McCloy Consulting

Flood Risk Assessment and Hydromorphological Assessment

Sean Walsh

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FILE	✓					
CLIENT	✓					

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1 INTRODUCTION

1.1 Terms of Reference

This Stage 1 Flood Risk Assessment and Hydromorphological Assessment (FRA) and Stage 1 Hydromorphological Assessment (HA) was commissioned by South Dublin County Council to assess the potential risk of flooding and impact of watercourse hydromorphology at the existing open amenity space Sean Walsh Park (hereafter referred to as 'the site').

1.2 Statement of Authority

This assessment has been completed and reviewed by qualified professionals with appropriate experience in flood risk, drainage, wastewater, and hydraulic modelling studies. The key staff members involved in this project are as follows:

- Gregory Conway *MEng (Hons)* – Graduate Engineer with experience in flood risk assessment, hydrology, and hydraulic modelling.
- Paul Singleton *BEng (Hons) MSc CEng MIEI* – Associate Director and Chartered Engineer specialising in flood risk assessment, hydrology, drainage design and Sustainable Drainage Systems (SuDS); a recognised industry professional providing training courses on these topics to the public and private sectors in Ireland and the UK.

1.3 Purpose

This report is designed to provide a Stage 1 FRA and Stage 1 HA which identified any flooding or surface water management issues and screening of any development within a riparian corridor.

The assessment will therefore determine any potential sources of flooding and riparian zones at the site and outline recommended mitigation and further work where necessary / appropriate.

1.4 Approach to the Assessment

1.4.1 Method of Assessment

The method of assessment complies with the Source-Pathway-Receptor model and provides a spatial assessment of flood risk to people, property, and the environment at the site. Consideration has been given to the source and extent of all potential flood mechanisms at the site, including fluvial, coastal, pluvial, and urban drainage flooding.

1.4.2 Hydraulic Model Status

For the purposes of this assessment, the primary stakeholders are the Office of Public Works (OPW) and South Dublin County Council (SDCC). OPW and SDCC data has been used to form the basis of this assessment and is presented in line with the relevant guidance and requirements.

The site and surrounding area are included in flood maps produced as part of the OPW's Catchment Flood Risk Assessment and Management (CFRAM) programme and Preliminary Flood Risk Assessment (PFRA). The site and surrounding area were part of the OPW's CFRAM Study and are included in the 'Present Day Tallaght Stream' map.

1.4.3 Flood Risk Planning Guidelines

The requirements for flood risk assessments are generally as set out in the 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities', published by the OPW and Department of the Environment, Heritage and Local Government in November 2009 (hereafter referred to as 'the OPW Guidelines'). The OPW Guidelines are supplemented by Departmental Circular PL 2/2014 issued by the Department of Environment, Community and Local Government on 13th August 2014, which relates to use of OPW flood mapping in assessing planning applications and clarifications of advice contained within the OPW Guidelines. Further guidance is also provided in the CIRIA Research Project 624 'Development and Flood Risk: Guidance for the Construction Industry'.

Planning guidelines applicable to the area of interest are implemented in the South Dublin County Development Plan 2022-2028, specifically through the Strategic Flood Risk Assessment for the South Dublin County Development Plan 2022-2028 (hereafter referred to as "the SFRA").

The SFRA was prepared in accordance with the requirements of the OPW Guidelines and adopts an identical Flood Zone standard. Flood Zones are the extents of a design flood event that determine whether development is appropriate from a flood risk point of view. They are defined in both the OPW Guidelines and SFRA 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).

The SFRA clarifies that Flood Zones are to be used to determine suitability of proposed development and are to be derived from 'present day' hydrological estimates. The SFRA also states that Flood Zones are generated without the inclusion of climate change and that, in addition to flood zoning, developments should be designed to be resilient to the effects of climate changes.

The OPW Guidelines state that Stage 1: Flood Risk Identification is "*to identify whether there may be any flooding or surface water management issues related to the proposed development site that may warrant further investigation*". Planning and development decisions can be made based on a Stage 1 FRA provided a precautionary approach is taken but further work, as part of a Stage 2 / Stage 3 FRA, may be recommended and carried out.

1.4.4 Hydromorphological Assessment Guidance

As part of the South Dublin County Development Plan 2022-2028, SDCC published Development Hydromorphological Assessment (HA) Guidance. The guidance was prepared to aid applicants in meetings the objectives of the CDP and associated SFRA as the relate to HAs. The introduction of HAs is key to ensuring that objectives of the Water Framework Directive (WFD) are met.

