings submitted with the application documents:

| • | GWH-BMD-ZZ-XX-DR-C-1000 | Site Drainage & Watermain Plan                   |
|---|-------------------------|--|
| • | GWH-BMD-ZZ-XX-DR-C-1001 | Basement Drainage Plan                           |
| • | GWH-BMD-ZZ-XX-DR-C-1002 | Surface Water Management Strategy – Roof Level   |
| • | GWH-BMD-ZZ-XX-DR-C-1003 | Surface Water Management Strategy – Ground Level |

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Figure 1.2: Site Layout Plan

#### 2. SITE SPECIFIC FLOOD RISK ASSESSMENT

#### 2.1 Introduction

The Civil Infrastructure and Stormwater Management System report, which is also included with the planning application, indicates that the proposed drainage system for the site will not cause an unacceptable risk of site flooding.

A flood risk assessment has also been carried out to confirm that the risk of flooding from sources other than the proposed drainage system is acceptable. This flood risk assessment is carried out in accordance with guidelines outlined in 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 that publication as follows:

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

The OPW publication outlines a sequential approach for determining whether a particular development is appropriate for a specified location in terms of flood risk. The categorisation of the proposed development in terms of the OPW's sequential approach is further outlined in section 5.2 below. The Dublin City Council Development Plan 2022-2028 Strategic Flood Risk Assessment (SFRA) was also consulted during the preparation of this assessment.

#### 2.2 STAGE 1: FLOOD RISK IDENTIFICATION

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

In terms of tidal flooding, the coastline is approximately 10 kilometres to the East of the site and so does not pose a risk.

A culverted section of the Camac River runs through the site at a depth of approximately 7-10m below existing ground level. It is noted that the river is to be daylighted as part of the development. The Greater Dublin Strategic Drainage Study document does not suggest any issue with the hydraulic capacity of the culvert at this location. The GDSDS indicates that the 'Storm Sewer does not surcharge for 1 or 2 year return period events and does not flood for a 30 year return period event or below.' The 'Camac Storm Level 1' drawing from the GDSDS is included in Appendix I.

In addition, based on the current arrangement of the culverted river, the CFRAMS study map for this location does not indicate a risk of flooding in the areas around the culvert – refer to Figure 2.1 below for extract from the Flood Map. Interpolating the flood levels provided in the CFRAMS map indicates a 1:1000 year flood level of +33.54m approx. As the lowest floor level in the development is set at +35.10m, there is a clearance of +1.56m from the lowest floor level to the 1:1000 year flood level.

However, as the Camac river is due to be daylighted as part of development, the additional risk from the open channel needs to be considered. The CFRAMS study map also provides the expected flows for the 10 %, 1% and 0.1% AEP flood events. The flow in the open channel for these flood events needs to be considered, to ensure that the daylighting of the culvert does not introduce a significant new flooding risk for the development or adjacent properties. Note that the CFRAMS map for this area is included in Appendix II of this report.

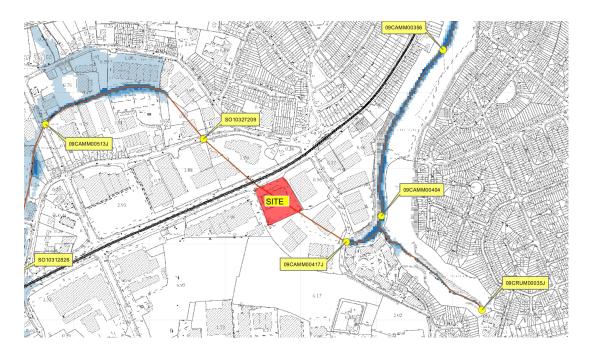


Figure 2.1: CFRAM Fluvial (River) Flooding Mapping

The National Flood Hazard Mapping Service drawing and report, extracted in Figure 2.2 below and presented in Appendix III, shows that no flood incidents have been recorded on the site or the areas adjacent to the site. The closest recurring flooding incidents have occurred at a culverted section of the Camac River adjacent to the Old Naas Road, 620m west of the site. This was recorded in a Local Authority Drainage meeting in 2005, though there are no specific recent incidents recorded on the Flood Maps website.



Figure 2.2: OPW Historical Flooding Map.

The possibility of Fluvial, Pluvial or Tidal flooding on the site is considered utilizing the guidelines outlined in Chapter 3 of the OPW publication referenced in Section 2.1 and with information gathered from the sources outlined above.

