CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

New Artificial Grass Pitch
Greenhills Park
Dublin
Ireland

Flood Risk Assessment

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September 2025

Report Originator(s)

Warren Allsopp, BEng (Hons)
Director for SEA Consulting Engineers Ltd.
warren@seace.co.uk
07976 310054

Revision Record

Revision	Date	Description	Written	Approved
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T: 07976 310054
E:warren@seace.co.uk

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1.0 Introduction

1.1 Design Brief

1.1.1 The client, Sports Labs, requires a Flood Risk Assessment to accompany a new planning application for the installation of an artificial grass pitch at Greenhills Park, Dublin.

1.1.2 This report provides research into the likelihood of flooding in the area.

1.1.3 This report has been prepared by SEA Consulting Engineers Ltd. With the benefit limited to our instructing Client, Sports Labs.

1.1.4 This report refers to the following documents/websites:

- Department of the Environment Heritage and Local Government (DEHLG) and the Office of Public Works (OPW) Guidelines for Planning November 2009 on *'The Planning System and Flood Risk Management Guidelines for Planning Authorities'.*
- Flood maps available at www.floodinfo.ie
- Geological Survey Ireland (GSI) maps available at www.gsi.ie

1.1.5 The stages involved in the assessment of flood risk are listed in the guidelines as follows:

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

1.1.6 The OPW and DEHLG's publication also 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 subject site in terms of the OPW and DEHLG's sequential approach is further outlined in section 3.2 of this report.

1.2 Site Location

1.2.1 The proposed development is located to the south west of Dublin, within Greenhills Park, Irish Grid reference E310880, N229960. The site is surrounded by residential dwellings to the north, west and south and Greenhills Community College to the east.

1.3 Current Land Use

1.3.1 The site is currently open playing fields, therefore classified as greenfield land.

1.4 Proposed Development

1.4.1 The proposed development will comprise the construction of a new artificial grass pitch, 145m long by 100m wide. The proposed development layout is presented in Appendix A.

2.0 Stage 1 - Flood Risk Identification

2.1 General

2.1.1 Stage 1 identifies whether there are any flooding or surface water management issues at the subject site location and whether a flood risk assessment is required. This involves a review of the desk study information available, as outlined in the following headings

Table 2.1 The possible sources of flood water

Source	Pathway	Receptor	Likelihood	Consequence	Risk
Tidal	Overtop Breach	Property and people	Very remote	High	Very Low
Fluvial	Overtop Breach	Property and people	Remote	High	Very Low
Groundwater	Rising groundwater levels	Property and people	Very remote	Medium	Very Low
Pluvial Surface water	Overflow / Blockage	Property and people	Possible	Low	Low

2.2 Historical Flooding

2.2.1 A review of the past flood events available on the floofinfo.ie website shows that the site has not been subject to historical flooding. An extract from this flood map is presented below in Figure 2.1.