The HA guidance outlines the importance of maintaining / protecting riparian corridors and set out the following assessment stages:

- Stage 1: Screening
- Stage 2: Scoping
- Stage 3: Detailed Assessment

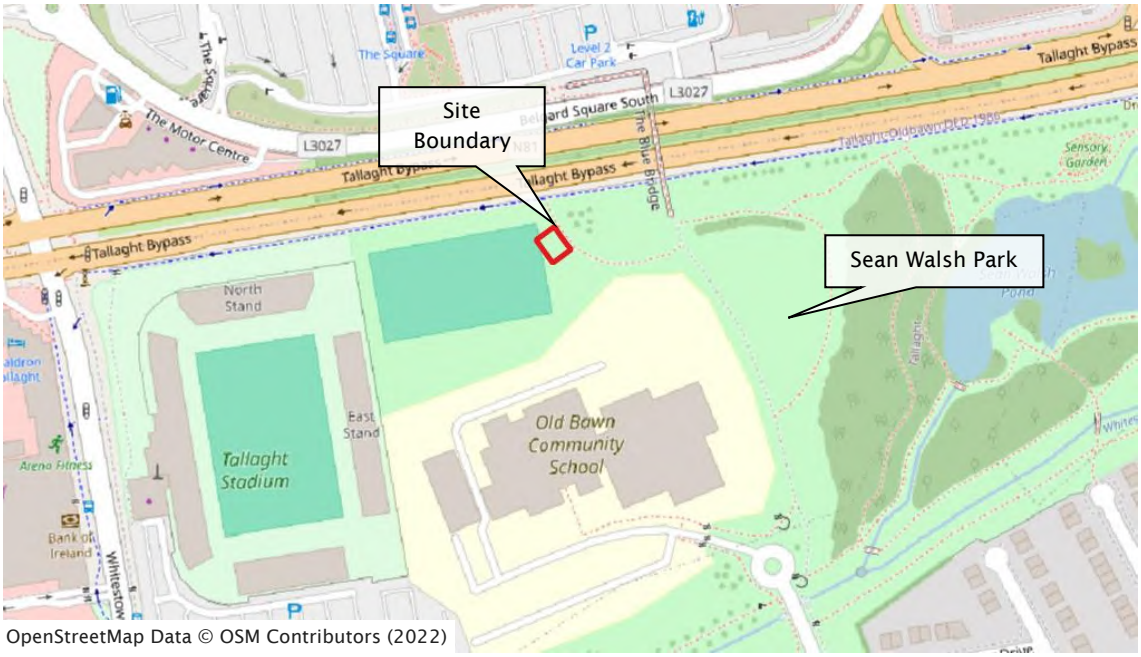
This report provides a Stage 1 HA in line with the SDCC guidance and will outline requirements for Stage 2 / Stage 3 assessment where necessary.

2 SITE AND PROPOSAL DETAILS

2.1 Site Location

The application site is located within the existing Sean Walsh Park, Tallaght, Dublin 24. The site location and boundary are shown in Figure 2.1 and Figure 2.2.

Figure 2.1: Site Context



OpenStreetMap Data © OSM Contributors (2022)

Figure 2.2: Site Location

2.2 Site Description

Relevant information related to the site is as follows:

- The site currently comprises greenspace within the existing Sean Walsh Park.
- The River Dodder is situated to the south of the site.
- The topography of the site is flat with surrounding areas lying at similar elevations.

2.3 Development Proposals

The development proposals described in the planning application that this assessment is intended to support are as follows:

> *The proposed site is located in Sean Walsh Park, Tallaght, Dublin 24, south of the N81 Tallaght Bypass. Sean Walsh Park, comprising of approximately 21 hectares, located in the Tallaght area beside the Tallaght Stadium and the Tallaght square shopping centre with a children's play area, other sports facilities, and an exercise area. The proposed development is for a single storey changing rooms pavilion.*
>
> *Planning and Development Act, 2000 (as Amended) Public Consultation Procedure under Part 8 of the Local Government Planning and Development Regulations 2001 (as Amended).*
>
> *Pursuant to the requirements of the above, notice is hereby given of the proposal to construct the following development by South Dublin County Council:*
>
> *A proposed Sports Changing Rooms Pavilion at Sean Walsh Park, In accordance with the requirements of the above, notice is hereby given that South Dublin County Council proposes:*
>
> - *One single storey pavilion building consisting of two individual team changing rooms each with one WC area, one club storage area, and one plant room, all with individual access.*
> - *1 No. Storage facility for equipment with a Plant room.*
> - *Ancillary landscaping works adjacent to the pavilion building.*
> - *All associated ancillary works in adjacent areas including but not limited to foul & surface water drainage and utility supplies.*
> - *Installation of CCTV for security.*

Relevant proposal drawings are included in Appendix A.