#### 2.2.1 Flood Zones

Geographical areas are 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 Naas Road Lands Local Area Plan (2013 which has now expired), Appendix 1; Flood Risk Assessment indicates that the site is in Zone C. This assessment was done in the absence of any river modelling, which followed in the OPW CFRAMS study in 2016. This also shows the site to be in Flood Zone C, where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 plants).

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for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B. The DCC Development Plan also contains a Composite Flood Map, which shows different flood zones around the city. As with the Local Area Plan map, the Composite Flood Map indicates that the site is in Flood Zone C. The map is included in Appendix IV of this report.

#### 2.2.2 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
- Water-compatible Development
  - docks, marinas, amenity open space etc

The proposed development is to function as student accommodation above 1<sup>st</sup> floor level, with commercial and amenity spaces at ground floor and basement levels. Therefore, as the residential areas are all located above ground level, it is considered that the site can be classified as a Less Vulnerable Development.

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#### 2.2.3 Development Classification

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

Table 2.1 – Matrix of vulnerability versus flood zone

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

As noted in section 2.2.1 above, the proposed development site is located in Flood Zone C meaning that it is not likely to flood. We note that even if residential accommodation was proposed at ground floor level, it would be considered appropriate at this location having regard to the Flood Zone C designation. This development is therefore deemed 'Appropriate' in accordance with the guidelines of the OPW's publication.

#### 2.3 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 the proposed development are addressed. It should assess the adequacy of existing information and any flood defences.

#### 2.3.1 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 2.2: The possible sources of flood water

| Source        | Pathway            | Receptor | Likelihood | Consequence | Risk |
|---------------|--------------------|----------|------------|-------------|------|
| Tidal         | Overtop            | People   | Extremely  | High        | Low  |
|               | Breach             | Property | unlikely   |             |      |
| Fluvial       | Overtop            | People   | Very       | High        | Low  |
|               | Breach             | Property | unlikely   |             |      |
| Pluvial       | Overflow /         | People   | Possible   | High        | Low  |
| Surface water | Blockage           | Property |            |             |      |
| Groundwater   | Rising groundwater | People   | Unlikely   | Low         | Low  |
| *Note 1       | levels             | Property |            |             |      |

<sup>\*</sup>Note 1: The basement will be waterproofed to prevent groundwater ingress.

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

Extracts from relevant maps are shown in Figures 2.1 and 2.2 previously, and the available maps are included in Appendices I – IV of this report. The information available is detailed and adequate for the purposes of this assessment.

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

Given the comprehensive and detailed nature of the existing information available regarding flooding, it is not considered necessary to carry out any further analysis of the tidal or pluvial flooding of the site. However, as the Camac culvert is due to be daylighted, it is considered that a more detailed study of the flows in the open channel needs to be carried out.

#### 2.3.4 Assessment of Risks from the Daylighting of the Camac Culvert

As discussed further in the BMCE 'Civil Infrastructure & Surface Water Management' report which is submitted with the planning application, an open channel design has been carried out using the well-established HEC RAS design software.

In terms of the storm water flows through the channel, the following flow information has been taken from the CFRAMS study map for this location:

- For 10 % AEP Rainfall event, flow = 24.03 m<sup>3</sup>/s.
- For 1 % AEP Rainfall event, flow = 36.1 m<sup>3</sup>/s
- For 0.1 % AEP Rainfall event, flow = 47.69 m<sup>3</sup>/s

It is not clear whether increased flows need to be considered to allow for climate change increases. Conservatively, it has been assumed that a 20% increase in the storm flows needs to be allowed for, which results in the following design flows in the channel:

- For 10 % AEP Rainfall event, increased flow = 24.03 \* 1.2 = 28.84m<sup>3</sup>/s
- For 1 % AEP Rainfall event, increased flow = 36.1 m<sup>3</sup>/s \* 1.2 = 43.32m<sup>3</sup>/s
- For 0.1 % AEP Rainfall event, increased flow =  $47.69 \text{ m}^3/\text{s} \times 1.2 = 57.3 \text{m}^3/\text{s}$

Based on the HEC RAS analysis which was carried out, for the extreme 0.1% AEP storm event, the flood flows will rise to a level approximately 700 – 800mm above the riparian planting zone – see figure 2.3 showing extract from the channel design. The approximate flood level will be +32.700 mOD.

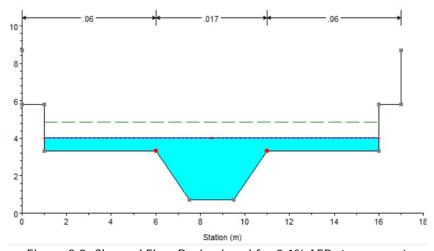


Figure 2.3: Channel Flow Design Level for 0.1% AEP storm event

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As noted previously, the basement level for the new development is set at +35.100 mOD. Hence the 0.1% AEP flood event water level will still be 2.40m below the basement slab level.