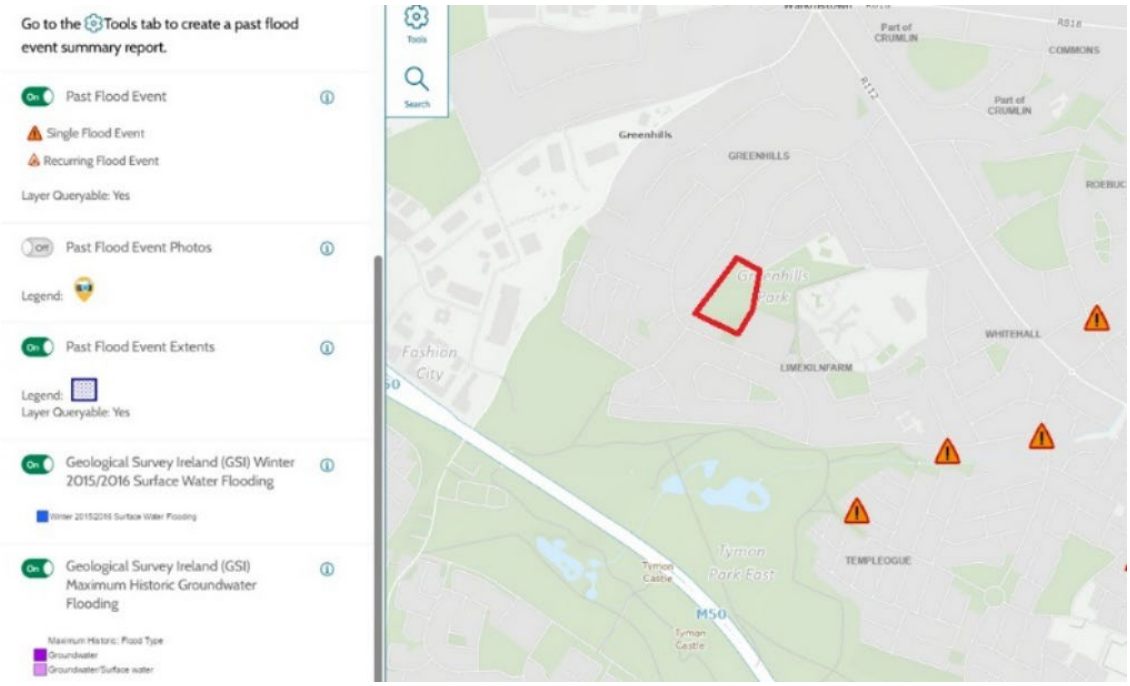


Figure 2.1 – Extent of historical flooding – floodinfo.ie website – 11.09.2025

2.3 Coastal Flooding

2.3.1 Coastal flooding occurs when sea levels along the coast or in estuaries exceed neighbouring land levels or overcome coastal defences where these exist. A review of the CFRAM Coastal Flood Extents Mapping was carried out and indicates no coastal flooding at the subject site, refer to figure 2.2 below.

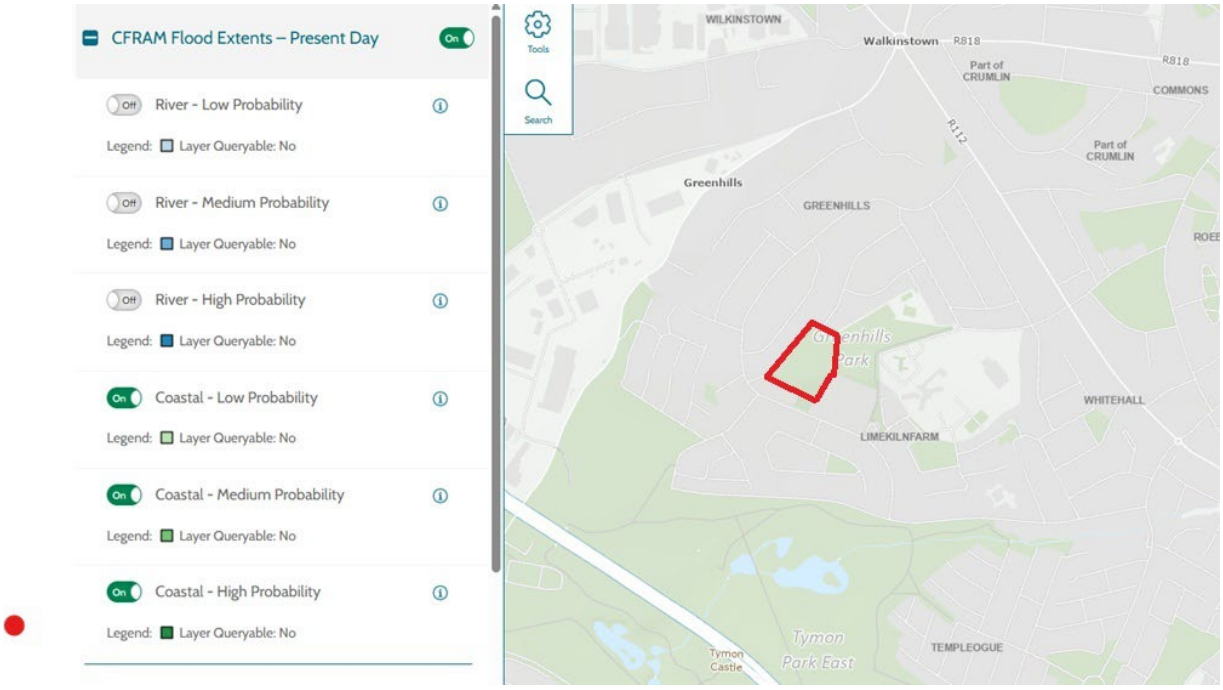


Figure 2.2 - Extent of coastal flooding – floodinfo.ie website – 11.09.2025

2.4 Fluvial Flooding

2.4.1 Fluvial flooding occurs when rivers and streams break their banks and water flows out onto the adjacent low-lying areas

2.4.2 The likelihood of fluvial flooding is defined on flood maps located on the www.floodinfo.ie website, and an extract is provided below in Figure 2.3