2.4 Vulnerability Classification

Based on the classification criteria set out in the OPW Guidelines, the proposal comprises development with the vulnerability classification shown in Table 2.1.

Table 2.1: Proposed Development Vulnerability Classification

Part	Use	Classification
Pavilion	Outdoor sports and recreation and essential facilities	Water Compatible Development

3 BACKGROUND INFORMATION REVIEW

A background information review based on existing flood risk data was carried out to build an understanding of the potential sources of flooding at the site. This section outlines the key findings of a background information review.

3.1 Initial Background Search

Based on an initial internet / media background search, there is no evidence of flooding at the site from any source.

3.2 South Dublin CC Data

3.2.1 South Dublin County Development Plan 2022-2028

The South Dublin County Development Plan 2022-2028 has been reviewed as part of this assessment and the following objectives are considered pertinent to this Stage 2 FRA:

- Policy GI3 Objective 1: To ensure that hydromorphical assessments are undertaken where proposed development is within lands which are partially or wholly within the Riparian Corridors.
- Policy GI4 Objective 1: To limit surface water run-off from new developments through the use of Sustainable Drainage Systems (SuDS) using surface water and nature-based solutions and ensure that SuDS is integrated into all new development in the County.
- Policy IE3 Objective 2: To maintain and enhance existing surface water drainage systems in the County and to require Sustainable Drainage Systems (SuDS) in new development.
- Policy IE4 Objective 1: To require site specific flood risk assessments to be undertaken for all new developments within the County in accordance with The Planning System and Flood Risk Management - Guidelines for Planning Authorities (2009).
- Policy IE4 Objective 2: To require all developments in the County to be designed and constructed in accordance with the "Precautionary Principle" detailed in the OPW Guidelines.

3.3 OPW Data

3.3.1 Past Flood Events

OPW 'Past Flood Event' mapping indicates that there is no record of historic flooding in the vicinity of Sean Walsh Park.

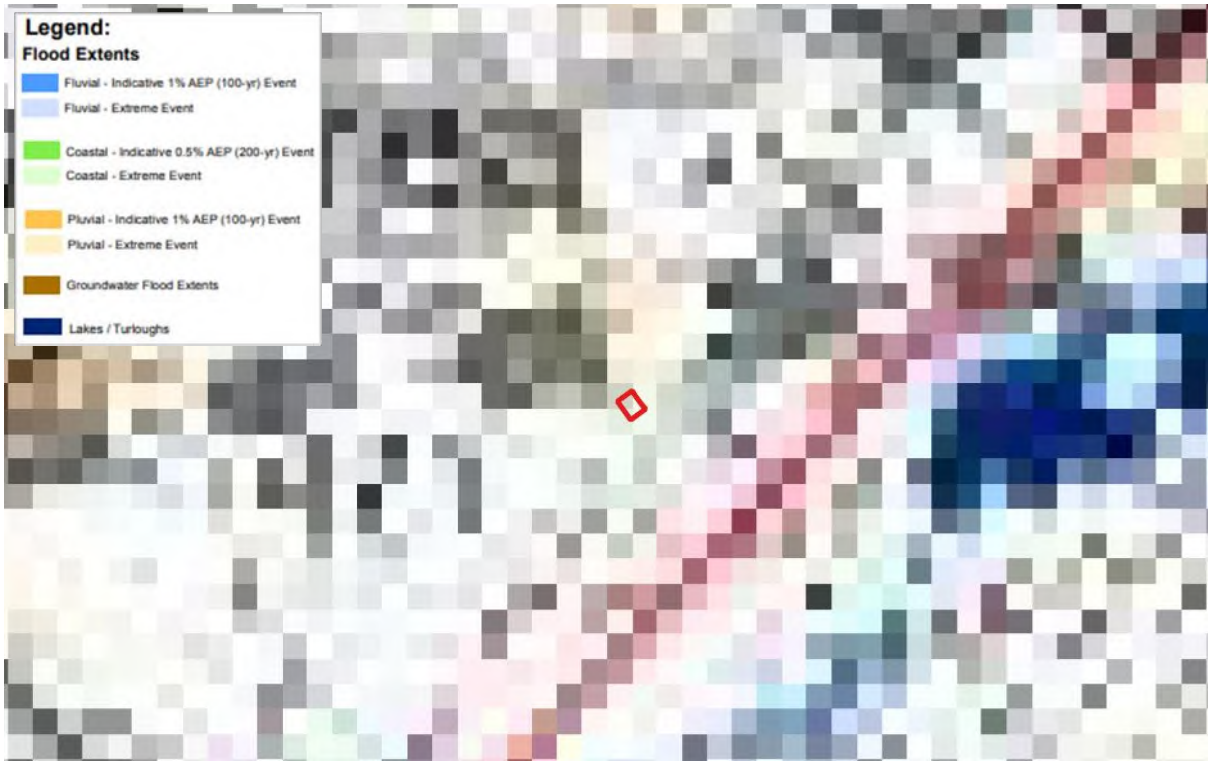
3.3.2 Preliminary Flood Risk Assessment

The OPW have developed flood maps as part of the Catchment Flood Risk Assessment and Management (CFRAM) Programme.

