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Site Specific Flood Risk Assessment

**Project: 22.222
Kia Liffey Valley
Valet Bay**



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1. INTRODUCTION

1.1 GENERAL DESCRIPTIONS

Barrett Mahony Consulting Engineers Ltd. Have been appointed by KIA Liffey Valley to prepare a civil infrastructure design report for a car wash/valet at Liffey Valley Motor Mall, Quarryvale, Dublin.

The proposed development consists of a car wash and valeting facility to accommodate the cleaning of up to 4 cars.

The site is bounded to the north by the access road which be the site entrance and exit, the eastern edge of the site is bounded by a Volkswagen group, to the west of the site by Windsor Liffey Valley and to the south by Fonthill Road.

The site area is 0.1ha. The site location with boundary is shown below in Figure 1.

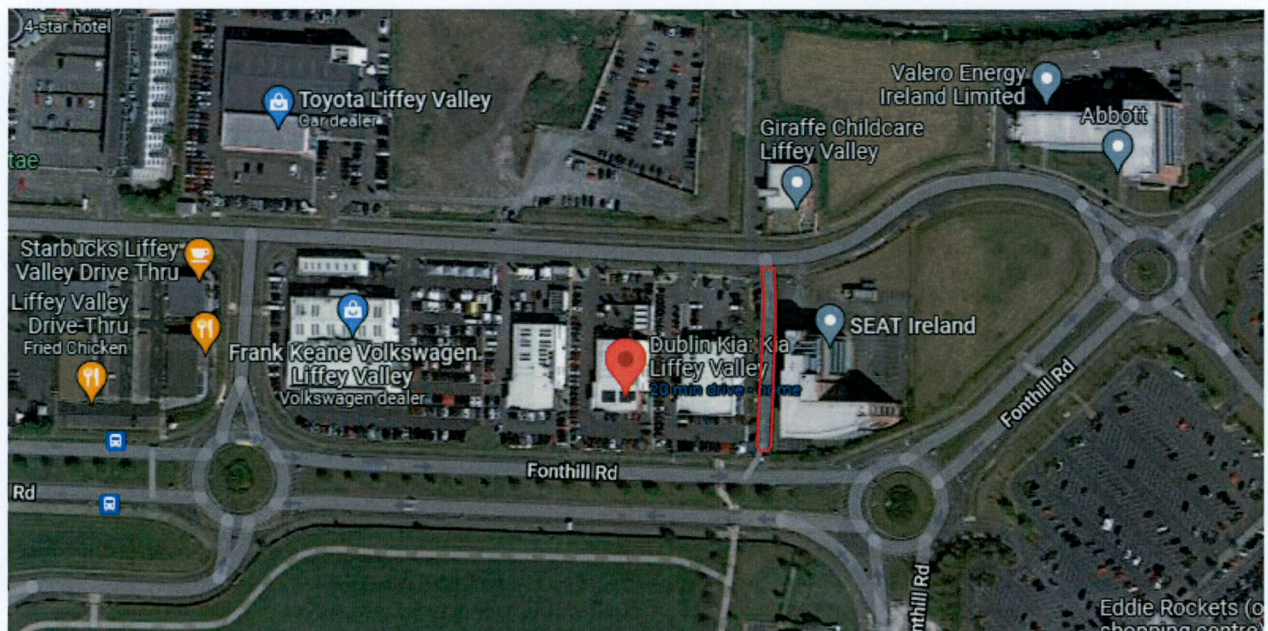


Figure 1: SITE LOCATION



1.2 SITE TOPOGRAPHY

The northern end of the site lies at 59.21m above sea-level with a slight incline of one meter to the south of the site which is 60.21m above sea-level.

1.3 SCOPE OF THIS REPORT

This report describes the proposed civil engineering infrastructure for the development and how it connects to the public infrastructure serving the area.

In particular: Access and Road Layout, Foul and Surface Water Drainage and Water Supply are considered.

This report should be read in conjunction with the drawings listed in Section 1.3 and the following Reports submitted with the application under separate cover.