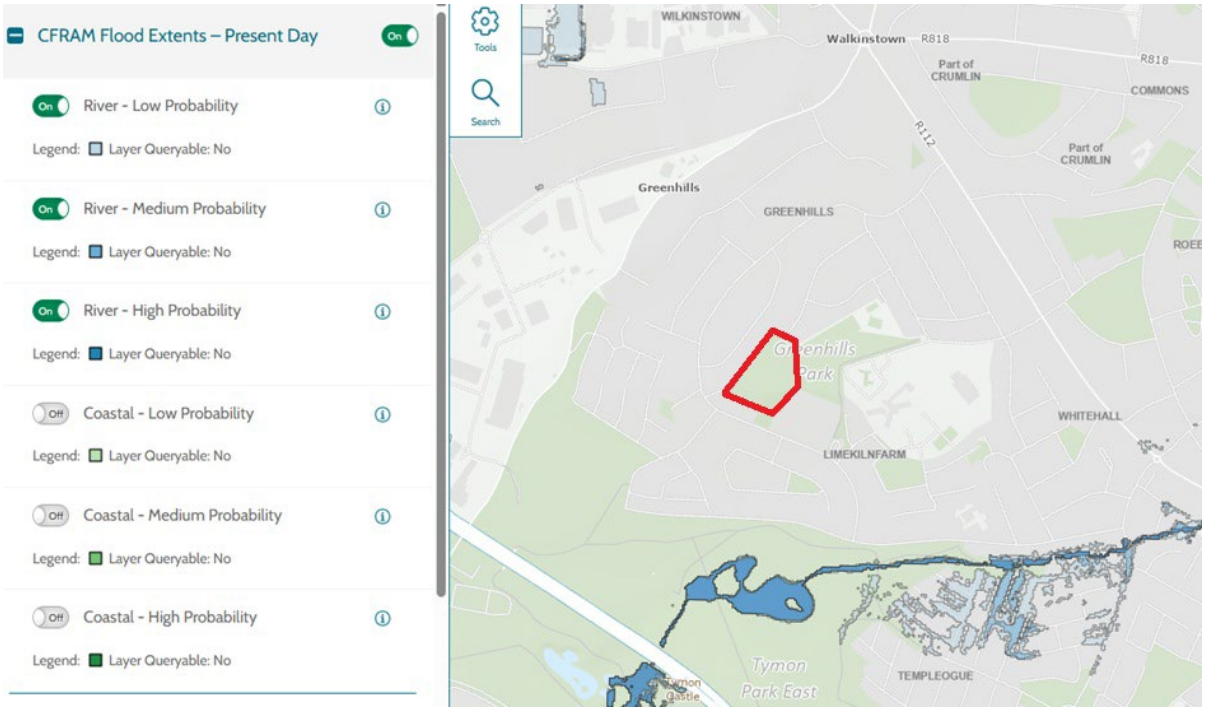


Figure 2.3 – Extent of fluvial flooding – www.floodinfo.ie website – 11.09.2025

2.4.3 The mapping shows that the site is not at risk of fluvial flooding; therefore, the risk is considered to be low.

2.5 Pluvial Flooding

2.5.1 Pluvial flooding occurs when the amount of rainfall exceeds the capacity of urban water drainage systems or the ground to absorb it.

2.5.2 The likelihood of fluvial flooding is defined on flood maps located on the www.floodinfo.ie website, and an extract is provided below in Figure 2.4