The first stage of the CFRAM process involved a Preliminary Flood Risk Assessment (PFRA) that included flood mapping for the entire country. The PFRA is only a preliminary assessment based on available or readily derivable information. The analysis was undertaken to identify areas prone to flooding to inform further stages in the CFRAM process.

It is understood that OPW PFRA flood mapping is now considered superseded by the OPW. However, it has been used to assess pluvial flood risk at the site in the absence of more recent / detailed data. An extract from the PFRA flood mapping is shown in Figure 3.1. The site is shown to potentially be at risk of pluvial flooding but not fluvial, coastal or groundwater flooding. A copy of the original PFRA map is included in Appendix B.

Figure 3.1: OPW PFRA Flood Map



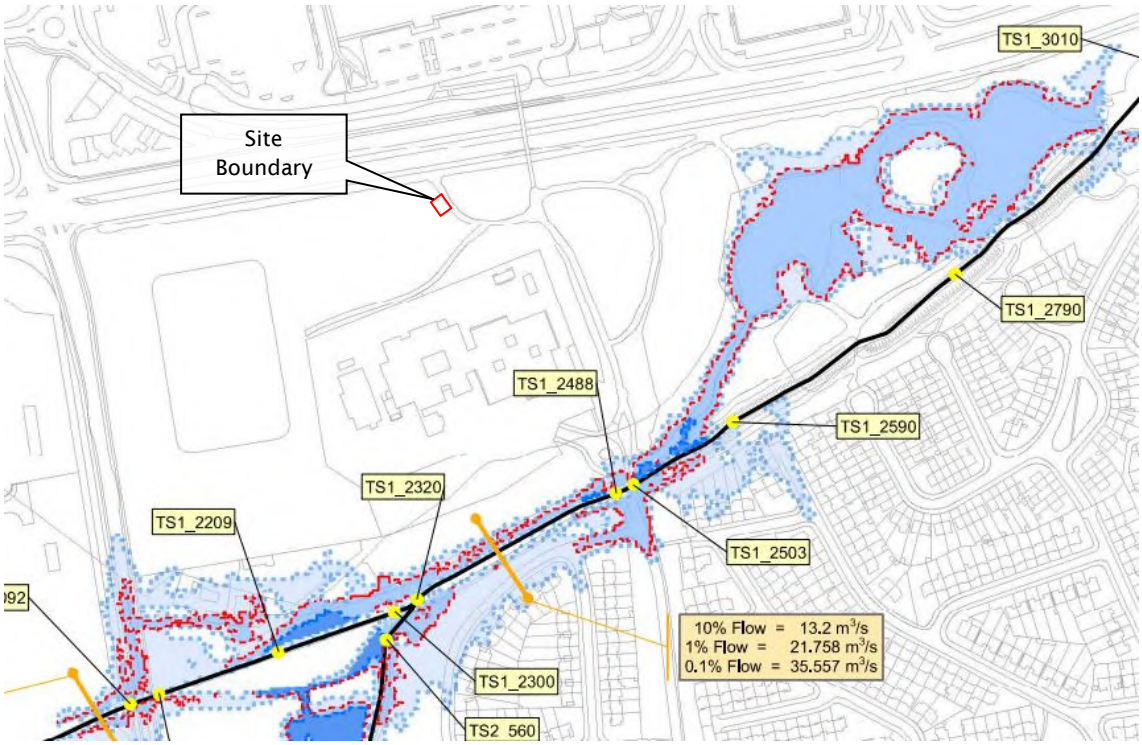
3.3.3 Catchment Flood Risk Assessment Management

As part of the Catchment Flood Risk Assessment and Management (CFRAM) Programme, the OPW produced detailed flood maps for areas identified by the national Preliminary Flood Risk Assessment (PFRA) as being at significant risk of flooding. CFRAM flood maps based on detailed hydraulic modelling are available for the site and surrounding area.

The detailed CFRAM flood mapping shows that the site is not within the vicinity of fluvial or coastal flood extents. The nearest flood extent is c. 250 m east of the site.

An extract of the detailed CFRAM map is shown below in Figure 3.2. A copy of the original CFRAM flood map, published in November 2010, is included in Appendix B.

Figure 3.2: OPW CFRAM Flood Map

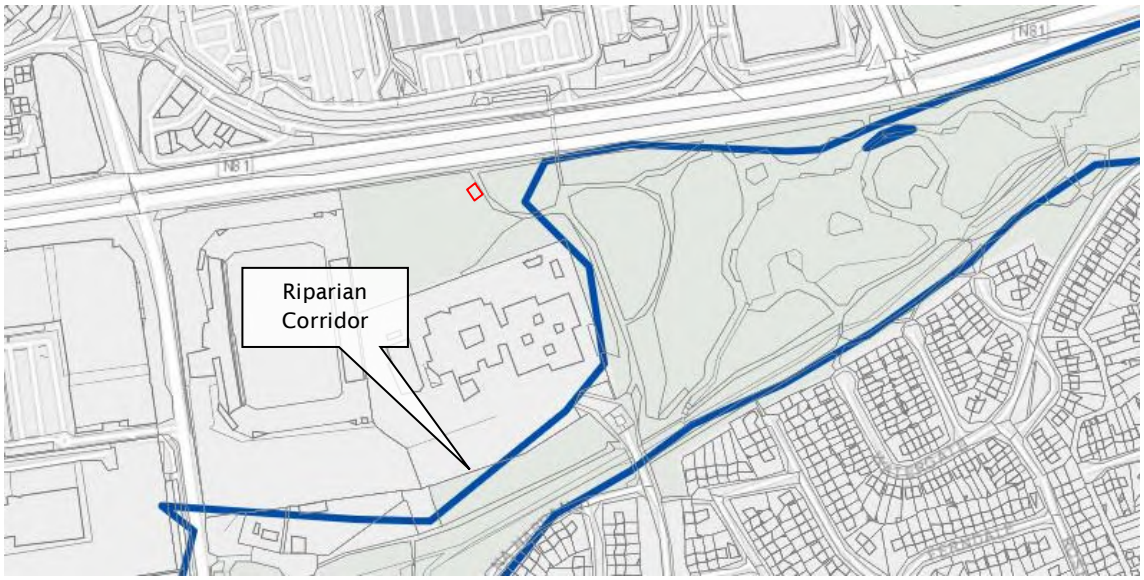


3.4 Riparian Corridor Mapping

Riparian Corridor mapping is available through the South Dublin County Development Plan 2022-2028 online viewer[1].

An extract from the riparian corridor layer is included in Figure 3.3 and indicates that the nearest riparian corridor to the site is c. 28 m east of the site. No other unmapped watercourses exist in the vicinity of the site.

Figure 3.3: Extract from CDP 2022-2028 Online Viewer



[1] Adopted Development Plan (arcgis.com)

4 ASSESSMENT OF FLOOD MECHANISMS

4.1 Preamble

Development control procedures aim to avoid 'inappropriate' development, as defined in the OPW Guidelines, in areas that are at risk of flooding. They also aim to prevent new development that would increase flood risk elsewhere. This section aims to determine the suitability of the site for the proposed development in accordance with development control procedures by assessing all possible sources of flooding at the site and their associated risk people, property, and the environment.

4.2 Initial Assessment

Table 4.1 presents a screening assessment of the site for potential flooding mechanisms requiring further detailed assessment. It is based on the background information review and consultations.

Flooding mechanisms screened as being significant or possibly significant and requiring further assessment have been assessed further in the following sections. Mitigation of flood hazards, where required, is detailed in Section 5.2.

Table 4.1: Potential Flooding Mechanisms at the Site

Source / Pathway	Significant?	Reason
Fluvial Flooding	No	OPW flood mapping indicates that the site is not in an area at risk of fluvial flooding.
Coastal Flooding	No	The site is not in a coastal area.
Urban Drainage Flooding	No	There is no known existing drainage infrastructure within the site boundary. No indication of urban drainage flooding / sewer incapacity within the site boundary was identified in an initial background search.
Surface Water Flooding	Possible	OPW flood mapping indicates the site may be at risk of pluvial flooding. Surface water runoff could potentially flow towards the site from adjacent areas.
Groundwater Flooding	No	OPW flood mapping indicates that the site is not in an area at risk of groundwater flooding. Due to the site topography, there are no areas that would cause impoundment of groundwater.
Impoundments / Artificial Sources	No	There are no impoundments / reservoirs / canals in close proximity to or that drain towards the site.