Consideration was also given to a potential partial blockage of the downstream culvert, to determine if this would have a significant impact on the flood levels through the open channel. A further iteration of the channel flow design for the 0.1% AEP storm event was carried out, but with the width of the downstream culvert reduced by 1m to simulate a potential blockage of the culvert. This is effectively considering a 20% reduction in the cross section of the remaining culvert through the Carriglea residential development. It is considered that such a blockage would be highly unlikely given the size of the culvert.

In such a case, it was found that the water level in the channel rises to approximately 2m above the riparian zone, but critically the flood water is still contained within the channel – refer to Figure 2.4 below. A free-board of just under 1m remains between the basement floor level and the flood water level in such an event.

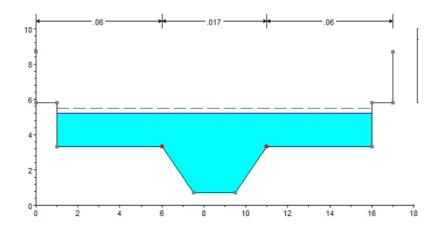


Figure 2.4: Channel Flow Design Level for 0.1% AEP storm event assuming 20% reduction in downstream culvert cross section

The complete HEC RAS flow design is detailed in the 'Civil Infrastructure & Surface Water Management' report. Based on the results, which are extracted and discussed above, it is considered that the daylighting of the Camac culvert does not create a significant fluvial flood risk to the development.

# 2.3.5 Description of what residual risks will be assessed and how they might be mitigated and potential impacts of development on flooding elsewhere

As stated in Section 2.2.1, the proposed development is in an area where there is not considered to be any risk of flooding due to tidal sources. There is minimal risk of flooding from pluvial sources including sewer surcharging.

To eliminate the risk of an external sewer surcharge causing flooding back into the basement of the development via the basement drainage system, a pumped lifting station will be used to raise the drained water to within 1.5m minimum of ground floor level prior to discharge. This is in accordance with DCC requirements, as set out in the Greater Dublin Regional Code of Practice for Drainage Works.

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Ground floor levels in the building will be typically 150mm above street level as standard.

In terms of potential fluvial flooding, a detailed flow analysis of the proposed open river channel has been carried out. The full details of the flood flow analysis are outlined in the 'Civil Infrastructure & Surface Water Management' report, and summarised in section 2.3.4 above. It has been found that even after the Camac culvert is reopened as part of the proposed development, any flood waters will be contained in a formed channel along the length of the open river. A potential blockage of the culvert does increase the flood risk somewhat. To mitigate this risk, a maintenance and inspection plan for the open channel will be developed and agreed between the developer and DCC prior to construction. As the flood waters are all contained with the open channel, there is similarly a negligible risk to any downstream properties as a result of the daylighting proposal.

#### 2.4 CONCLUSION

This flood risk assessment report has considered the various possible sources of flooding in the site vicinity. The report has established that the site is at negligible risk of flooding from external sources and that the development is 'Appropriate' in accordance with the OPW Guidelines.

The surface water drainage system within the site is designed to cater for 1 in 100 year flows +30% climate change and 10% urban creep, without flooding. There is no discernible potential impact of the development on flooding in the vicinity of the site or downstream of it. Consideration has also been given to the proposed daylighting of the Camac culvert and it has been demonstrated that this does not pose a flood risk to the development or to adjacent developments.

The surface water flow from the development will be limited to 2 l/s/ha and basement drainage will be pumped to avoid the risk of sewer backflows into the basement.