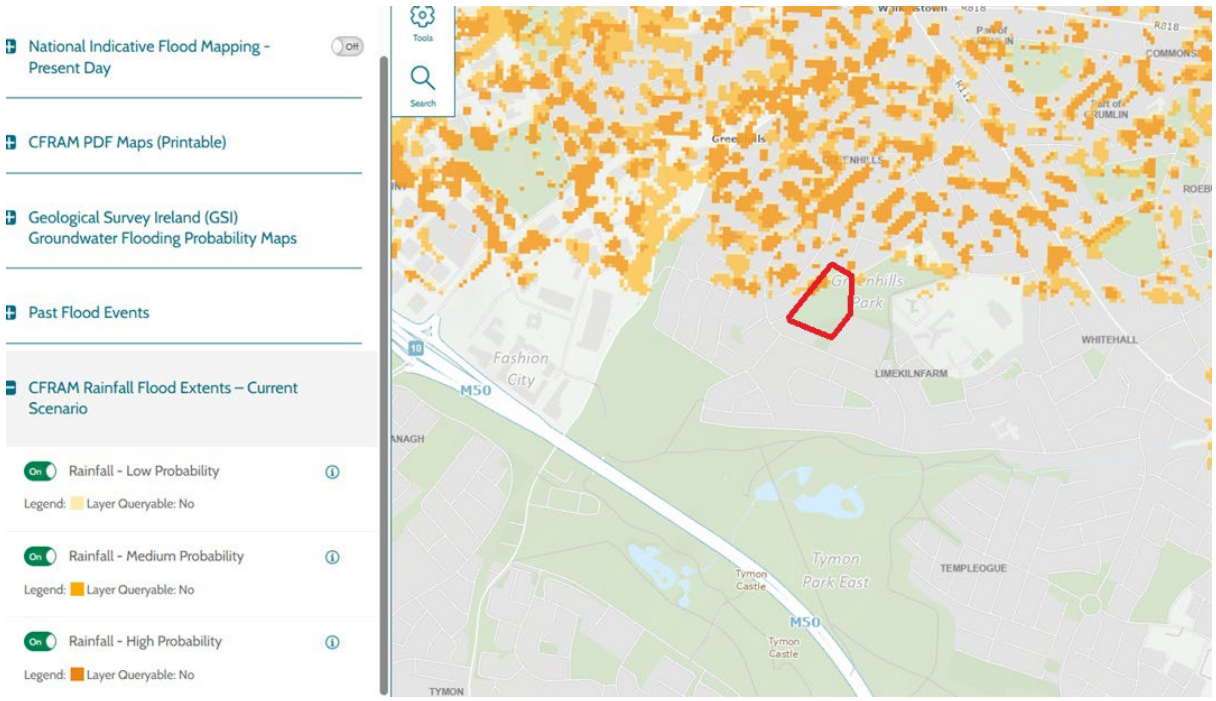


Figure 2.4 – Extent of pluvial flooding – www.floodinfo.ie website – 11.09.2025

2.5.3 A very small portion of the site to the west is located within an area shown to have a high probability of pluvial flooding. However, this is deemed to be located outside of the AGP extents; therefore, the risk of pluvial flooding is low.

2.6 Groundwater Flooding

2.6.1 Groundwater flooding occurs when the level of water stored in the ground rises as a result of prolonged rainfall, to meet the ground surface and flows out overground.

2.6.2 The proposed development comprises 3G/4G playing pitches. There are no basements proposed.

2.6.3 A review of the groundwater flooding maps provided by Geological Survey Ireland (GSI) shows that the site is not at risk of groundwater flooding. An extract is provided below in Figure 2.5.

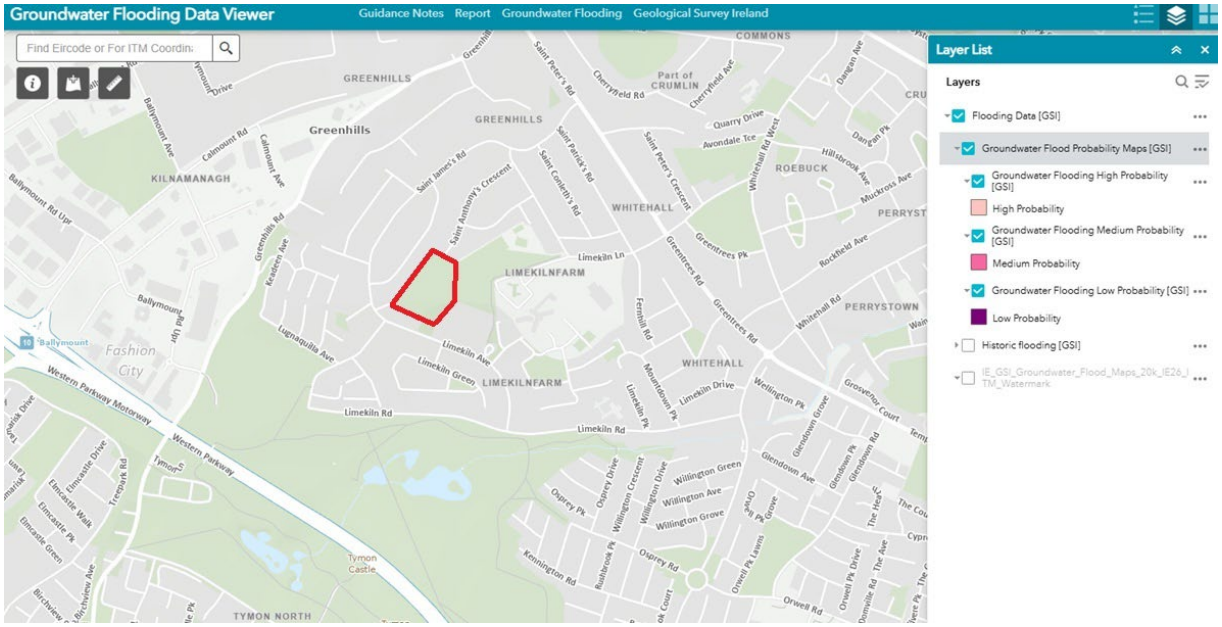


Figure 2.5 – Extent of groundwater flooding – www.gsi.ie website – 11.09.2025

3.0 Stage 2- Initial Flood Risk Assessment

3.1 General

3.1.1 The purpose of an initial flood risk assessment is to examine flood risk issues highlighted as part of Stage 1 Flood Risk Identification.

3.1.2 Based on available recorded information as outlined in Stage 1, the site is at low risk of flooding from all sources.

3.2 Sequential Approach

3.2.1 The sequential approach used in this assessment follows the guidelines from The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009, see Figure 3.1 for a graphical representation.