4.3 Surface Water (Pluvial) Flooding

4.3.1 Pluvial Flooding onto the Site

The lands surrounding the site are open amenity space and are at similar elevations. Surface water runoff from these areas would therefore not be directed towards the site. If not intercepted by local drainage, overland flow would tend to spread out over a relatively large area.

Therefore, the site is not considered to be at significant risk of pluvial flooding originating from surrounding lands. Residual risk will be mitigated by means of an effective surface water drainage network and surface water management, as discussed in Section 5.2.

4.3.2 Pluvial Flooding from the Site

Development proposals will increase the impermeable footprint of the site and increase the rate and volume of surface water runoff accordingly.

Any increase in impermeable area at the site would require mitigation by means of an effective surface water drainage network and surface water management, as discussed in Section 5.2.

4.4 Hydromorphology

SDCC riparian corridor mapping demonstrates that the site does not lie in the buffer zone of any watercourse and no other watercourses are located in the vicinity.

Therefore, the Stage 1: Screening assessment demonstrates that no further consideration (i.e. Stage 2 / Stage 3 HA) is required. In line with SDCC HA Stage 1: Screening guidance, flood risk and SuDS are considered as part of this assessment.

5 SUMMARY OF FINDINGS AND RECOMMENDATIONS

5.1 Summary of Findings

The site has been shown to be unaffected by fluvial flooding. In relation to Flood Zones as defined by the OPW Guidelines, the assessment demonstrates that the site lies wholly in Flood Zone C. The proposed development will therefore have no impact on flood risk elsewhere.

The site has been shown to be unaffected by pluvial flooding and surface water runoff from the development can be mitigated through provision of SuDS measures.

No other significant flood mechanisms are anticipated at the site.

A Stage 1 Hydromorphological Assessment has shown that the site does not lie in any riparian corridor so will have no impact on the hydromorphology of any watercourse.

5.2 Design Requirements

The following section outlines measures incorporated into proposals submitted in support of the planning application and to be further considered / developed in any detailed design or variation post-determination of the planning application.

5.2.1 Land Use

This assessment demonstrates that the site lies wholly in Flood Zone C, meaning there is no policy-based restriction on land use within the site boundary and development will not cause an increase in flood risk elsewhere. Notwithstanding, the proposed water compatible development is appropriate in any Flood Zone and, as such, considered appropriate as per the OPW Guidelines.

5.2.2 Design Levels

Given the water compatible nature of the proposed development as well as being sited in Flood Zone C, there is no required minimum design level.

5.2.3 Site Access

Given that the site and surrounding area lies wholly in Flood Zone C, safe access to and egress from the proposed development will be possible during an extreme flood event.

5.2.4 Drainage Design

Surface water drainage design should be per the requirements of the South Dublin County Development Plan 2022-2028 and to the standards of the South Dublin County Council Water Services Department.