2. SITE SPECIFIC FLOOD RISK ASSESSMENT

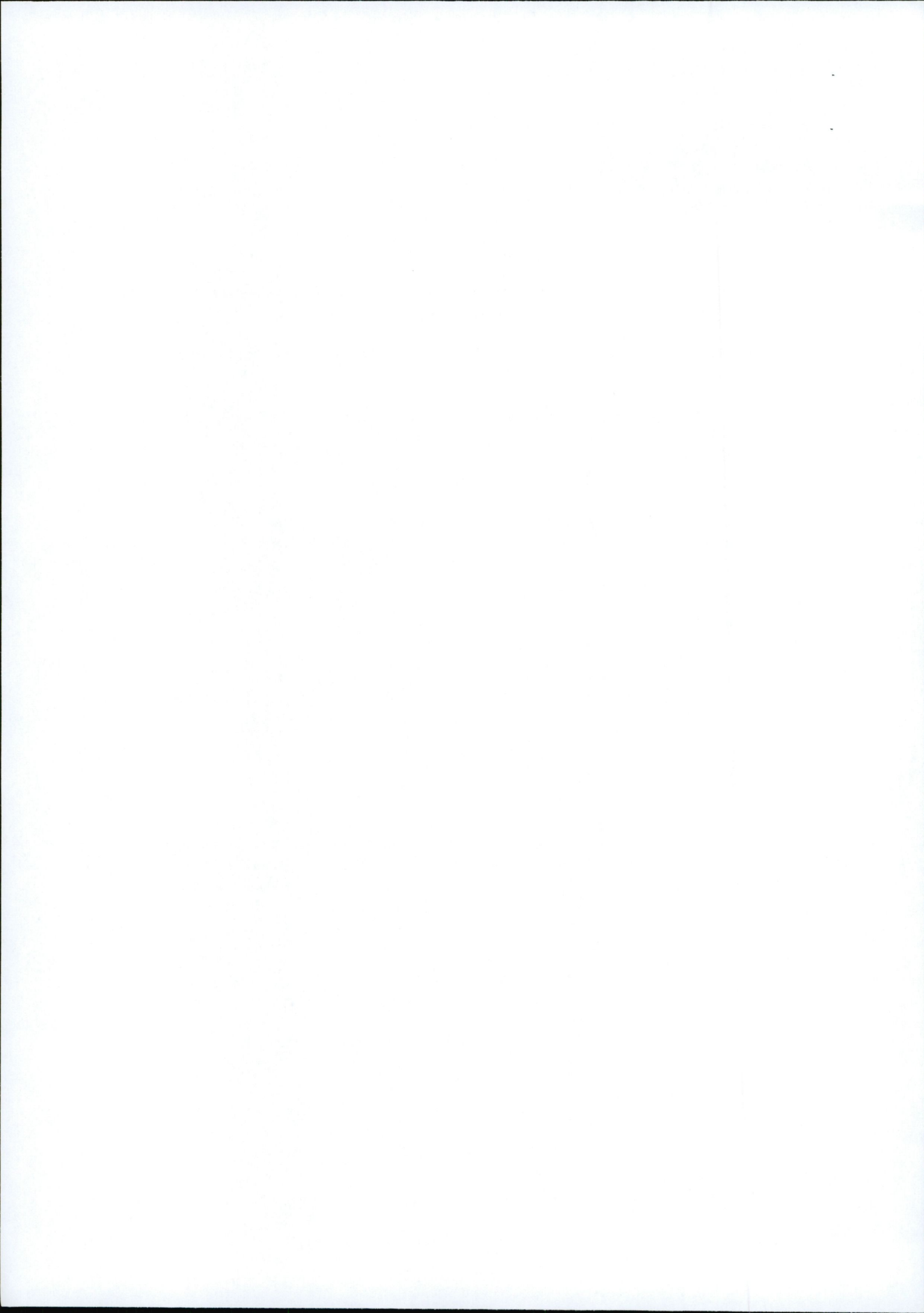
The flood risk assessment outlined below is carried out in accordance with the OPW publication “The Planning System and Flood Risk Assessment Guidelines for Planning Authorities”. The stages involved in the assessment of flood risk are listed in these publications as follows:

- 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 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 2.3 below.

2.1 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. The coast is approximately 300m to the east of the site. The relative levels of the site with regards to the coast pose a flood risk. The OPW Map (National Flood Hazard Mapping Service) presented in Appendix 2 shows that no flood incidents have been recorded on the site and flooding in the area has not occurred.



2.1.1 Flood Zones

The sequential approach defines the flood zones as detailed below:

- 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); and
- 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). Flood Zone C covers all areas of the plan which are not in zones A or B.

The site is located in Flood Zone C, where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 and 1% for both river and coastal flooding).

2.1.2 Vulnerability Class

The sequential approach describes the vulnerability classes 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 development is an open space development ‘water compatible’

2.1.3 Development Classification

The matrix of vulnerability as per “The Planning System and Flood Risk Management – Guidelines for Planning Authorities” is reproduced overleaf in Table 4.2.

Table 1: Matrix of Vulnerability

	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

This development therefore does not need a justification test.

2.2 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.



2.2.1 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: The possible sources of flood water

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

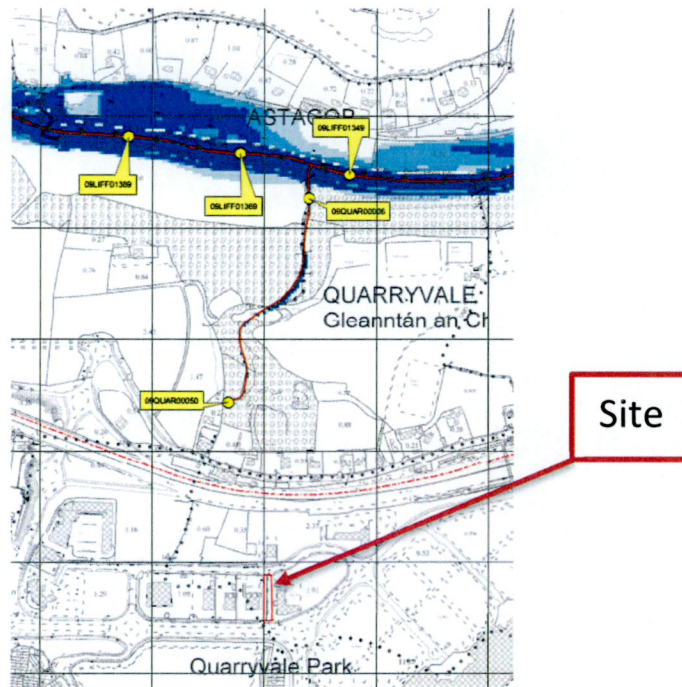
2.2.2 Appraisal of the availability and adequacy of existing information and flood zone maps:

2.2.2.1 Tidal/Fluvial: Current

Reasonable data is available on possible flooding of the surrounding area to the site in the Strategic Flood Risk Assessment (SFRA) by the OPW which is a national screening exercise, based on available and readily derivable information, to identify areas where there may be a significant risk associated with flooding. The SFRA provides a broad assessment of flood risk to inform strategic land-use planning decisions, in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009; these Guidelines were issued under the Planning and Development Act 2000, and recognize the significance of proper planning to manage flood risk.



Figure 3 – OPW Fluvial 1 in 1000-year storm



2.2.3 Determination of what technical studies are appropriate

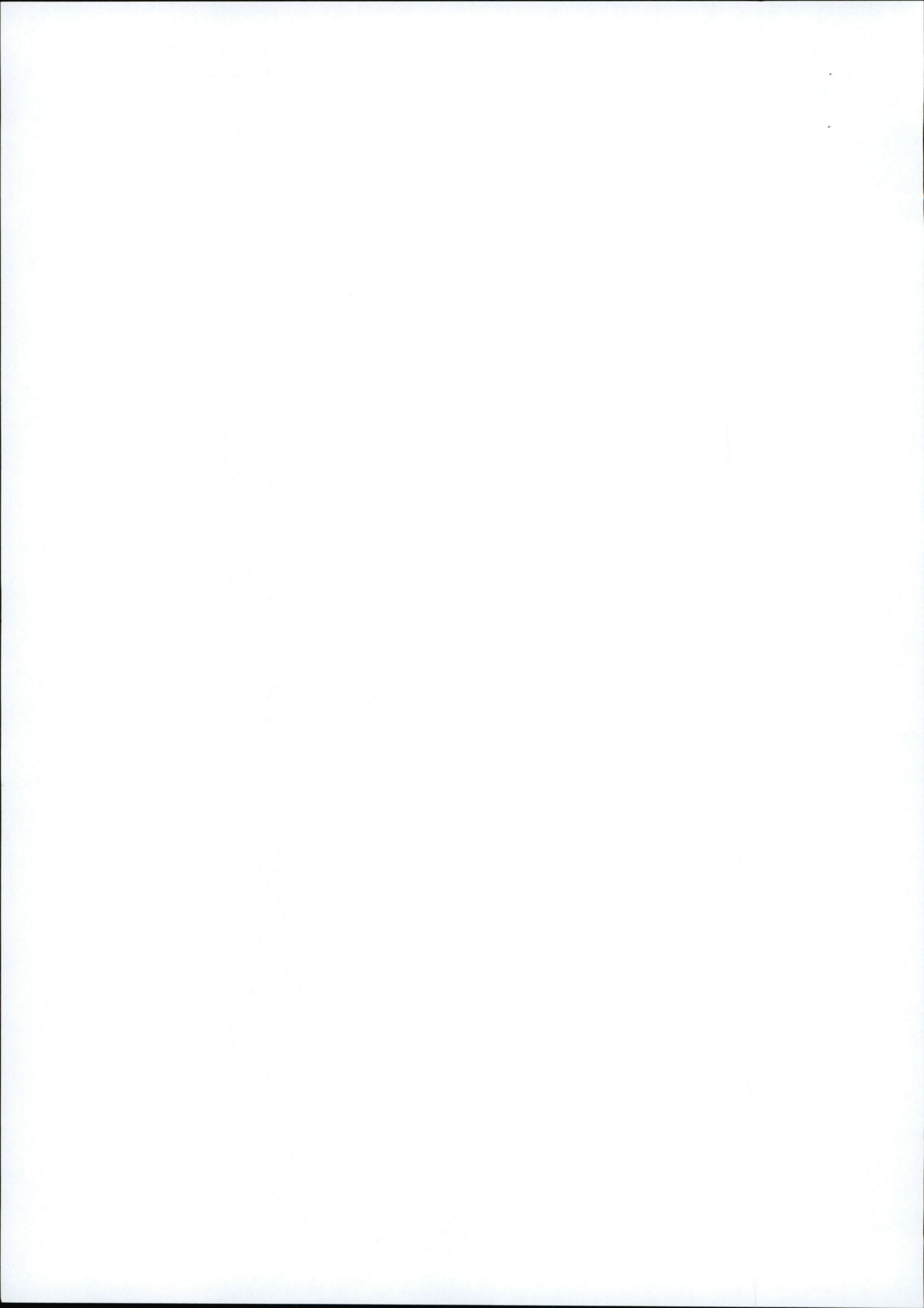
Given the comprehensive nature of the existing information available regarding flooding, it is not considered necessary to carry out any further analysis of fluvial or tidal flooding or of the sewer network serving the area.

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

As this is a water compatible development the valet bay will be open storage, as a result of this the interference of water will be of no concern.

2.2.5 Pluvial Flooding

The event of a complete blockage of the surface water drainage system on site will lead to overland flow in the site from the point of blockage. All the surface water will follow the natural contours of the terrain towards the west of the site. These routes are onto the surrounding public roads.



2.3 STAGE 3: DETAILED FLOOD RISK ASSESSMENT

A detailed flood risk assessment involves the estimation of the level of flooding on the site and the performance of the development under these conditions so that a “fit for purpose” development can be delivered. Once the likely maximum flood level has been estimated, the design should develop so that the ground floor level is above this level but, since this is a water compatible development, this will not be required.

2.3.1 Maximum Flood Levels

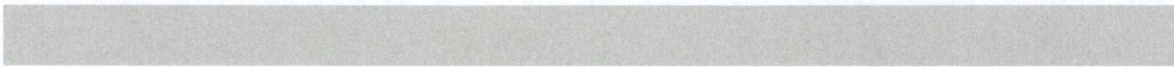
There are no significant flood risks from pluvial, fluvial or sources. The SuDS proposal for this development will deal with any excess surface run-off during the 100 year storm.

3. 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”.

The site is within low-risk Flood Zone C. There are no anticipated flood events that would cause flooding of the proposed development, and the development does not affect the flood storage or increase flood risk elsewhere.





Appendix 1
Site Survey



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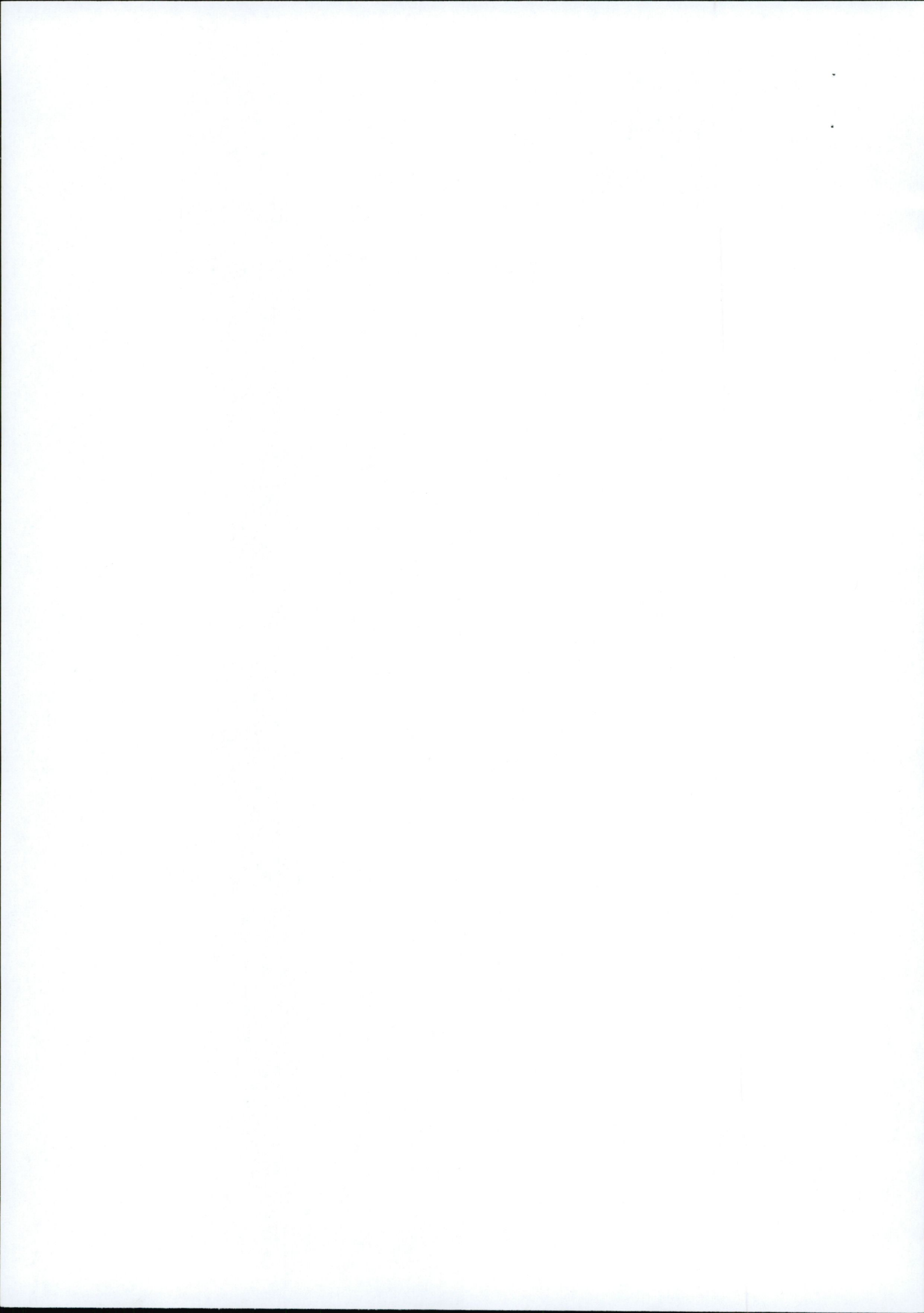
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WWW.BMCE.IE

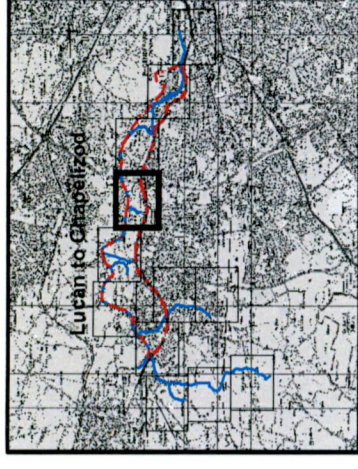




Appendix 2
OPW CFRAMS Flood Maps







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

Legend

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

FINAL

REV: NOTE: DATE:



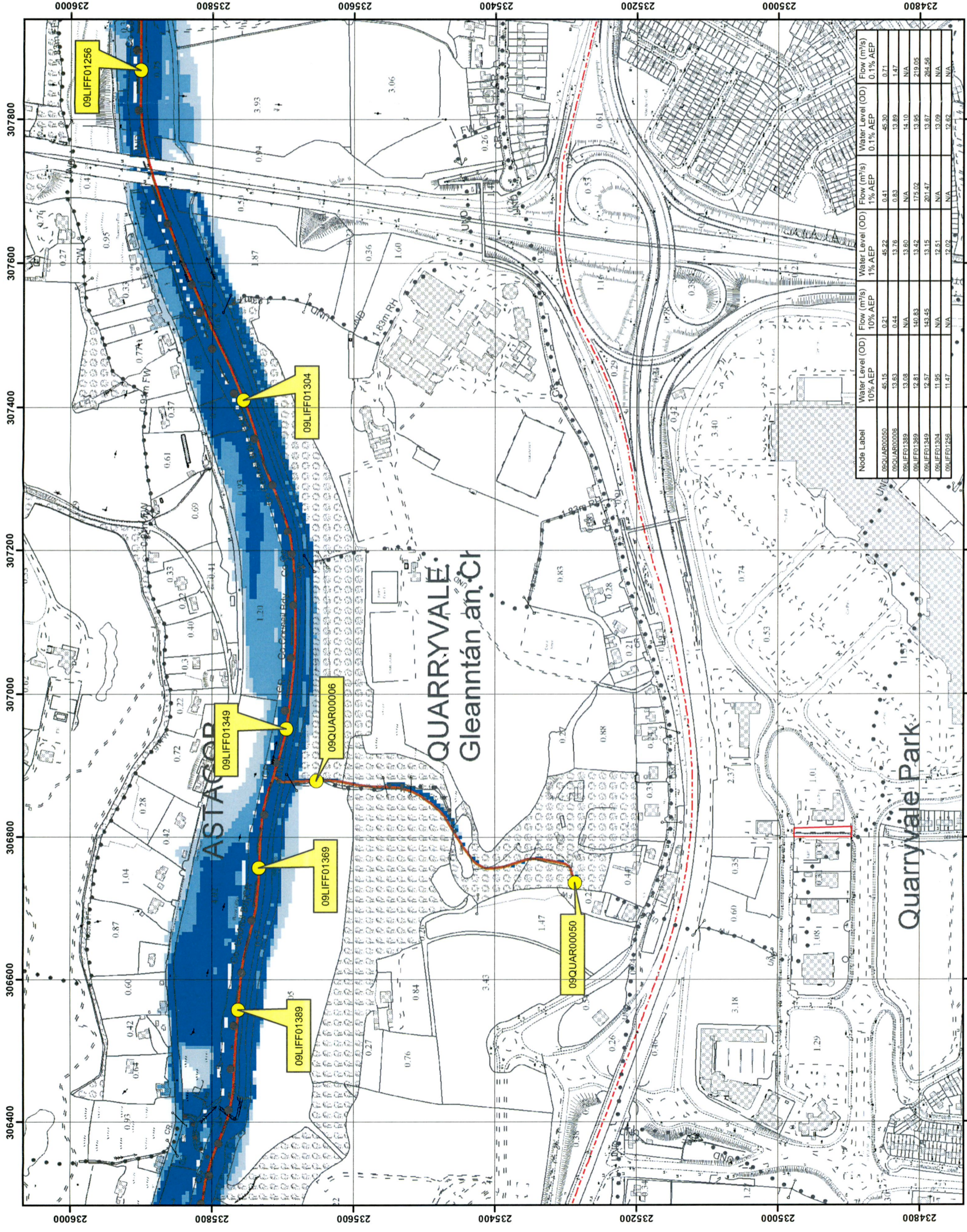
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Map: Lucan to Chapelizod Fluvial Flood Extents

Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By:	C.C.
Checked By:	S.P.
Approved By:	G.G.
Drawing No.:	E09LUC_EXFCD_F0_09

Map Series : Page 9 of 12
Drawing Scale : 1:5,000 @ A3



Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09QUAR000050	45.15	0.21	45.22	0.41	45.30	0.71
09QUAR000006	13.63	0.44	13.76	0.63	13.89	1.47
09LIFF01369	13.08	N/A	13.60	N/A	14.10	N/A
09LIFF01369	12.81	140.63	13.42	175.02	13.95	219.05
09LIFF01349	12.67	143.45	13.15	201.47	13.67	264.66
09LIFF01304	11.95	N/A	12.51	N/A	13.09	N/A
09LIFF01256	11.47	N/A	12.02	N/A	12.62	N/A