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

- Highly Vulnerable Development (i.e. power stations, residential)
- Less Vulnerable Development (i.e. retail, leisure)
- Water-Compatible Development (i.e. car parking, recreational space)

3.2.3 The proposed use (3G/4G playing pitches,) comes under the heading of a 'water-compatible' development.

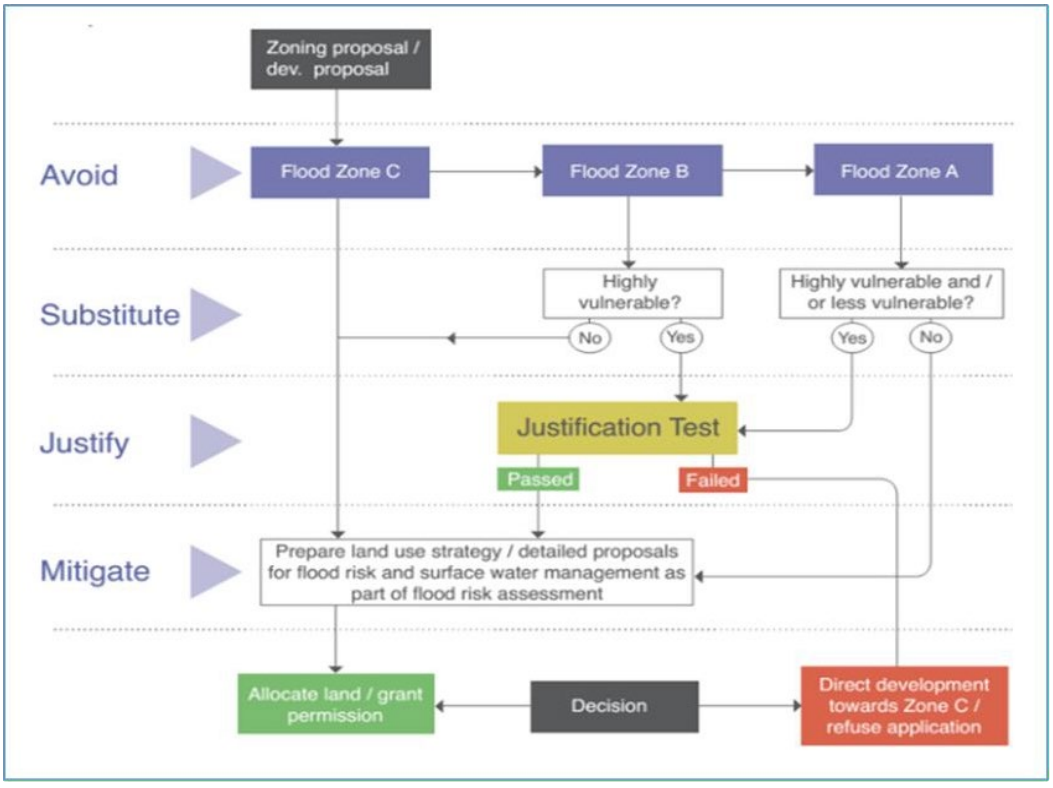


Figure 4.1 Sequential Approach (Source: Guidelines for Planning Authorities, 2009)

Table 4.1 Matrix of vulnerability versus flood zone (Source: Guidelines for Planning Authorities, 2009)

	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**

3.2.4 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 1in 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).

3.2.5 Based on the flood risk identification in Stage 1, the proposed development falls into Flood Zone C (refer Fig 2.3 above) and the proposed development type is within a 'water-compatible' category. Hence, the proposed development is deemed 'Appropriate' in accordance with the guidelines of the OPW's publication. Therefore, no 'Justification Test' and/or Stage 3 Detailed Flood Risk Assessment is required.

4.0 Surface Water Drainage

4.1 Existing Surface Water Drainage

4.1.1 The site is greenfield with no formal surface water drainage.

4.2 Proposed Storm Drainage Discharge

4.2.1 It is generally anticipated that surface water should outfall via the following hierarchy

- Into the Ground (infiltration);
- To a surface water body;
- To a surface water sewer/drain
- To a combined sewer

4.2.2 Each of these is considered separately below.

Into the ground

4.2.3 Inspection of the GSI maps indicates that the site is underlain with clay soils, which would be effectively impermeable. A ground investigation would be required to confirm if soils exhibit any permeability for use in a soakaway

To a surface water body

4.2.4 There are no surface water bodies in the vicinity or close to the site.

To a surface water sewer/drain

4.2.5 There has been no formal drainage survey of the site, but there appears to be a surface water sewer to the south west of the site within the access road off St James Rd.

4.3 Surface Water Discharge Rates

4.3.1 As the site is greenfield, we have calculated greenfield runoff rates for the site using the HR Wallingford online tool. The site's total drained area is 15,050$m^{2,}$ and the Qbar value has been calculated as 3.8l/s, therefore flows will be restricted to this rate; calculations are presented in Appendix B.