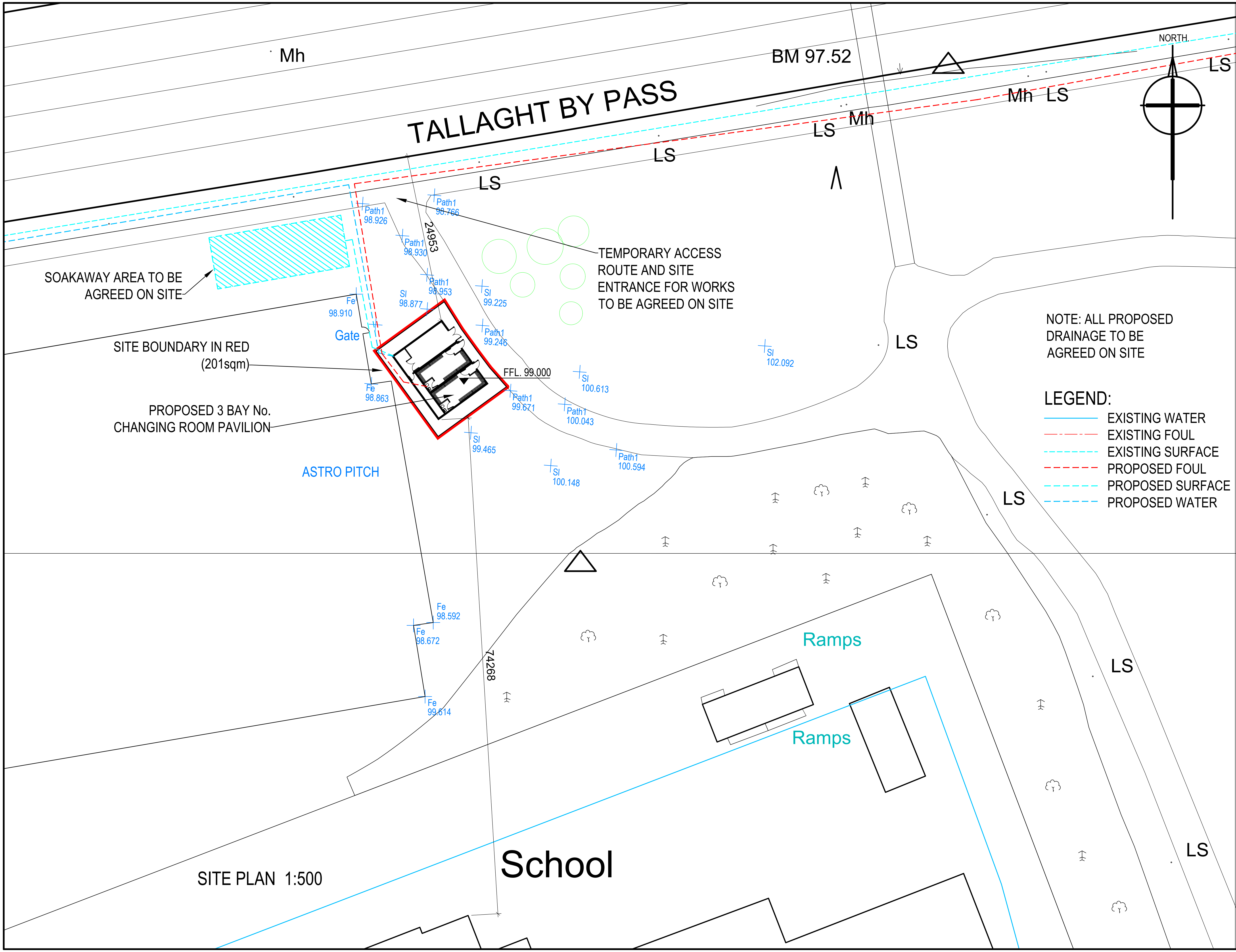
The South Dublin County Development Plan 2022-2028 states that it is an objective to incorporate and promote the use of Sustainable Urban Drainage Systems (SuDS), and that these are to be designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works.

SuDS components, including but not limited to green roofs, rain harvesting, permeable pavement, infiltration trenches, and soakaways, should be considered in relation to the nature and character of the site. The type of SuDS deemed suitable for the site will be subject to outline and detailed design. The SuDS design should demonstrate how water quantity and quality are dealt with as well as make provision for amenity and biodiversity, where practicable.

Drainage design is to be carried out by others.

Appendix A

Site Drawings


TALLAGHT BY PASS
BM 97.52
Mh
LS
NORTH
SOAKAWAY AREA TO BE AGREED ON SITE
SITE BOUNDARY IN RED (201sqm)
PROPOSED 3 BAY No. CHANGING ROOM PAVILION
Gate
ASTRO PITCH
TEMPORARY ACCESS ROUTE AND SITE ENTRANCE FOR WORKS TO BE AGREED ON SITE
FFL. 99.000
24953
74268
Path1 98.926
Path1 98.766
Path1 98.930
Path1 98.953
Path1 99.246
Path1 99.671
Path1 100.043
Path1 100.594
SI 98.877
SI 99.225
SI 100.613
SI 102.092
SI 99.465
SI 100.148
Fe 98.910
Fe 98.863
Fe 98.592
Fe 98.672
Fe 99.614
NOTE: ALL PROPOSED DRAINAGE TO BE AGREED ON SITE
LEGEND:
EXISTING WATER
EXISTING FOUL
EXISTING SURFACE
PROPOSED FOUL
PROPOSED SURFACE
PROPOSED WATER
Ramps
Ramps
School
SITE PLAN 1:500

SEAN WALSH PARK PAVILION PART 8 2024

SHEET 03

PART 8

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Appendix B

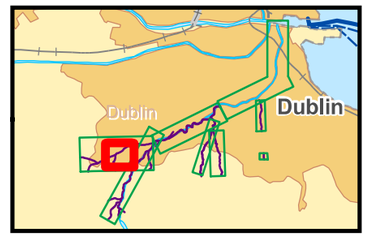
OPW Flood Mapping

N

TS1_3471
TS1_3111
TS1_3165
TS1_3051
TS1_3475
TS1_3047
TS1_3320
TS1_3010
TS1_2790
TS1_2488
TS1_2590
TS1_2320
TS1_2209
TS1_2503
TS1_2092
10% Flow = 13.2 m³/s
1% Flow = 21.758 m³/s
0.1% Flow = 35.557 m³/s
TS1_2300
TS2_560
10% Flow = 10.68 m³/s
1% Flow = 18.846 m³/s
0.1% Flow = 29.867 m³/s
TS1_2115
10% Flow = 3.57 m³/s
1% Flow = 5.9 m³/s
0.1% Flow = 9.34 m³/s
TS1_1820
TS1_1990
TS2_360
TS2_180
10% Flow = 3.58 m³/s
1% Flow = 5.96 m³/s
0.1% Flow = 9.71 m³/s
TS2_0

	Water Level (mOD) per AEP		
Node Label	WL 10%	WL 1%	WL 0.1%
TS1-1820	98.38	98.77	99.06
TS1-1990	95.47	96.29	96.60
TS1-2092	95.20	96.09	96.35
TS1-2115	95.08	95.46	95.59
TS1-2209	95.08	95.45	95.60
TS1-2300	94.26	94.59	94.85
TS1-2320	94.23	94.57	94.82
TS1-2488	93.70	94.10	94.33
TS1-2503	93.57	93.83	94.04
TS1-2590	91.94	92.21	92.53
TS1-2790	90.39	90.65	90.98
TS1-3010	89.29	89.89	90.38
TS1-3047	89.22	89.69	90.04
TS1-3051	89.21	89.67	90.01
TS1-3111	89.19	89.65	89.99
TS1-3165	87.71	88.05	88.51
TS1-3320	87.00	87.37	87.98
TS1-3471	86.32	86.69	87.21
TS1-3475	86.27	86.62	87.13
TS2-0	98.14	98.38	98.69
TS2-180	96.75	96.94	97.14
TS2-360	95.13	95.37	95.68
TS2-560	94.33	94.74	95.00

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 Peak flow during design flood extent

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:

Dublin City Baile Átha Cliath · South Dublin County Council · Dún Laoghaire-Rathdown County Council Comhairle Contae Dhún Laoghaire-Ráth an Dúin · OPW

Project:

DODDER CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map:

PRESENT DAY TALLAGHT STREAM

Map Type: FLOOD EXTENT

Source: FLUVIAL FLOODING

Map Area: URBAN AREA

Scenario: CURRENT

Drawn By :	A.A.B	Date :	26 November 2010
Checked By :	A.J.	Date :	26 November 2010
Approved By :	A.G.B	Date :	26 November 2010

Figure No. :

TS/EXT/UA/CURS/102

Map Series : Page 2 of 3

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

0 0.1 0.2
Kilometers

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www.rpsgroup.com/Ireland

FINGLAS, GLASNEVIN

CLONTARF

DUBLIN CITY

No Fluvial Data Available For Area

No Fluvial Data Available For Area

No Fluvial Data Available For Area

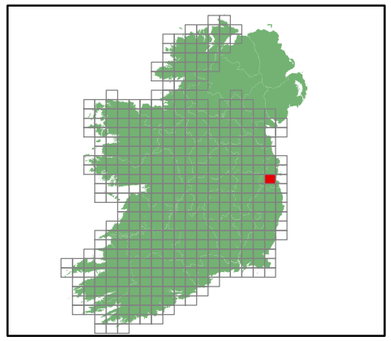
No Fluvial Data Available For Area

No Fluvial Data Available For Area

No Fluvial Data Available For Area

0.5 0.25 0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 Kilometers

Location Plan :



Legend:

Flood Extents

- Fluvial - Indicative 1% AEP (100-yr) Event
- Fluvial - Extreme Event
- Coastal - Indicative 0.5% AEP (200-yr) Event
- Coastal - Extreme Event
- Pluvial - Indicative 1% AEP (100-yr) Event
- Pluvial - Extreme Event
- Groundwater Flood Extents
- Lakes / Turloughs

PFRA Outcomes

- Probable Area for Further Assesment
- Possible Area for Further Assesment

Important User Note:

The flood extents shown on these maps are based on broad-scale simple analysis and may not be accurate for a specific location. Information on the purpose, development and limitations of these maps is available in the relevant reports (see www.cfram.ie). Users should seek professional advice if they intend to rely on the maps in any way.

If you believe that the maps are inaccurate in some way please forward full details by contacting the OPW (refer to PFRA Information leaflets or 'Have Your Say' on www.cfram.ie).

Office of Public Works
Jonathon Swift Street
Trim
Co Meath
Ireland

Project :
PRELIMINARY FLOOD RISK ASSESMENT (PFRA)

Map :
PFRA Indicative extents and outcomes
- Draft for Consultation

Figure By : PJW Date : July2011

Checked By : MA Date : July 2011

Figure No. : 2019 / MAP / 238 / A

Revision 0

Drawing Scale : 1:50,000 Plot Scale : 1:1 @ A3