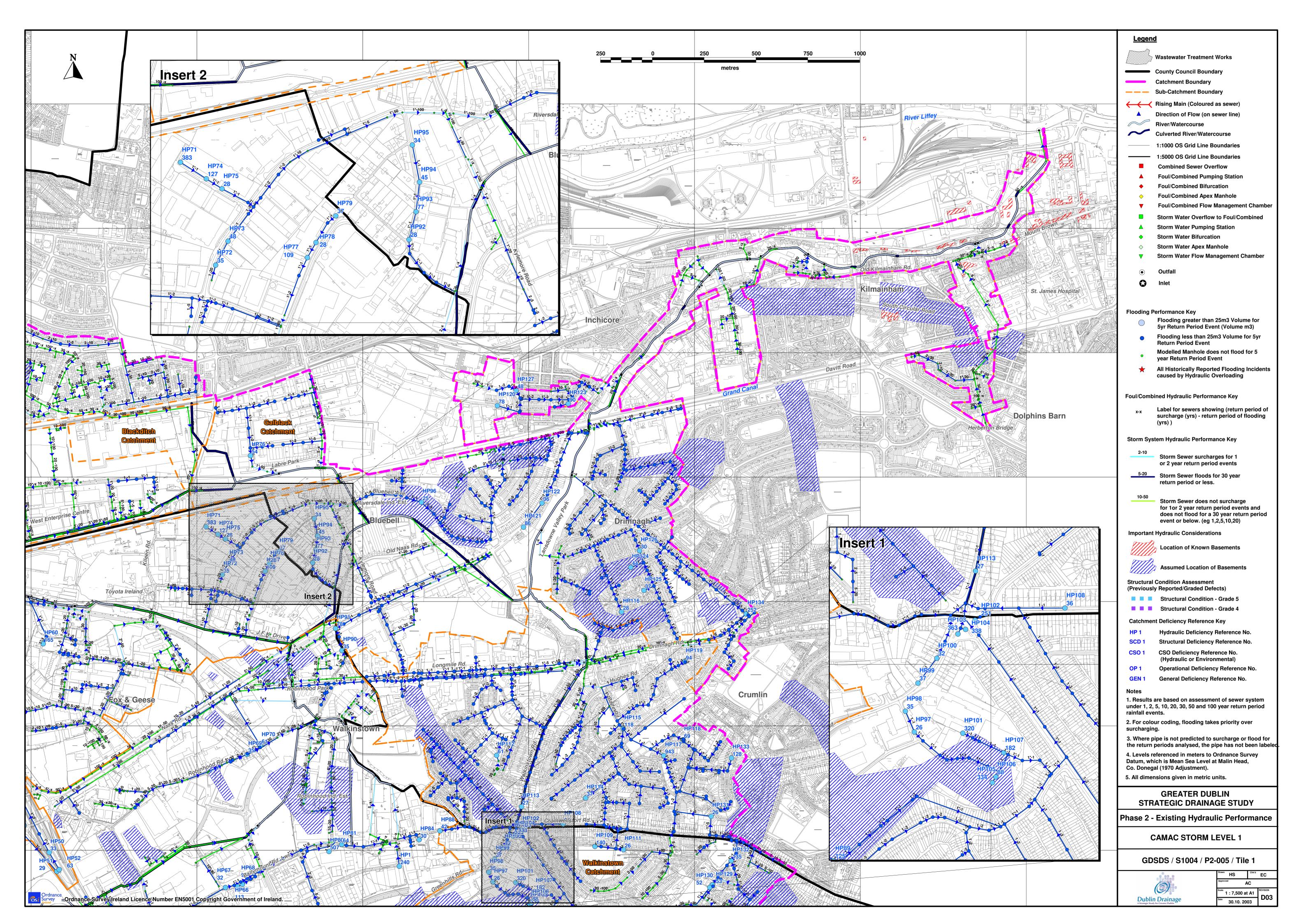
We conclude that a further detailed flood risk assessment is not required.