4.4 Proposed Surface Water Design

4.4.1 The new AGP will consist of a permeable synthetic surface, porous shockpad along with a porous macadam layer and a permeable type 3 subbase, which will allow water to infiltration through the pitch makeup to a series of new lateral drains which will collect surface water before out falling into a flow control chamber with attenuation being provided by the pitches subbase and/or an additional buried geo-modular tank, if required. The design will be for all storm events up to and including the 1 in 100 year event, plus a 20% allowance for climate change.

4.5 SUDS

4.5.1 The use of SUDS and pollution control measures have been assessed using the Simple Index Approach set out within the CIRIA SUDS Manual 2015. Based on table 26.2 of the SUDS Manual, the pollution indices for the site are set out in table 2.1 below.

Pollution Hazard Indices for Different land use classifications				
Land use	**Pollution Hazard Level**	**Total Suspended Solids (TSS)**	**Metals**	**Hydrocarbons**
Residential Roofs	Very Low	0.2	0.2	0.05

Table 2.1 – Extract of table 26.2 of the SUD manual.

4.5.2 Residential roofs' is considered to be the most appropriate category, due to the minimal pollution hazard associated with the proposed AGP, which will have no vehicle movements within its extent.

4.5.3 Surface water from the area will pass through the permeable subbase. Therefore, acting very similar to permeable paving.

4.5.4 Table 26.3 of The SuDS Manual shows the mitigation indices for a range of Suds components for discharges to surface waters. An extract of this is provided in Table 2.2 below for the components relevant to the proposed development.

Indicative mitigation indices			
Type of SUDS Component	**Mitigation Indices**		
	Total Suspended Solids (TSS)	**Metals**	**Hydrocarbons**
Permeable Paving	0.7	0.6	0.7

Table 2.2 – Extract from table 26.3 of the SUDS Manual

4.5.5 Based on the above it can be seen that the permeable subbase will provide adequate treatment for the sites surface water.

4.6 Maintenance

4.6.1 All new surface water will remain private and maintenance will be the responsibility of the landowner The following maintenance plan shall be implemented.

Pitch and Permeable subbase

Maintenance Schedule		
Maintenance Category	**Required Action**	**Frequency**
Regular Maintenance	Brushing (Standard cosmetic sweep over all areas)	Once a year, after the autumn leaf fall, or reduced frequency as required, based on site specific observations of clogging or manufacturers recommendations. Particular attention to be paid to areas where water into pervious areas from adjacent impermeable areas as this area is most likely to collect sediment
Occasional maintenance	Stabilise and mow adjacent contributing areas	As required
	Removal of weeds or management suing glyphosphate applied directly into the weeds by an applicator rather than spraying	As required
Remedial Actions	Remediate any landscaping which, through vegetation maintenance strip, has been raised to within 50mm of the finished surface	As required
	Remedial work to any depressions, rutting and cracked surfacing considered detrimental to the performance or hazard to users	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10-15 years, or as required (if infiltration performance is reduced due to significant clogging
Monitoring	Initial inspection	Monthly for 3 month after installation
	Inspect for areas of poor operation and/or weed growth – if required take remedial action	3-monthly, 48hrs after large storms for the first 6 months
	Establish slit accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor Inspection chambers	Annually

5.0 Conclusion

5.1.1 This Site-Specific Flood Risk Assessment for the proposed site development was undertaken in accordance with the requirements of the Planning System and Flood Risk Management Guidelines for Planning Authorities," November 2009.

5.1.2 Following the flood risk assessment stages, it was determined that the site is within Flood Zone C as defined by the Guidelines and based on the ECFRAMS mapping. Therefore, the proposed development on the subject site is appropriate for the site's flood zone category, and a justification test as outlined in the Guidelines is not required.

5.1.3 Surface water from the development will be controlled at greenfield runoff rates and be designed such that no flooding will occur on site for all storm events up to and including the 1 in 100 year event plus a 20% allowance for climate change.