APPENDIX

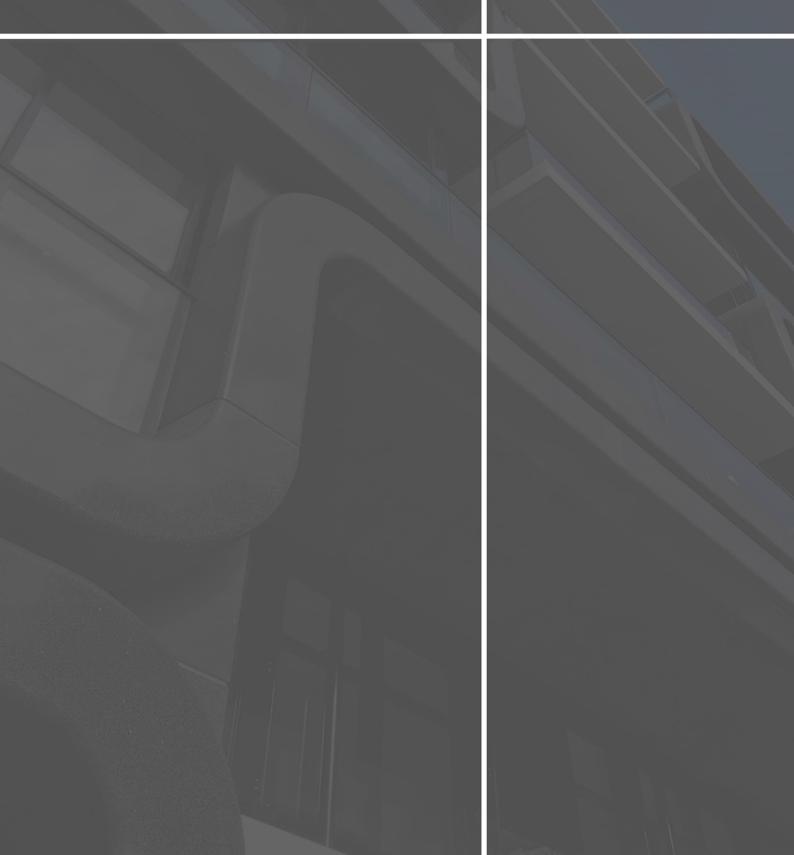
GDSDS Camac
Hydraulic Map

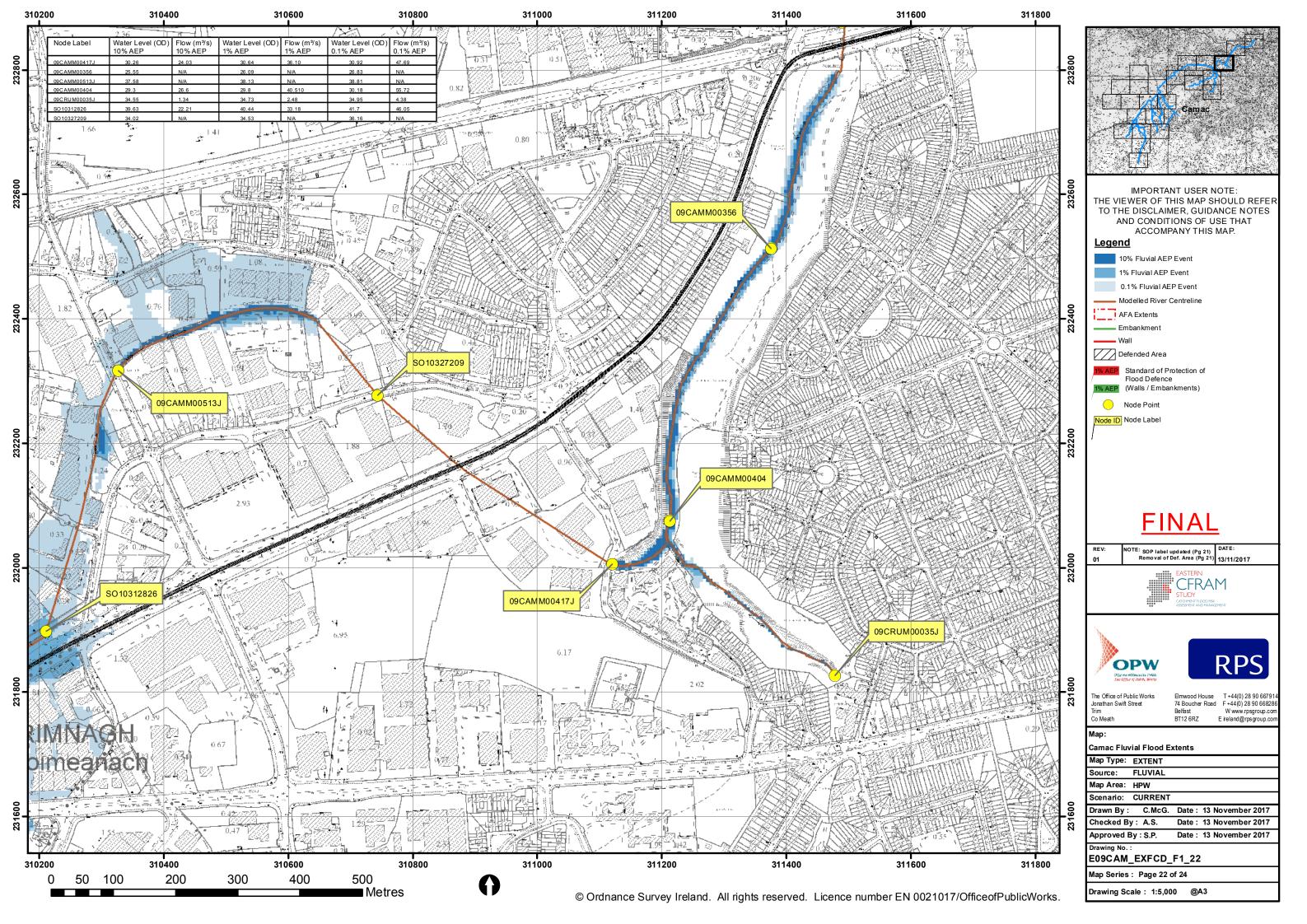






# APPENDIX II CFRAMS FLOOD MAP TILE



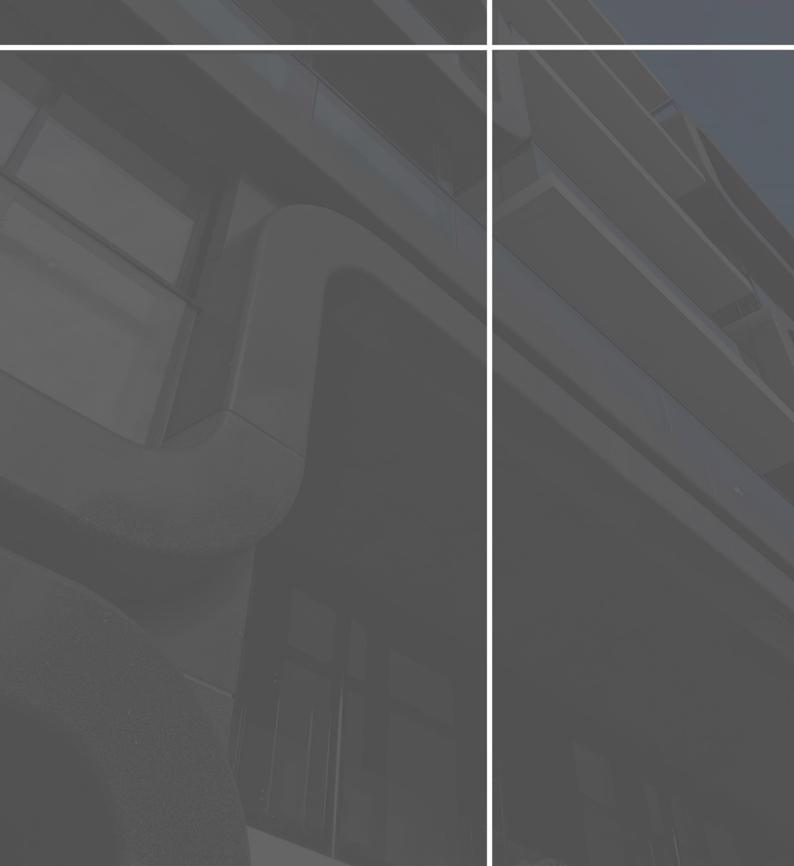




APPENDIX

III

OPW REPORT



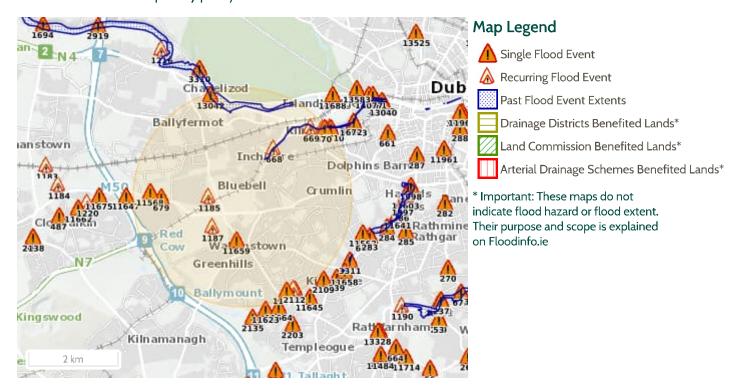
### Past Flood Event Local Area Summary Report



Report Produced: 17/4/2023 14:44

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

This report has been downloaded from www.floodinfo.ie (the "Website"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



#### 16 Results

| Name (Flood_ID)   | Start Date | <b>Event Location</b> |  |  |  |
|---|------------|-----------------------|--|--|--|
| 1. Poddle River Whitehall Road June 1993 (ID-2112)                  | 10/06/1993 | Approximate Point     |  |  |  |
| Additional Information: <u>Reports (1) Press Archive (0)</u>        |            |                       |  |  |  |
| 2. Camac August 1986 (ID-125)                                       | 24/08/1986 | Area                  |  |  |  |
| Additional Information: Reports (3) Press Archive (0)               |            |                       |  |  |  |
| 3. Liffey Lower - Dec 1954 (ID-241)                                 | 08/12/1954 | Area                  |  |  |  |
| Additional Information: <u>Reports (5)</u> <u>Press Archive (2)</u> |            |                       |  |  |  |
| 4. <u>A</u> Camac November 2000 (ID-679)                            | 05/11/2000 | Approximate Point     |  |  |  |
| Additional Information: Reports (1) Press Archive (0)               |            |                       |  |  |  |
| 5. 🛕 Camac Turvey Ave Recurring (ID-669)                            | n/a        | Exact Point           |  |  |  |
| Additional Information: Reports (1) Press Archive (0)               |            |                       |  |  |  |
| 6. 🛦 Camac Goldenbridge Recurring (ID-668)                          | n/a        | Approximate Point     |  |  |  |
| Additional Information: Reports (1) Press Archive (0)               |            |                       |  |  |  |