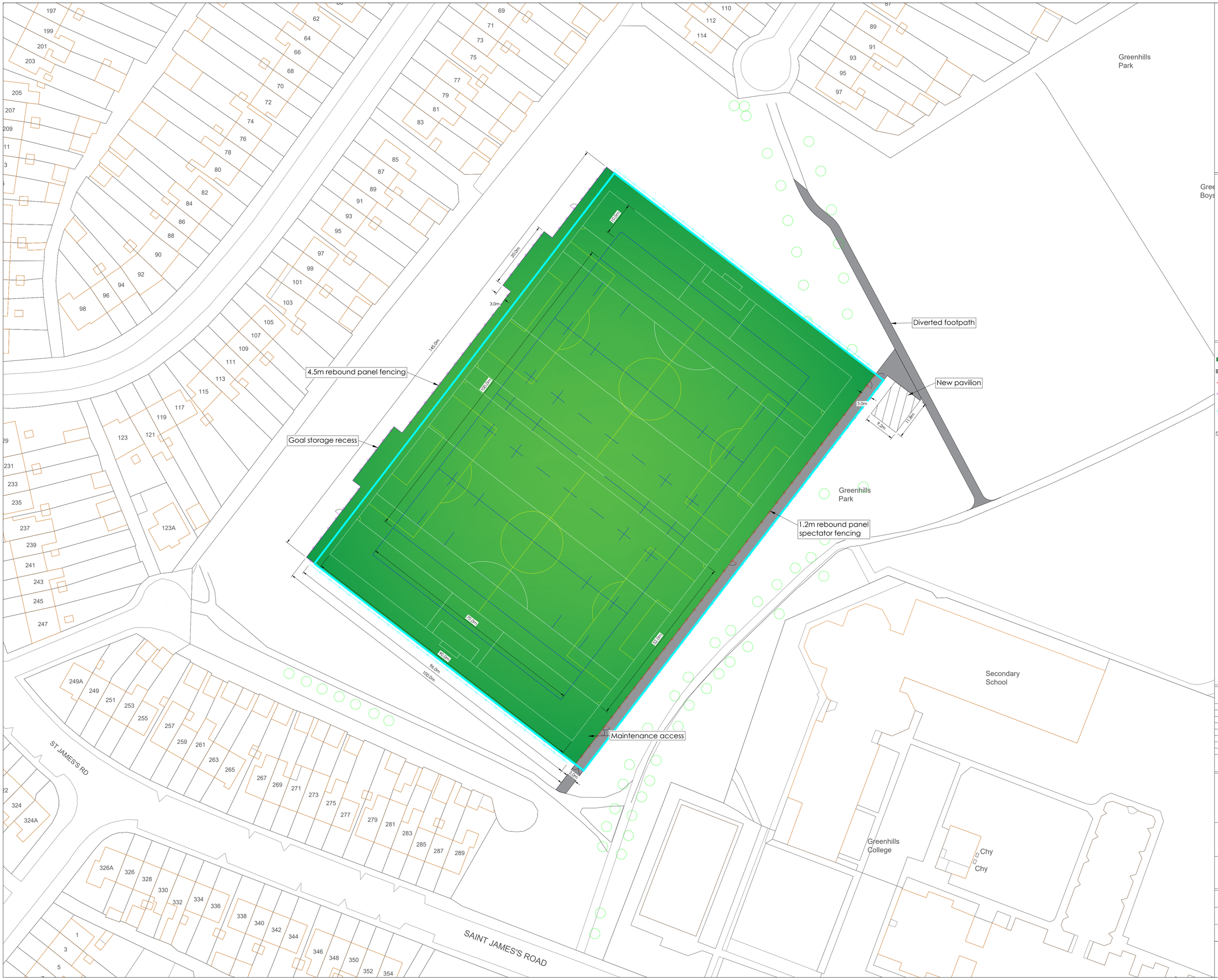
5.1.4 Based on the above, and providing the above strategies are adopted, the developed site will not contribute further to flood risk.

CONSULTING ENGINEERS
[CONSULTING CIVIL & STRUCTURAL ENGINEERS]
T: 07976 310054
E:warren@seace.co.uk

Client	Sports Labs
Project	New AGP, Greenhills Park, Dublin
Title	Flood Risk Assessment

Appendix A

Proposed Site Plan



Notes

It is the contractors responsibility to check design levels and sizes for compliance. Any discrepancies or errors to be identified to the design team.

N

Key

- New 3G Synthetic Turf
- New Perimeter Path
- New 1.2m Spectator Fence
- New 4.5m High Perimeter Security Fence c/w Additional 3.0m High Ballstop Netting Above
- New 13.0m Ballstop Netting
- Existing Tree
- New Pavilion

Revision	Date	Description	By

Status

sportslabsconsult
Sports Labs
1 Adam Square
Brucefield Industrial Estate
Livingston
info@sportslabs.co.uk

Client
South Dublin County Council

Site
Greenhills Park, Dublin, Ireland

Drawing Title
General Arrangement

Drawing No.
3465-SL-DR-100-GA-R00

Scale @ A1	Date	Drawn By	Checked By
1:500	09/2025	CH	DD

Scale Bar (metres)

0 5 10 20 30 40

CONSULTING ENGINEERS
[CONSULTING CIVIL & STRUCTURAL ENGINEERS]
T: 07976 310054
E:warren@seace.co.uk