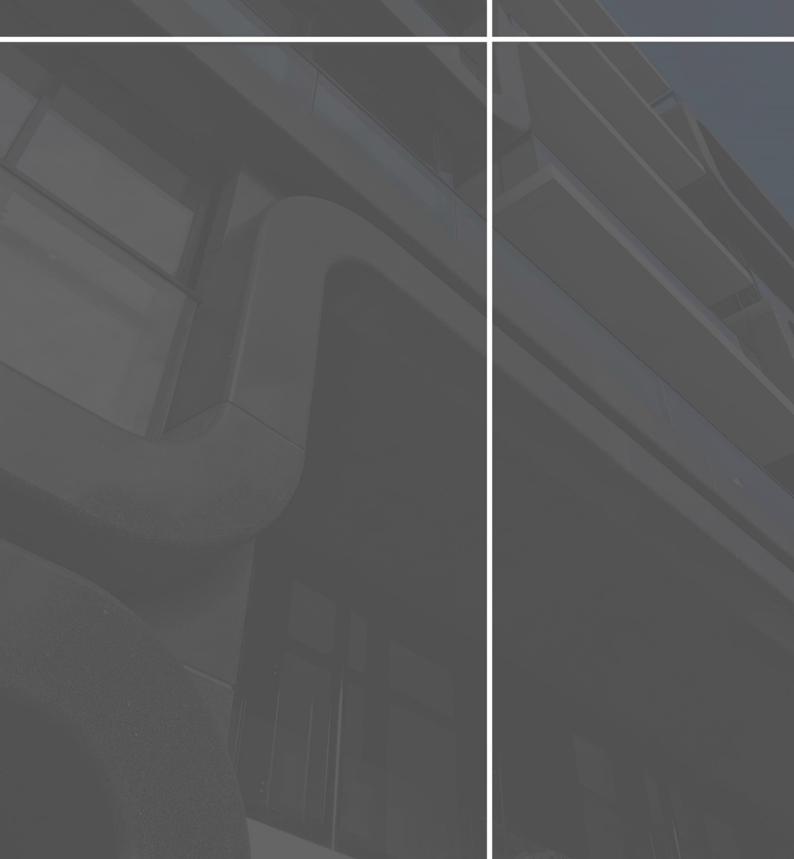
| Name (Flood_ID)  | Start Date | Event Location       |
|--|------------|----------------------|
| 7. 🛕 Camac Carrickfoyle Terrace Recurring (ID-670)   | n/a        | Exact Point          |
| Additional Information: Reports (1) Press Archive (0)  |            |                      |
| 8. 🛕 Camac Culvert Old Naas Road recurring (ID-1185)   | n/a        | Approximate<br>Point |
| Additional Information: <u>Reports (2) Press Archive (0)</u>                                   |            |                      |
| 9. 🛦 Robinhood Stream Walkinstown Recurring (ID-1187)  | n/a        | Approximate<br>Point |
| Additional Information: <u>Reports (3) Press Archive (0)</u>                                   |            |                      |
| 10. 🛦 Whitehall Road Kimmage Recurring (ID-1188)   | n/a        | Approximate<br>Point |
| Additional Information: <u>Reports (2) Press Archive (0)</u>                                   |            |                      |
| 11. A Flooding at Diageo, Nangor Road, Dublin 12 on 24th Oct 2011 (ID-11568)                   | 23/10/2011 | Approximate<br>Point |
| Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>                            |            |                      |
| 12. A Flooding at Lady's Lane, Kilmainham, Co. Dublin on 24th Oct 2011 (ID-11622)              | 23/10/2011 | Approximate<br>Point |
| Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>                            |            |                      |
| 13. Flooding at Robinhood Industrial Estate, Clondalkin, Dublin 12 on 24th Oct 2011 (ID-11654) | 23/10/2011 | Exact Point          |
| Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>                            |            |                      |
| 14.  Flooding at Walkinstown Crescent, Walkinstown, Dublin 12 on 24th Oct 2011 (ID-11659)      | 23/10/2011 | Exact Point          |
| Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>                            |            |                      |
| 15. A Flooding at Whitehall Road, Templeogue, Dublin 6W on 24th Oct 2011 (ID-11666)            | 23/10/2011 | Exact Point          |
| Additional Information: <u>Reports (1)</u> <u>Press Archive (0)</u>                            |            |                      |
| 16.  | 07/01/2014 | Approximate<br>Point |
| Additional Information: <u>Reports (0)</u> <u>Press Archive (0)</u>                            |            |                      |

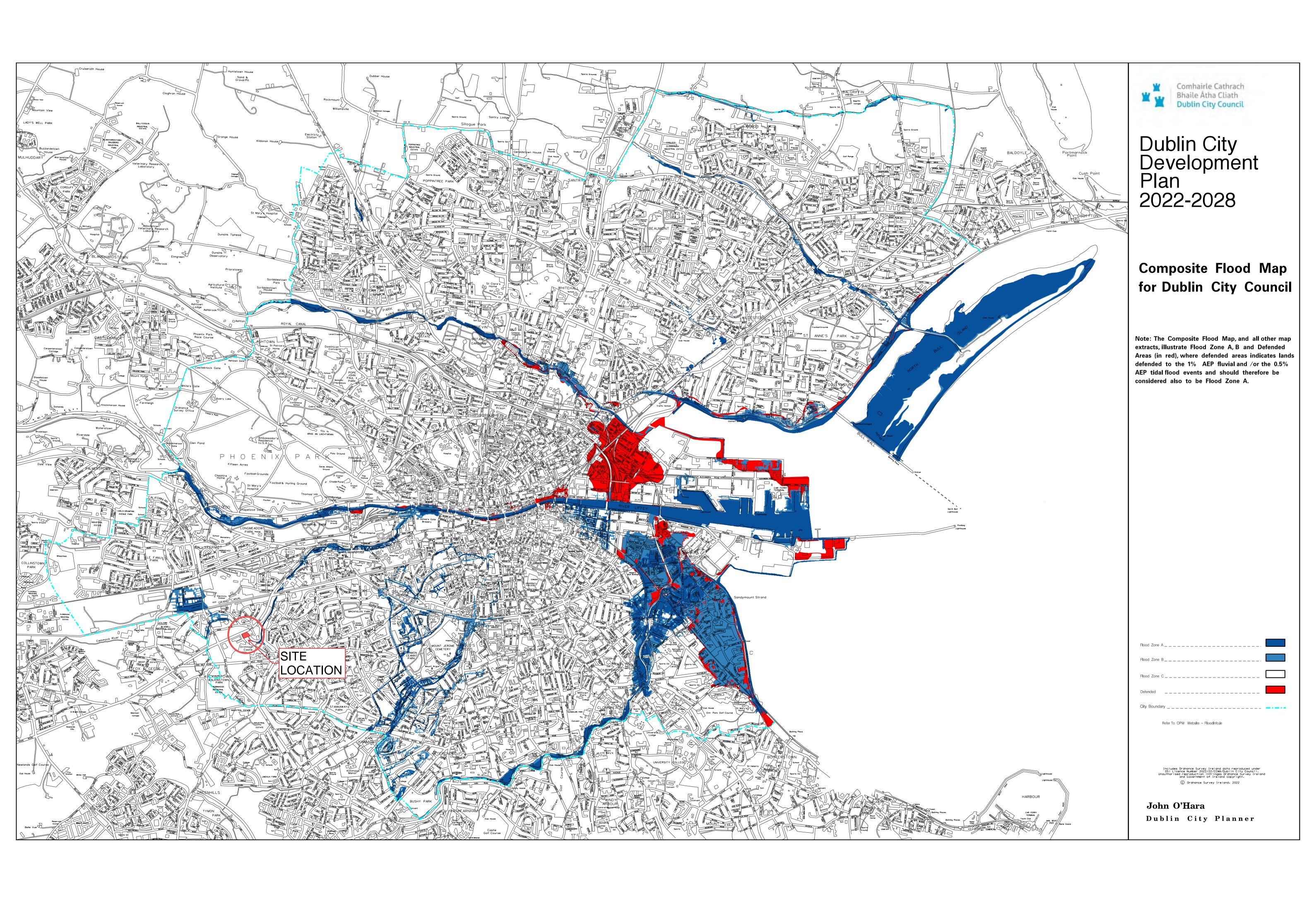


APPENDIX

IV

DCC Composite
Flood Map





#### **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

WWW.BMCE.IE