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Appendix B

Greenfield Runoff Calculation

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

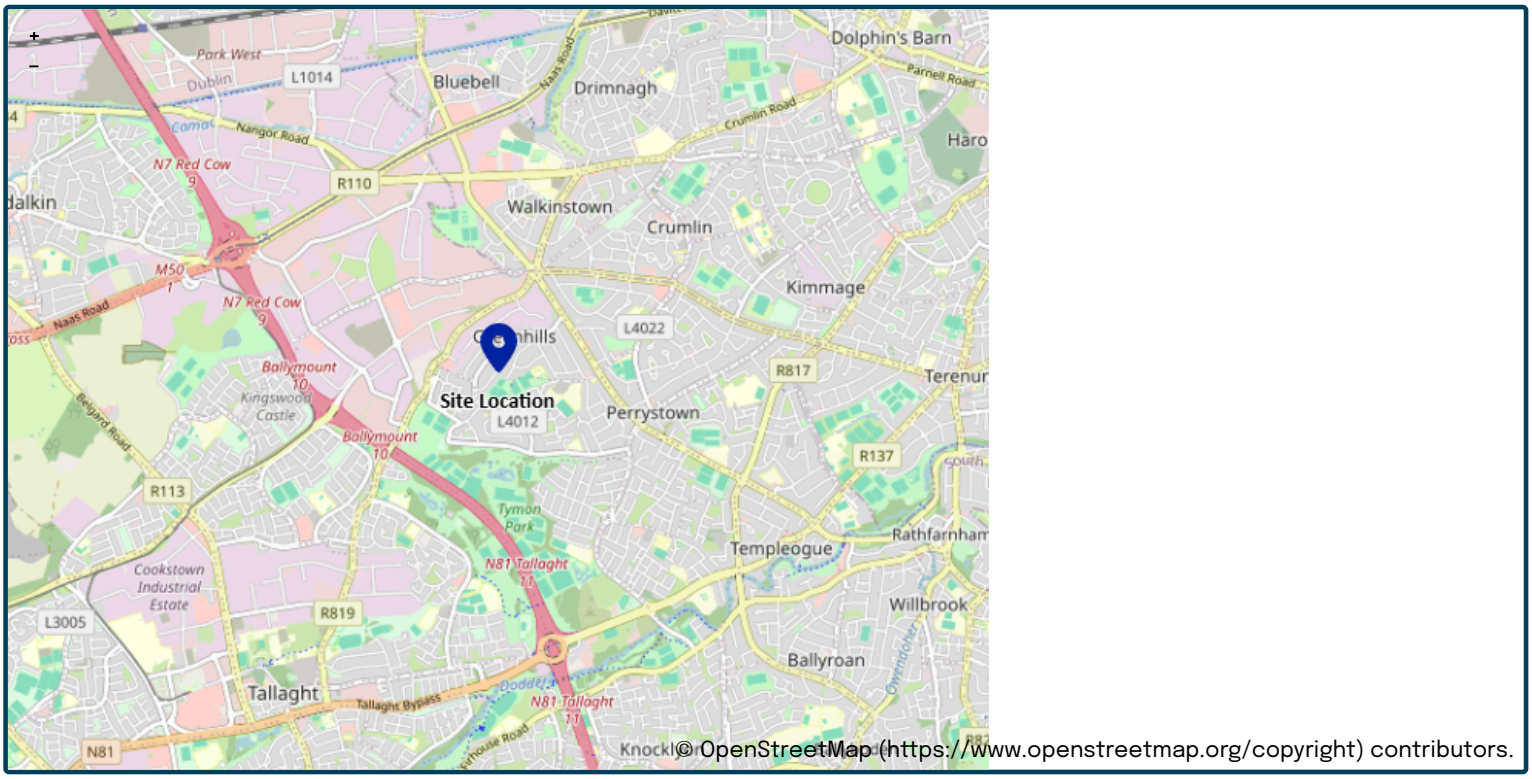
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	11/09/2025
Calculated by	Warren Allsopp
Reference	00305
Model version	2.1.2

Location

Site name	New AGP
Site location	Greenhills Park, Dublin



Site easting (Irish Grid)	310877
Site northing (Irish Grid)	229963
Site easting (Irish Transverse Mercator)	710804
Site northing (Irish Transverse Mercator)	729990

Site details

Total site area (ha)	1.505 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	937 mm		937
How should SPR be derived?	WRAP soil type		
WRAP soil type	2		2
SPR	0.3		
QBar (IH124) (l/s)	3.86 l/s		

Growth curve factors

	My value		Map value
Hydrological region	12		12
1 year growth factor	0.85		
2 year growth factor	0.95		
10 year growth factor	1.72		
30 year growth factor	2.13		
100 year growth factor	2.61		
200 year growth factor	2.86		

Results

Method	IH124
Flow rate 1 year (l/s)	3.3 l/s
Flow rate 2 year (l/s)	3.7 l/s
Flow rate 10 years (l/s)	6.6 l/s
Flow rate 30 years (l/s)	8.2 l/s
Flow rate 100 years (l/s)	10.1 l/s
Flow rate 200 years (l/s)	11.0 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer