ROGER MULLARKEY & ASSOCIATES
CONSULTING STRUCTURAL and CIVIL ENGINEERS

SITE SPECIFIC FLOOD RISK ASSESSMENT
for a Residential Development at "Southern Site"
Glenamuck North, Kilternan, Dublin 18.

PROJECT:	**GLENAMUCK NORTH SOUTHERN SITE - 2411**
CLIENT:	**DURKAN GLENAMUCK DEV.LTD.**
DATE:	**DECEMBER 2025**
ISSUE NO:	**LRD STAGE 3**
ISSUED BY:	**ROGER MULLARKEY**

DUNCREEVAN,
KILCOCK,
Co.KILDARE
Ph: 01 6103755
Mob: 087 2324917
Email: info@rmullarkey.ie
Web www.rmullarkey.ie

TABLE OF CONTENTS

1.0 Introduction

1.1 This document relates to the Flood Risk Assessment (FRA) for a proposed residential development located on lands at located at Glenamuck North, Glenamuck Road, Kilternan, Dublin 18, known as "Southern Site".

1.2 We, Roger Mullarkey & Associates, were appointed by Durkan Glenamuck Developments Ltd.to carry out the Site Specific Flood Risk Assessment report to accompany the suite of other drawings and documentation relating to the proposed residential development at the above noted address.

1.3 The site application area is c.3.3Ha and the total drained S/W area in two separate catchments is 2.62Ha. The existing lands are currently greenfield. A watercourse bounds part of the subject lands and is known as the Glenamuck Stream/River and is also referred to as the Carrickmines Stream_010 (EPA Ref.IE_EA_10C040350). In this document the watercourse is referred to as "The Glenamuck Stream".

Fig.1 – Site Location

1.4 The site is bounded to the north and east by the recently completed Glenamuck District Distributor Road (GDDR) and the substantially complete Glenamuck Link Distributor Road (GLDR) in Kilternan, Dublin18. These roads are part of the DLRCC Glenamuck District Roads Scheme (GDRS) project. This project will be referred to as the GDRS throughout this report.

1.5 The proposed development will consist of a residential development of 135No. units. Please refer to Thornton O'Connor Planning Consultants for a full development description.

1.6 In accordance with the requirements set out in the DoEHLG and OPW published guidelines *The Planning System and Flood Risk Management 2009* (the Guidelines) and the Strategic Flood Risk Assessment Policy of Appendix 15 of the Dun Laoghaire Rathdown County Development Plan 2022 – 2028 a Site Specific Flood Risk Assessment (SSFRA) is carried out for this application.

1.7 The purpose of the SSFRA is to scope for possible sources of flooding, assess the types of flood risk for the proposed development and to consider if there are any possible impacts on flood risk elsewhere due to the development. Where appropriate, the SSFRA recommends flood mitigation and management measures and identifies residual risks, if any should remain after the implementation of the identified measures.

1.8 The report is intended for the sole use of the applicant, their elected agents and advisors and, further, solely for the purpose for which it was originally commissioned. It may not be assigned or copied to third parties or relied upon by third parties.

2.0 Flood Risk Guidelines and the Planning System

2.1 The Planning System and Flood Risk Management, Guidelines for Planning Authorities (the Guidelines) was published in November 2009. The main purpose of the Guidelines is to ensure that sustainable development can be delivered by integrating flood risk management into the planning process.

2.2 The core objectives of the guidelines are to;

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flooding elsewhere, including that which may arise from surface water runoff;

- Ensure effective management of residual risks for development permitted in floodplains;
- Avoid unnecessary restriction of national, regional, or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders;
- Ensure that the requirements of EU and national law in relation to the environment and nature conservation are complied with at all stages of flood risk management.

2.3 A staged approach is adopted to the Flood Risk Assessment (FRA) as follows;

2.4 *Stage 1 - Flood risk identification* – identify whether there may be any flooding or surface water management issues related to either the area or regional planning guidelines, development plans and LAP's or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels.

2.5 *Stage 2 - Initial flood risk assessment* – to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed.

2.6 *Stage 3 Detailed flood risk assessment* – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

2.7 From the Guidelines Section 3.1, the broad philosophy underpinning the sequential approach in flood risk management is laid out as follows;

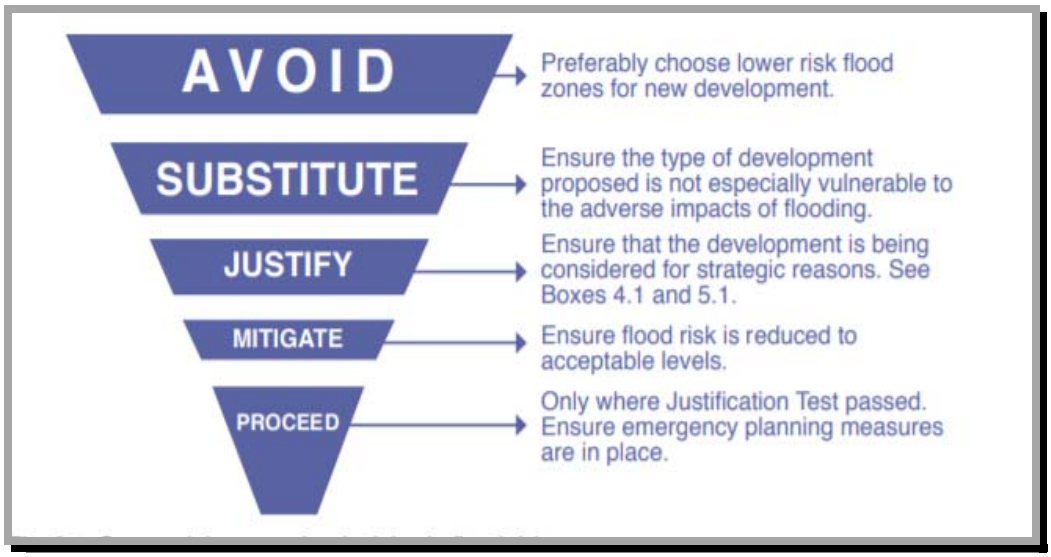


Fig.2 – Extract from *Section 3.1* **of the** *Guidelines*

2.8 The sequential approach to planning is a key tool in ensuring that development, particularly new development, is first and foremost directed towards land that is at low risk of flooding.

2.9 The sequential approach described in Fig.3 above should be applied to all stages of the planning and development management process and is applicable in the layout and design of development within a specific site at the development management stage.

2.10 The following flow chart from Section 3.2 of the Guidelines describes its mechanism for use in the planning process.

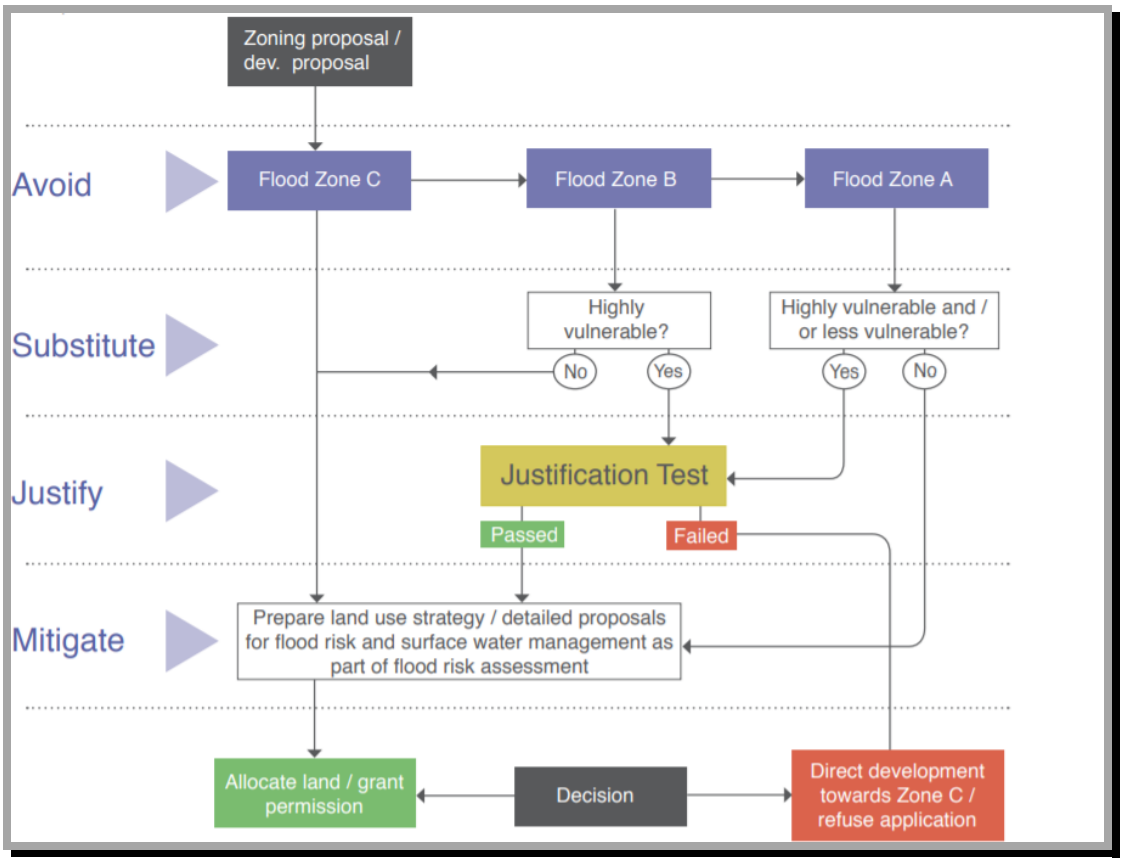


Fig.3 – Extract from *Section 3.2* **of the** *Guidelines*

2.11 There are 3 types or levels of flood zones defined in the Guidelines and are as described in Table 1 below;

Flood Zone	Description
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)
B	Where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 years and 1% or 1 in 100 years for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding)
C	Where the probability of flooding from rivers and sea is low (less than 0.1% or 1 in 1000 years for both river and coastal flooding). Flood Zone C covers all areas of the plan which are non in Zones A or B.

Table 1 – Flood Zones

2.12 The following table extracted from the Guidelines section 3.5 defines the Vulnerability Classes of various types of development.

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	Garda, ambulance and fire stations and command centres required to be operational during flooding; Hospitals; Emergency access and egress points; Schools; Dwelling houses, student halls of residence and hostels; Residential institutions such as residential care homes, children's homes and social services homes; Caravans and mobile home parks; Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.
Less vulnerable development	Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste); Mineral working and processing; and Local transport infrastructure.
Water-compatible development	Flood control infrastructure; Docks, marinas and wharves; Navigation facilities; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).

*Uses not listed here should be considered on their own merits

Fig.4 – Extract from *Section 3.5* **of the** *Guidelines*

2.13 The vulnerability of class of a development and the identified flood zone are used to determine the appropriateness of the development proposed and which types of development would need to undergo a Justification Test as per the extracted table from section 3.6 of the Guidelines below;

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Fig.5 – Extract from *Section 3.6* **of the** *Guidelines*

2.14 Should the review of the sequential approach determine that a Justification test is necessary ,i.e., a development lies in a high/moderate risk of flooding and be inappropriate as per the Justification test able as above, the following table extracted from the Guidelines section 5.15 needs to be satisfied;

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Fig.6– Extract from *Section 5.15* **of the** *Guidelines*

3.0 Site Specific Flood Risk Assessment

3.1 General

3.1.1 The site is proposed on greenfield land located at Glenamuck North, Glenamuck Road, Kilternan, Dublin 18, known as "Southern Site".

Fig.7 – Site Location from Google Maps

3.1.2 The site application area is c.3.3Ha but the drained S/W area is in two separate catchments equals c.2.62Ha. and the drainage design is discussed in detail in the separate Engineering Infrastructure & Stormwater Impact Assessment report accompanying this LRD Stage 3 submission.

3.1.3 The site is bounded to the north and east by the recently constructed DLRCC Glenamuck District Roads Scheme and is henceforth referred to as the GDRS in his report. To the NW of the site a watercourse bounds part of the subject lands and is known as the Glenamuck Stream and is also referred to as the Carrickmines Stream_010 (EPA Ref.IE_EA_10C040350). In this document the watercourse is referred to as "*The Glenamuck Stream*". An existing recently constructed residential development (Glenamuck Manor) bounds the southwest of the site and to the west lies a thickly wooded field and the landholding of a detached resedential dwelling (Shaldon Grange). The gardens of an existing detached residential dwelling (Westgate) and its greater landholding bounds the southeast of the site.

3.1.3 The topography generally has a natural split in catchment with approximately half of the site sloping down towards the Northwest and the other half sloping downwards towards the Northeast. The topography undulates between existing gradients of approximately 1/40 to 1/12, with some localised dips down towards the Glenamuck Stream at 1/6. A site survey drawing is included in the application and can be viewed as background on the drawing RMA Dwg.No.2411/100 and is summarised in Fig 8 below.

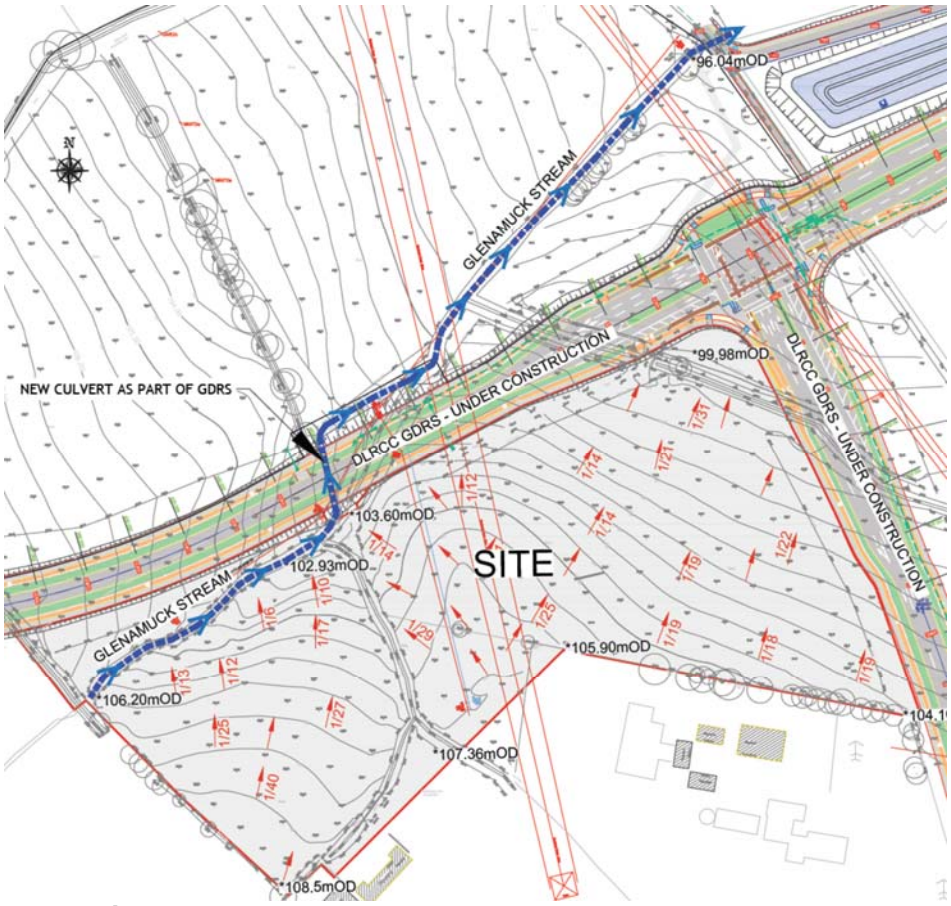


Fig.8– Topography

3.1.4 A Road & Block levels drawing has been prepared as part of this application and reference should be made to Dwg.No.2411/100 in this regards. Generally, the proposed road levels and house levels balance across the existing site levels.

3.1.5 The following assessment will identify the potential sources of flooding and categorise the risk as either very low, low, medium, high, and very high.

3.1.6 The risks categorised above are based on the judgement and experience of the Engineer carrying out the assessment and based on the documentation sourced from the Flood Risk Indicator sources as noted in Section 3.3 of this report.

3.1.7 The initial assessment process will involve examining the flood risk indicators. Where it is demonstrated that there is a risk of flooding the study will progress to a more detailed flood risk assessment, if required. Each of the below 5 potential sources of flood risk will be assessed in this regards.

3.2 Potential Sources of Flood Risk

3.2.1 **Tidal**
Coastal flooding is caused by higher sea levels than normal, largely because of storm surges, resulting in the sea overflowing onto the land.

3.2.2 **Fluvial**
Caused by the overtopping of rivers/streams when the capacity of a watercourse is exceeded or the channel is blocked or restricted, and excess water spills out from the channel onto adjacent low-lying area.

3.2.3 **Pluvial**
Caused when the intensity of rainfall events cannot be absorbed into the ground or urban drainage systems cannot effectively convey the flowrates.

3.2.4 **Groundwater**
Groundwater flooding occurs when the level of water stored in the ground, the water table, rises because of prolonged rainfall. Groundwater flooding tends to be very local and result from interactions of site specific factors such as tidal variations.

3.2.5 **Human/Mechanical Error**
Caused by blockages in piped systems or intervention of/failure of mechanical devices.

3.3 Flood Risk Indicators

3.3.1 The initial flood risk identification involves a scoping review of existing available information and datasets. The following source indicators were researched as part of the Stage 1 process;

- UÉ/DLRCC Drainage Records maps
- Available OPW flood maps and reports (from *floodmaps.ie*)
- DLRCC Carrickmines/Shanganagh River Catchment Study
- DLRCC Kilternan Glenamuck Local area Plan 2025
- DLRCC Development Plan– Appendix 15-Strategic Flood Risk assessment
- DLRCC GDRS published SSFRA
- OPW Eastern CFRAM study
- OPW PFRM mapping
- ECFRAM Maps
- National Indicative Fluvial Maps (NIFM)
- Geological Survey of Ireland (GSI) website
- Teagasc soils data sets
- Ordnance Survey mapping
- Topographical survey
- Site Investigation report
- Site walkover visits

3.4 Tidal Flood Risk

3.4.1 Tidal flooding is caused by higher sea levels than normal, largely because of storm surges, resulting in the sea overflowing onto the land. There are also tidal effects on groundwater levels.

3.5 Tidal Flood Risk Indicators

3.5.1 Reference to land mapping websites such as google maps/OSI mapviewer indicate that this site is more than 5km from the coast. The site topographical survey demonstrates that the land is elevated at c.105mOD Malin Head.

3.6 Initial Tidal Flood Risk Assessment

3.6.1 Based on the remote distance from the coastline and the elevated nature of the site, in our opinion there is no risk of Tidal flooding on this site.

3.7 Fluvial Flood Risk

3.7.1 Fluvial river/stream flooding occurs when the capacity of a watercourse is exceeded or the channel is blocked or restricted, and excess water spills out from the channel onto adjacent low-lying area.

3.8 Fluvial Flood Risk Indicators

3.8.1 Appendix 15 of the DLRCC CDP "Strategic Flood Risk Assessment" has created Flood Zone maps for the DLRCC area. Flood Zone Map No.9 published in the CDP indicates portions of the Glenamuck Stream as Flood Zone A where the watercourse floods locally. Part of that flooding lies within the NW portion of the subject site, refer to Fig.9 below. As is stated in the Kilternan Glenamuck LAP,the National Indicative Fluvial Maps (NIFM) were used in the preparation of the CDP and Kilternan Glenamuck LAP and use of the NIFM is indicative and should not be used as the sole basis for defining flood zones.

Fig.9- Ex DLRCC CDP Flood Zone map No.9

3.8.2 The OPW NIFM (extracted from the Kilternan Glenamuck LAP) mapping of the local area does not identify flooding associated with the Glenamuck Stream as referenced from Fig.10 below;

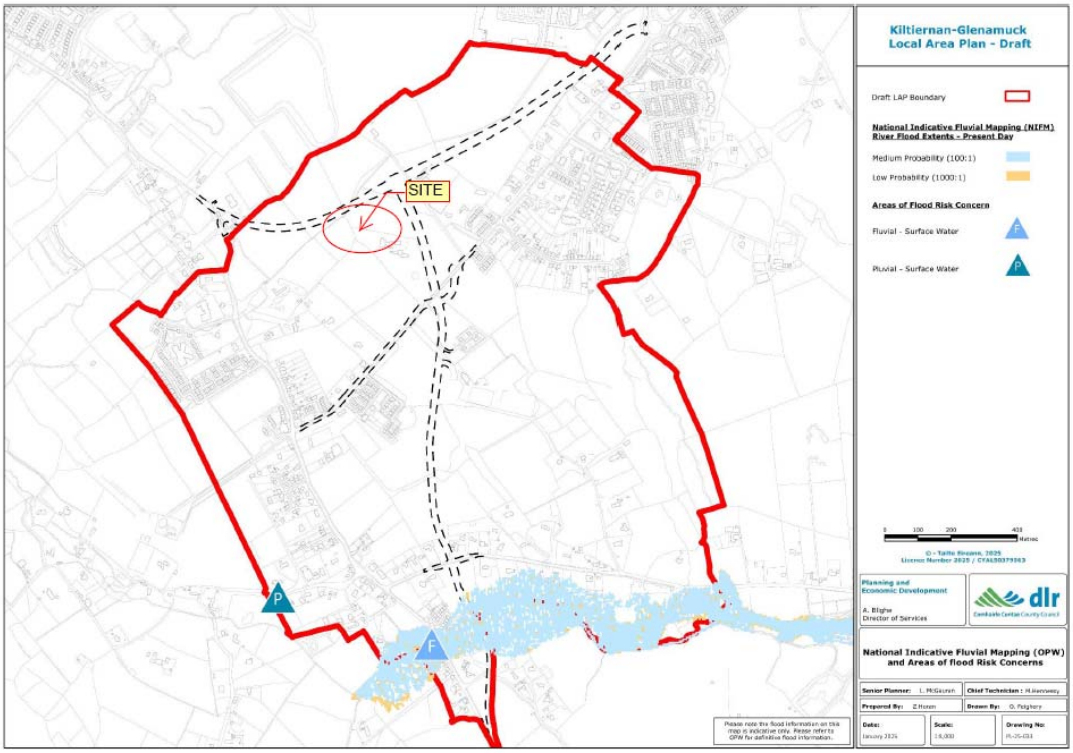


Fig.10- OPW NIFM ex.DLRCC Kilternan Glenamuck LAP

3.8.3 DLRCC commissioned RPS Consulting Engineers to carry out the Fluvial Flooding Report for Carrickmines/Shanganagh River Catchment Stage 1 Final Report 2008. Review of that report determined that there is no risk to flooding of property along the Golfcourse Stream between Enniskerry Road and Carrickmines River. The following Fig.11 is an extract taken from the DLRCC/RPS report.

3.2 GLENAMUCK AND GOLF COURSE STREAM AREA

This area consists of the catchments of the Stepaside Golf Course stream and the Glenamuck stream and the analysis covers the area between Enniskerry Road and the Carrickmines River. There is one predicted flooding location.

Location G1 – Beside Carrickmines Retail Park (DG2052)
Flooding in a field is predicted to occur south of Carrickmines Retail Park near the confluence of the Glenamuck Stream and a stream from the landfill area to the west. No properties are at risk. The flooding is caused by a 600mm diameter culvert restriction on the main Glenamuck Stream. The river is culverted at this location to facilitate a farm access track.

Fig.11 – Extract from DLRCC/RPS Carrickmines/Shanganagh River Catchment Study

3.8.4 A Site Specific Flood Risk Assessment was carried out by DLRCC as part of the, currently under construction, GDRS project. That SSFRA was included in the appendix 14-1 of the Environmental Impact Assessment Report (EIAR) for that project. That SSFRA included a full hydrological assessment of the Glenamuck Stream, various existing undersized culverts within the stream, determined existing potential flood risk areas and proposed mitigation of the flood risk by inclusion of correctly sized culverts where the GDRS traverses the Glenamuck Stream.

3.8.5 In the immediate and near vicinity of this subject site, the GDRS had included 2No. new drainage culverts referenced as "WX01" and "WX02" as identified in Fig.12 below extracted from the DLRCC GDRS SSFRA;

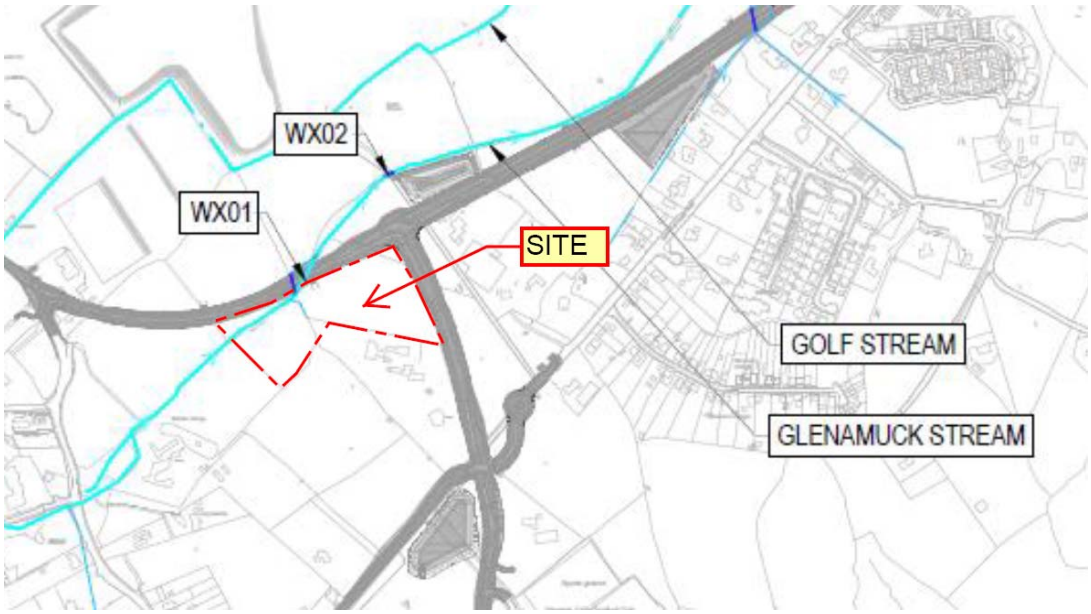


Fig.12- ex. DLRCC GDRS EIAR SSFRA **Appendix 14.1**

3.8.6 The hydrological model generated for the GDRS examined the Q100 and Q1000 flow characteristics of the Glenamuck Stream for both pre and post construction of the GDRS. The pre-construction (existing) Q100 and Q1000 events did not identify out of channel flooding of the Glenamuck Stream in the NW of the subject site. Further downstream of the subject site at a location identified as the "Bective Rangers Access" (ref.WX02), significant surcharging of the stream in the Q100 event was noted as was overtopping of the stream banks at this location during the Q1000 event. Surcharging and overtopping of the bank at this WX02 location was noted as "typically associated with deficiencies in the capacity in the existing culverts". Pre-construction of the GDRS this WX01 culvert was surveyed as a 450mm pipe. Refer to Fig 13 below extracted from the DLRCC GDRS SSFRA (appendix 14 of the GDRS EIAR).

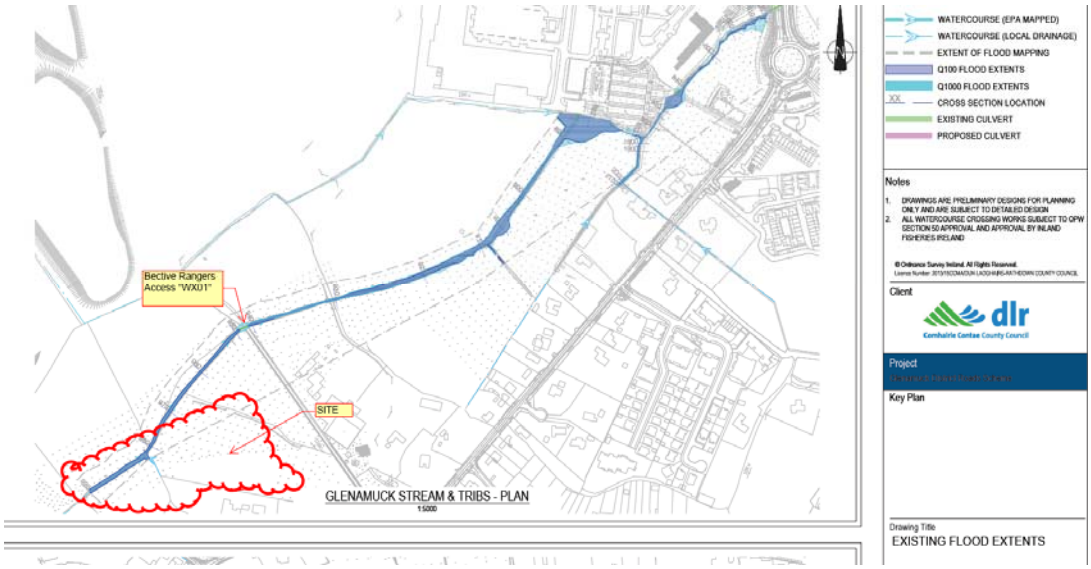


Fig.13- ex. DLRCC GDRS EIAR SSFRA **Appendix 14.1 Figure 1**

3.8.7 The GDRS project (currently under construction as of March 2025) required and has constructed a new culvert diverting the Glenamuck Stream under the GDRS referenced as "WX01" (see Fig.13 above for location). The published hydrological study also modelled the post-construction scenario for the Q100 & Q1000 year events. The results of that drainage model noted that the "Proposed Culvert WX01 reduces modelled Q100 flood levels in the vicinity of the works (by approx.0.16m)". The DLRCC GDRS SSFRA also notes that "The proposed replacement of undersized culvert Ex Cul 1 with WX02 reduces the modelled Q100 flood levels by approx. 0.28m) in the vicinity of the works". Refer to Fig 14 below extracted from the DLRCC GDRS SSFRA (appendix 14 of the GDRS EIAR).

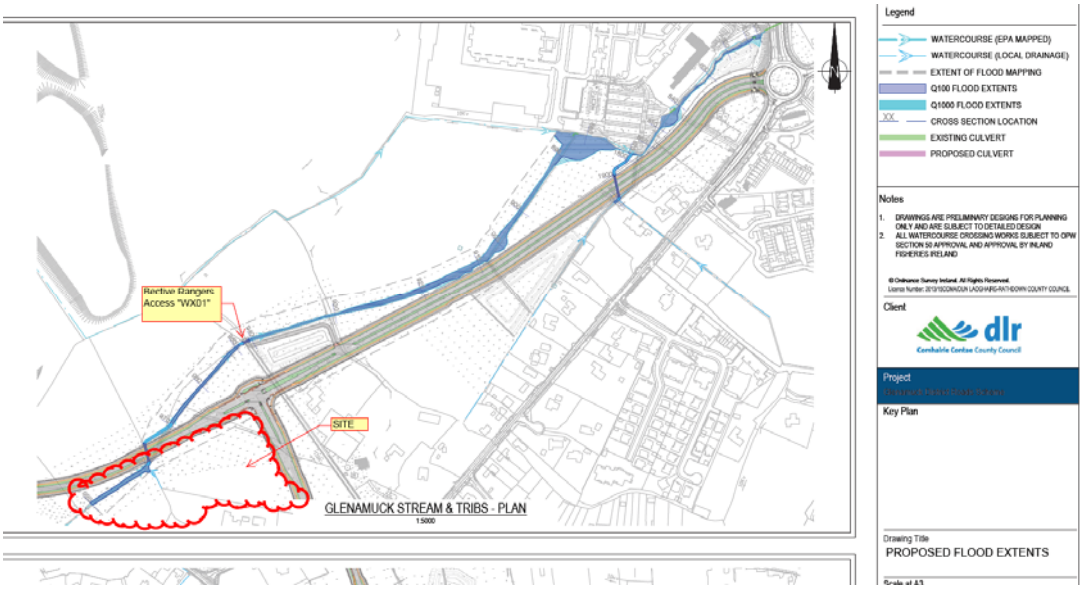


Fig.14- ex. DLRCC GDRS EIAR SSFRA **Appendix 14.1 Figure 2**

3.8.8 The GDRS SSFRA concluded that "the proposed roads are within Flood Zone C and are at low risk of fluvial flooding".

3.8.9 The Appendix C of the GDRS SSFRA includes results of the hydrological model for the Q1000 events at various locations along the Glenamuck stream. The identified locations relevant to this subject site are noted as "990" and "980" as per Fig.15 below extracted from the GDRS SSFRA;

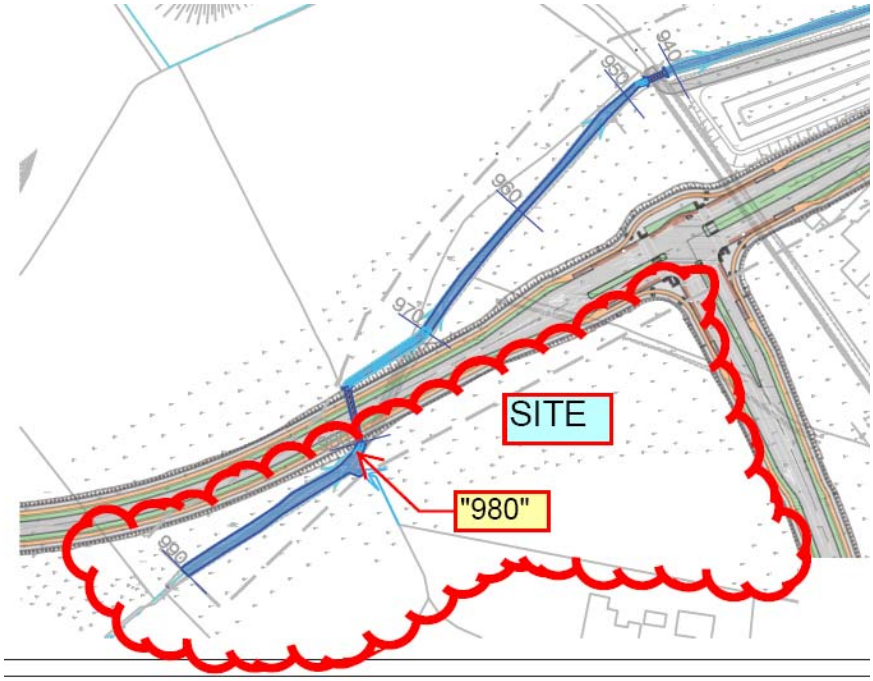


Fig.15- ex. DLRCC GDRS EIAR SSFRA **Appendix 14.1 Figure 2**

3.8.10 The hydrological model results published in the DLRCC GDRS SSFRA Appendix C list the various paramaters and associated levels/flow rates/etc. The "W.S. Elev" result refers to the elevation of the surface of the water at that section and at location "980" is noted as 101.89mOD for the Q1000 year event for the post-construction, i.e. after the GDRS culvert WX01 is installed. Another value listed in the hydrological model results is called the "E.G Elev" which refers to the elevation of the Energy Grade Line, which is the sum of the actual water surface elevatuion and the additional head derived from the flow velocity. That "E.G. Elev" level is noted as 101.93mOD and is the highest modelled flood level at location "980" which is at the relevant point on the subject sites lands.

3.8.11 Reference to the topographical survey carried out on the subject site indicates that the existing ground levels at/around the proposed housing c.18m from "980" or "WX01" is at an elevation of c.104.0 mOD. Furthermore, the proposed finished floor level of the lowest house in this area is 104.30mOD. That is, the lowest FFL is c. 2.37m above the highest water level in the Glenamuck Stream during the Q1000 year

event. Refer to Fig.16 below for an extract from the DLRCC GDRS SSFRA hydrological model results;

HEC-RAS Profile: Q1000

River	Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
					(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Glenamuck Stream	1	990	Q1000	proposed	1.93	104.69	105.28	105.28	105.47	0.082111	1.91	1.01	2.79	1.01
Glenamuck Stream	1	990	Q1000	existing	1.93	104.69	105.39	105.28	105.50	0.037589	1.44	1.34	3.07	0.70
Glenamuck Stream	1	980	Q1000	proposed	1.93	101.08	101.89	101.55	101.93	0.009810	0.90	2.15	3.65	0.37
Glenamuck Stream	1	980	Q1000	existing	1.93	101.14	101.77	101.63	101.85	0.028990	1.30	1.49	3.41	0.63

Fig.16 – Extract from GDRS SSFRA appendix C

3.8.12 Research into the flooding history of the area on *floodmaps.ie* website determined that there was no flooding in the immediate area of the site. Refer to Fig.17 below. It is noted that the flood point markers on the OPW National Flood Hazard map extract are located c.780m downhill of the subject site and the published DLRCC/OPW summary reports relating to those locations did not record flooding occurring at the subject site.

Fig.17 – Extract from the OPW National Flood Hazard Map (*floodmaps.ie*)

3.8.13 The OPW has published the Catchment Flood Risk Assessment Management Studies and they have created a website portal for accessing the available results and mapping at *www.cfram.ie*. & *www.floodinfo.ie*

3.8.14 The mapping published indicates the flood extent boundaries for various return period events. These Annual Exceedance Probability (AEP) events of 10%, 1% and 0.1% (or 1 in 10 year, 1 in 100 year and 1 in 1000 year) were examined as part of the CFRAM mapping. Fig.18 below indicates the studied areas as shown in shaded blue.

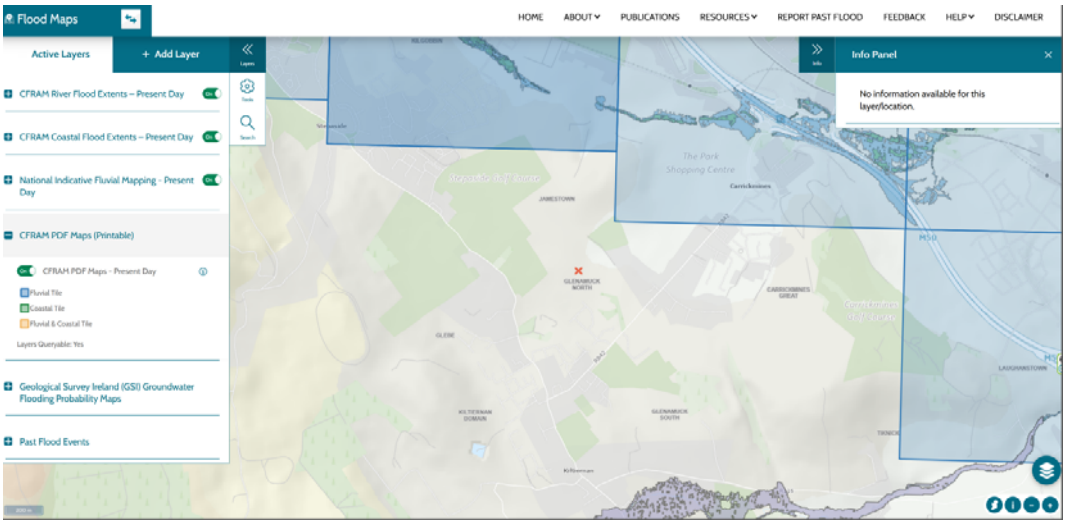


Fig.18 – Extract from CFRAM

3.8.15 It is apparent the CFRAM study (as shown in Fig.19 above in blue shading) has not been carried out in the immediate vicinity of Kilternan and is concentrated on the known Shanganagh-Carrickmines River Fluvial Extents area.

3.8.17 Local field drainage ditches on the subject site have been cut-off/built over from upstream development/s over the years. When visually inspected it was apparent that there was some low flow in one of the old drains in the southwest corner of the subject site. The drain in question was assessed and determined to be a continuation of a land drain constructed below the recently completed Glenamuck Manor housing scheme. It was noted to be a 225mm diameter plastic pipe and drains part of a private property upstream called "*Shaldon Grange*". Discussions were held with the Water Services Department regarding this element and it was determined that to avoid any conflict with the proposed attenuation system, the existing drain would be diverted into a new 300mm diameter pipe that remains independent of the proposed attenuated system and this pipe will pass through the development to a new outfall into the Glenamuck Stream. Refer to Dwg.2411/101 for further detail. All other existing on-site field drains for the proposed development are to be intercepted using local land/french drains and be connected to the new pluvial system connecting back into the Glenamuck Stream further downstream avoiding the proposed new attenuated system.

3.8.18 In preparation of this SSFRA, discussions were held with the previous landowner of the subject lands who has lived immediately adjacent to this site since 1971. The landowner was queried regarding any known flooding of the Glenamuck Stream at or onto the subject site and it was noted that there was no such flooding in his tenure on the lands.

3.8.19 4No.Site visits/walkovers were carried out (Aug & Sept 2024 and May & Aug 2025) in researching for this SSFRA and no visible evidence of localised flooding onto the subject site. It is noted that these visits took place in dry weather. The topography of the land slopes downwards to the stream and the developable areas were noted to be at a higher elevation than the stream banks.

3.9 Initial Fluvial Flood Risk Assessment

3.9.1 Based on the research into the available published reports, studies and DLRCCs own GDRS hydrological model in our opinion there is a low risk of fluvial flooding onto the development area of the proposed site.

3.10 Pluvial Flood Risk

3.10.1 Pluvial flooding is caused when the intensity of rainfall events cannot be absorbed into the ground or urban drainage systems cannot effectively convey the flowrates.

3.11 Pluvial Flood Risk Indicators

3.11.1 Reference was made to the available drainage records drawings of Irish Water/DLRCC. There is an existing 225mm diameter S/W pipe crossing the site from south to north draining the existing Glenamuck Manor housing development located to the southwest of the proposed development. The flowrate into this pipe from the Glenamuck Manor development has been restricted by agreement with DLRCC Drainage Dept. to a maximum of flow of 23.8 l/s as was determined from reading of the published planning file for that development. This 225mm pipe was laid at a gradient of c.1/41 yielding a flowrate capacity of c.114 l/s.

3.11.2 This existing S/W pipe has been maintained in its current location and extended by the GDRS project to continue its outfall into the Glenamuck Stream on the north side of the new GDRS.

3.11.3 The flow capacity of this pipe is c.5 times greater than the maximum attenuated flowrate in the pipe and the depth of the pipe is between 2 to 4m below the existing ground levels

3.11.4 There are no available records of flooding associated with this existing 225mm S/W pipe.

3.11.5 There is also an existing 225mm diameter foul sewer crossing the site, laid in parallel with the above noted S/W, serving the Glenamuck Manor residential development. This foul pipe is laid at a gradient of c.1/21 yielding a flowrate capacity of c.114 l/s, similar to that of the S/W. The peak discharge flowrate emanating from the Glenamuck Manor project was noted to be c.6.5 l/s. Based on the published flowrate figures it is apparent that the foul pipe crossing the site has a capacity in excess of

17 times that of the peak rate foul flows coming through from Glenamuck Manor.

3.11.6 There are no available records of flooding associated with this existing 225mm Foul pipe.

3.11.7 Also, in reference to the design calculations contained in the appendix of the main Engineering Infrastructure & Stormwater Impact Assessment report accompanying the application, the surface water discharge rate from the site has been restricted to the allowable agricultural greenfield run off rate Qbar (19.1 l/s) as determined from the DLRCC recommended HR Wallingford online assessment tool. The Qbar rate was determined based on the site topography, soil conditions and drained site area.

3.8.7 As is recommended in the DLRCC Stormwater Management Policy, the HR Wallingford UKSuDS Greenfield runoff rate estimation tool was used to calculate the Qbar for the site. The overall total S/W outfall rate from the proposed development has been calculated using the drained site area of c.2.62Ha (not the application "redline" area). **Qbar** was determined to be **= 19.1l/s**. Refer to the main application submission Dwg.No.'s 2411/101 for the layout and detail of the proposed S/W infrastructure.

3.12 Initial Pluvial Flood Risk Assessment

3.12.1 As the risk of pluvial flooding from the new infrastructure planned is not deemed as a low risk occurrence and the vulnerability of residential development is deemed as high, it is seen as appropriate that a detailed pluvial flood risk assessment be reviewed.

3.13 Detailed Pluvial Flood Risk assessment

3.13.1 The proposed new drainage surface water infrastructure for the development has been designed to cater for flows generated by all storms up to the Q100+20%(climate change) without flooding occurring. The drainage design has also allowed for more than the min.10% Urban Creep allowance as required in the DLRCC Stormwater Management Policy document

3.13.2 This subject site planning application seeks to outfall the attenuated surface water flows into two outfall locations, both of which connect with the Glenamuck Stream. One catchment outfalls into the existing 225mm S/W pipe on the site and the other catchment outfalls to a new connection to the Glenamuck Strem via pipework laid under the GDRS by the DLRCC. Refer to the main infrastructural report for details of same.

3.13.3 The pipe sizes and gradients are designed to convey the storm water flows to two separate attenuation locations where the storage capacity has been designed in each to exceed the Q100+20% event. Calculations for the critical rainfall events have been included in the appendix of the Engineering Infrastructure & Stormwater Impact Assessment report.

3.13.3 The calculated **Q30+20% Climate Change** storm water storage volume for total site is **c.227+262= 539m³** as determined from the MicroDrainage simulation modelling software and is split between the two catchment storage locations.

3.13.4 The calculated **volume for the Q100 +20% Climate Change plus 10% UC event** is **c.416+398= 814m³** as determined from the MicroDrainage simulation modelling software results.

3.13.5 The freeboard achieved in the S/W design exceeds the minimum 500mm requirement as specified in the GDRS as noted in Section 6.16 of the main Engineering Infrastructure & Stormwater Impact Assessment report.

3.13.6 It is noted that there is **interception storage** has not been subtracted from the required attenuation volume nor has it been added to the available storage volume and is therefore considered to be a safer and more conservative approach to attenuation storage estimation.

3.13.7 SuDS elements included in the pluvial design include rain garden planters, roadside filter swales, bio-retention areas, permeable paving systems, catchpits, tree pits, and attenuation storage areas.

3.13.8 An overflow flood route map was prepared (Dwg.No.2411/104) and is included in the appendix of this assessment report. These extreme event overflow follow the natural grassland ground contours overland to a low point grasslands on the subject site.

3.14 Conclusion of the Detailed Pluvial Flood Risk Assessment

3.14.1 In accordance with the sequential assessment approach as per the Guidelines flowchart (section 2.10 above) it is concluded that the requirements have been met and no further assessment is required regarding pluvial flood risk.

3.15 Groundwater Flood Risk

3.15.1 Groundwater flooding occurs when the level of water stored in the ground, the water table, rises because of prolonged rainfall. Groundwater flooding tends to be very local and result from interactions of site specific factors such as tidal variations.

3.16 Groundwater Flood Risk Indicators

3.16.1 Site investigations have revealed that sub surface soil conditions on this site are known to be sandy gravelly CLAY. A soakaway testing report is included in the Appendix 11.6 of the main infrastructure report and the result of which determined that the site is not suitable for soakaway design.

3.16.2 Reference was also made to the online web portal provided by the Geological Survey of Ireland (GSI) as well as the alluvial maps provided by the Teagasc link on the GSI website.

3.16.3 Ground water was noted as encountered during the soakaway trial holes investigations at levels varying between 1-1.5m but it is noted that ground water levels can vary depending on the time of year.

3.16.4 There were no recorded groundwater issues for the subject site/area on the Geological Survey of Ireland online datasets and reference can be made to the summary groundwater map report included in the appendix of this report.

3.16.5 Site walkovers were carried out in varying weather conditions and the water table was not evident during the visits.

3.16.6 In reference to the Road and Block Levels drawings 2411/100 it is noted that all finished floor levels of buildings on the site are to be constructed above the ground level and above the adjacent roads.

3.17 Initial Groundwater Flood Risk Assessment

3.17.1 The indicators described above suggest that the site is not at risk of flooding from groundwater and accordingly a detailed assessment of the flooding mechanism is not required and, in our opinion, there is a low risk of groundwater flooding onto the site

3.18 Human/Mechanical Error Flood Risk

3.18.1 There are flood risks associated with misuse, neglect, damage, intervention of or lack of intervention attributable to mechanical failure or human error. Such a risk can be caused by blockages in piped systems or lack of maintenance of mechanical devices.

3.19 Human/Mechanical Error Flood Risk Indicators

3.19.1 Based on the experienced professional judgement of the engineering designer and in consultation with the Drainage Department of DLRCC, it has been considered that blockages can occur with systems for many reasons.

3.20 Initial Human/Mechanical Error Flood Risk Assessment

3.20.1 As there is some risk of pluvial flooding from human/mechanical error, the new infrastructure is not deemed as a low risk occurrence and the vulnerability of residential development is classified as high (refer to Section 2.12 of this report), it is seen as appropriate that a more detailed human/mechanical error flood risk assessment be reviewed.

3.21 Detailed Human/Mechanical Error Flood Risk Assessment

3.21.1 As part of the assessment for blockages in the system, the MicroDrainage design model was run on the basis that there was a near 100% blockage of the outfall vortex control devices for a 120 minute period. Therefore, the model was run with a reduction in the outfall rates from each Hydrobrake down to 0.1 l/s for a 120min duration in the Q100 + 20% event. These resulting volumes and top water level are contained beneath the ground level in both storage areas and no above ground flooding was evident in the drainage model.

3.21.2 Notwithstanding that the above noted blocked outfall model simulation contains the water below ground, in the event of an unprecedented scenario, an above ground flood path/exceedance flow route assessment was carried out to determine and manage the flooding routes across the site and these flow routes are represented on Dwg.No.2411/104. Dropped kerbs and profiling of the local landscape will be constructed to direct the overland flows towards the lowest points of the sites landscaped areas. Refer to Dwg.No.2411/104 and to Appendix 6.1 for these calculation results.

3.22 Conclusion of the Detailed Human/Mechanical Error Risk Assessment

3.22.1 In accordance with the sequential assessment approach as per the Guidelines flowchart (section 2.10 above) it is concluded that the requirements have been met and no further assessment is required regarding human/mechanical error flood risk.

4.0 Source Pathway Receptor Model

4.1 A source-pathway-receptor model as per the Appendix A 1.3 of the Technical Appendices accompanying *the Guidelines* was created and is shown in the Table 2 below. This model indicates the possible sources of flood water and the pathway to the receptors (the buildings/people) and the risks associated based on the findings of the FRA research.

Source	Pathway	Receptor	Likelihood	Consequence	Risk
Tidal	c.5km from coast and elevated >100m above sea level	People/ property	Remote	N/A	None
Fluvial	Overtopping of the Glenamuck Stream	People/ property	Possible	Moderate	Low
Pluvial (Surface water)	Flooding from drainage systems	People/ property	Possible	Low	Low
Groundwater	Rising water table	People/ property	Possible	Low	Low
Human/ Mechanical Error	Blockage of drainage	People/ property	Possible	Moderate	Low

Table 2 – Source Pathway Receptor Model

5.0 SSFRA Conclusion

5.1 As is required under the Dun Laoghaire Rathdown County Development Plan 2022 – 2028 Appendix 15 – Strategic Flood Risk assessment and in accordance with the requirements set out in the DoEHLG and OPW published guidelines *The Planning System and Flood Risk Management 2009* (the Guidelines), a Site Specific Flood Risk Assessment (SSFRA) has been carried out for this application.

5.2 In accordance with the above noted Guidelines, as sequential staged approach was adopted in assessing the flood risk for the subject development.

5.3 It was determined in accordance with the Guidelines that the lands on which the subject development is located is within a **flood Zone C** as defined in the Guidelines.

5.4 It is concluded that a residential development is appropriate on the subject lands.

5.5 It is concluded that the above level of assessment is sufficient given the nature of the development and the level of flood risk identified for the site.

5.6 Based on the information available it is concluded that this site is suitable for development and has an overall low risk of being affected by flooding.

6.0 APPENDIX

Contents:

Appendix 6.1

Blocked Outfalls - Micro Drainage Calculations

Appendix 6.2

Dwg.2411/104 - Flood Exceedence Routing

Appendix 6.3

LAP Water Features Map PL-25-010

Appendix 6.4

CDP Flood Zone Map No.9

Appendix 6.5

OPW Flood Hazard Map & Summary Report

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Catchment 1

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	16.000	Add Flow / Climate Change (%)	20
Ratio R	0.276	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Free Flowing Outfall Details for Catchment 1

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.006		103.550	101.387	101.650	225	0

Simulation Criteria for Catchment 1

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	1.000
Region	Scotland and Ireland	Cv (Winter)	1.000
M5-60 (mm)	16.000	Storm Duration (mins)	30
Ratio R	0.276		

Online Controls for Catchment 1

Hydro-Brake® Optimum Manhole: 7, DS/PN: 1.006, Volume (m³): 5.4

Unit Reference	MD-SHE-0013-1000-1000-1000
Design Head (m)	1.000
Design Flow (l/s)	0.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	13
Invert Level (m)	101.600
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	0.1	Kick-Flo®	0.120	0.0
Flush-Flo™	0.052	0.0	Mean Flow over Head Range	-	0.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.0	0.800	0.1	2.000	0.1	4.000	0.2	7.000	0.2
0.200	0.1	1.000	0.1	2.200	0.1	4.500	0.2	7.500	0.2
0.300	0.1	1.200	0.1	2.400	0.1	5.000	0.2	8.000	0.2
0.400	0.1	1.400	0.1	2.600	0.1	5.500	0.2	8.500	0.2
0.500	0.1	1.600	0.1	3.000	0.2	6.000	0.2	9.000	0.3
0.600	0.1	1.800	0.1	3.500	0.2	6.500	0.2	9.500	0.3

Storage Structures for Catchment 1

Cellular Storage Manhole: 7, DS/PN: 1.006

Invert Level (m) 101.650 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	500.0	0.0	1.500	500.0	0.0	1.501	0.0	0.0

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 1

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 16.000	Cv (Summer) 1.000
Region	Scotland and Ireland	Ratio R 0.276	Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	120
Return Period(s) (years)	2, 30, 100
Climate Change (%)	20, 20, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)
1.000	1	120 minute 2 year Summer I+20%	107.690	106.248	-0.167	0.000	0.15		0.060
1.001	2	120 minute 2 year Summer I+20%	107.350	105.908	-0.137	0.000	0.32		0.127
1.002	3	120 minute 2 year Summer I+20%	107.000	105.277	-0.118	0.000	0.45		0.173
1.003	4	120 minute 2 year Summer I+20%	106.430	105.002	-0.143	0.000	0.28		0.123
1.004	5	120 minute 2 year Summer I+20%	105.250	103.598	-0.202	0.000	0.23		0.105
2.000	6	120 minute 2 year Summer I+20%	107.180	105.738	-0.167	0.000	0.15		0.060
2.001	7	120 minute 2 year Summer I+20%	106.220	104.780	-0.240	0.000	0.09		0.080
2.002	8	120 minute 2 year Summer I+20%	104.500	102.951	-0.189	0.000	0.29		0.141
2.003	9	120 minute 2 year Summer I+20%	104.000	102.725	-0.260	0.000	0.20		0.333
2.004	10	120 minute 2 year Summer I+20%	104.500	102.618	-0.247	0.000	0.24		0.297
2.005	11	120 minute 2 year Summer I+20%	104.220	102.419	-0.246	0.000	0.25		0.333
3.000	12	120 minute 2 year Summer I+20%	105.460	104.007	-0.178	0.000	0.10		0.048
3.001	13	120 minute 2 year Summer I+20%	104.350	102.552	-0.153	0.000	0.22		0.084
4.000	14	120 minute 2 year Summer I+20%	103.400	102.400	-0.225	0.000	0.00		0.000
4.001	15	120 minute 2 year Summer I+20%	104.000	102.212	-0.213	0.000	0.01		0.009
1.005	6	120 minute 2 year Summer I+20%	104.500	102.164	-0.111	0.000	0.81		0.431
1.006	7	120 minute 2 year Winter I+20%	104.500	101.998	0.223	0.000	0.00		166.048

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	1	1.1	9.3	OK
1.001	2	1.4	20.5	OK
1.002	3	1.3	24.3	OK
1.003	4	2.1	27.2	OK

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 1

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.004	5	1.5	29.9	OK
2.000	6	1.5	11.7	OK
2.001	7	2.0	19.9	OK
2.002	8	1.0	23.8	OK
2.003	9	1.0	27.4	OK
2.004	10	0.9	29.4	OK
2.005	11	1.0	31.9	OK
3.000	12	1.6	9.7	OK
3.001	13	0.9	10.0	OK
4.000	14	0.0	0.0	OK
4.001	15	0.4	0.4	OK
1.005	6	1.0	78.5	OK
1.006	7	0.1	0.1	SURCHARGED

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 1

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.000
Region	Scotland and Ireland	Ratio R	0.276
Cv (Summer)	1.000		
Cv (Winter)	1.000		

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	120
Return Period(s) (years)	2, 30, 100
Climate Change (%)	20, 20, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)
1.000	1	120 minute 30 year Summer I+20%	107.690	106.269	-0.146	0.000	0.27		0.084
1.001	2	120 minute 30 year Summer I+20%	107.350	105.943	-0.102	0.000	0.58		0.202
1.002	3	120 minute 30 year Summer I+20%	107.000	105.326	-0.069	0.000	0.82		0.307
1.003	4	120 minute 30 year Summer I+20%	106.430	105.034	-0.111	0.000	0.51		0.188
1.004	5	120 minute 30 year Summer I+20%	105.250	103.634	-0.166	0.000	0.41		0.146
2.000	6	120 minute 30 year Summer I+20%	107.180	105.759	-0.146	0.000	0.27		0.084
2.001	7	120 minute 30 year Summer I+20%	106.220	104.799	-0.221	0.000	0.16		0.107
2.002	8	120 minute 30 year Summer I+20%	104.500	102.994	-0.146	0.000	0.52		0.221
2.003	9	120 minute 30 year Summer I+20%	104.000	102.767	-0.218	0.000	0.36		0.610
2.004	10	120 minute 30 year Summer I+20%	104.500	102.666	-0.199	0.000	0.44		0.479
2.005	11	120 minute 30 year Summer I+20%	104.220	102.469	-0.196	0.000	0.45		0.650
3.000	12	120 minute 30 year Summer I+20%	105.460	104.023	-0.162	0.000	0.17		0.065
3.001	13	120 minute 30 year Summer I+20%	104.350	102.579	-0.126	0.000	0.40		0.117
4.000	14	120 minute 30 year Summer I+20%	103.400	102.400	-0.225	0.000	0.00		0.000
4.001	15	120 minute 30 year Summer I+20%	104.000	102.347	-0.078	0.000	0.03		0.256
1.005	6	120 minute 30 year Summer I+20%	104.500	102.345	0.070	0.000	1.47		1.460
1.006	7	120 minute 30 year Winter I+20%	104.500	102.266	0.491	0.000	0.00		294.818

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	1	1.3	16.5	OK
1.001	2	1.7	36.8	OK
1.002	3	1.5	43.6	OK
1.003	4	2.5	49.1	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 1

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.004	5	1.8	54.2	OK
2.000	6	1.7	20.8	OK
2.001	7	2.4	35.5	OK
2.002	8	1.2	42.8	OK
2.003	9	1.1	49.4	OK
2.004	10	1.1	53.4	OK
2.005	11	1.1	58.2	OK
3.000	12	1.9	17.3	OK
3.001	13	1.1	17.9	OK
4.000	14	0.0	0.0	OK
4.001	15	0.4	1.2	OK
1.005	6	1.3	142.7	SURCHARGED
1.006	7	0.1	0.1	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 1

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.000
Region	Scotland and Ireland	Ratio R	0.276
Cv (Summer)	1.000		
Cv (Winter)	1.000		

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	120
Return Period(s) (years)	2, 30, 100
Climate Change (%)	20, 20, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)
1.000	1	120 minute 100 year Summer I+20%	107.690	106.282	-0.133	0.000	0.35		0.098
1.001	2	120 minute 100 year Summer I+20%	107.350	105.966	-0.079	0.000	0.74		0.263
1.002	3	120 minute 100 year Summer I+20%	107.000	105.416	0.021	0.000	1.05		0.584
1.003	4	120 minute 100 year Summer I+20%	106.430	105.053	-0.092	0.000	0.65		0.248
1.004	5	120 minute 100 year Summer I+20%	105.250	103.656	-0.144	0.000	0.53		0.171
2.000	6	120 minute 100 year Summer I+20%	107.180	105.771	-0.134	0.000	0.34		0.098
2.001	7	120 minute 100 year Summer I+20%	106.220	104.811	-0.209	0.000	0.20		0.124
2.002	8	120 minute 100 year Summer I+20%	104.500	103.021	-0.119	0.000	0.67		0.270
2.003	9	120 minute 100 year Summer I+20%	104.000	102.791	-0.194	0.000	0.47		0.773
2.004	10	120 minute 100 year Summer I+20%	104.500	102.696	-0.169	0.000	0.57		0.590
2.005	11	120 minute 100 year Summer I+20%	104.220	102.498	-0.167	0.000	0.58		0.860
3.000	12	120 minute 100 year Summer I+20%	105.460	104.032	-0.153	0.000	0.22		0.076
3.001	13	120 minute 100 year Summer I+20%	104.350	102.595	-0.110	0.000	0.51		0.142
4.000	14	120 minute 100 year Winter I+20%	103.400	102.442	-0.183	0.000	0.00		0.042
4.001	15	120 minute 100 year Summer I+20%	104.000	102.442	0.017	0.000	0.05		0.596
1.005	6	120 minute 100 year Summer I+20%	104.500	102.442	0.167	0.000	1.88		2.334
1.006	7	120 minute 100 year Winter I+20%	104.500	102.441	0.666	0.000	0.00		378.309

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	1	1.4	21.3	OK
1.001	2	1.8	47.5	OK
1.002	3	1.5	56.0	SURCHARGED
1.003	4	2.6	63.1	OK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 1

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.004	5	1.9	69.8	OK
2.000	6	1.8	26.9	OK
2.001	7	2.5	45.7	OK
2.002	8	1.3	55.3	OK
2.003	9	1.2	63.8	OK
2.004	10	1.1	69.0	OK
2.005	11	1.2	75.1	OK
3.000	12	2.0	22.4	OK
3.001	13	1.1	23.0	OK
4.000	14	0.0	0.0	OK
4.001	15	0.4	2.2	SURCHARGED
1.005	6	1.7	183.1	SURCHARGED
1.006	7	0.1	0.1	SURCHARGED

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Catchment 2

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	16.000	Add Flow / Climate Change (%)	20
Ratio R	0.276	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Free Flowing Outfall Details for Catchment 2

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.004	S	100.750	97.740	97.000	225	0

Simulation Criteria for Catchment 2

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	1.000
Region	Scotland and Ireland	Cv (Winter)	1.000
M5-60 (mm)	16.000	Storm Duration (mins)	30
Ratio R	0.276		

Online Controls for Catchment 2

Hydro-Brake® Optimum Manhole: S5, DS/PN: S1.004, Volume (m³): 8.8

Unit Reference	MD-SHE-0013-1000-1000-1000
Design Head (m)	1.000
Design Flow (l/s)	0.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	13
Invert Level (m)	97.800
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	0.1	Kick-Flo®	0.120	0.0
Flush-Flo™	0.052	0.0	Mean Flow over Head Range	-	0.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.0	0.800	0.1	2.000	0.1	4.000	0.2	7.000	0.2
0.200	0.1	1.000	0.1	2.200	0.1	4.500	0.2	7.500	0.2
0.300	0.1	1.200	0.1	2.400	0.1	5.000	0.2	8.000	0.2
0.400	0.1	1.400	0.1	2.600	0.1	5.500	0.2	8.500	0.2
0.500	0.1	1.600	0.1	3.000	0.2	6.000	0.2	9.000	0.3
0.600	0.1	1.800	0.1	3.500	0.2	6.500	0.2	9.500	0.3

Storage Structures for Catchment 2

Cellular Storage Manhole: S5, DS/PN: S1.004

Invert Level (m) 98.200 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	450.0	0.0	1.500	450.0	0.0	1.501	0.0	0.0

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 2

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.000
Region	Scotland and Ireland	Ratio R	0.276
Cv (Summer)	1.000		
Cv (Winter)	1.000		

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	120
Return Period(s) (years)	2, 30, 100
Climate Change (%)	20, 20, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)
S1.000	S1	120 minute 2 year Summer I+20%	104.770	103.329	-0.166	0.000	0.16		0.061
S2.000	S2	120 minute 2 year Summer I+20%	104.330	102.393	-0.192	0.000	0.05		0.032
S2.001	S3	120 minute 2 year Summer I+20%	102.870	101.440	-0.230	0.000	0.13		0.453
S1.001	S2	120 minute 2 year Summer I+20%	102.650	101.245	-0.280	0.000	0.14		0.364
S3.000	S5	120 minute 2 year Summer I+20%	102.800	101.497	-0.178	0.000	0.10		0.047
S3.001	S5	120 minute 2 year Summer I+20%	102.730	101.342	-0.153	0.000	0.22		0.122
S1.002	S3	120 minute 2 year Summer I+20%	101.010	99.550	-0.235	0.000	0.30		0.209
S1.003	S4	120 minute 2 year Winter I+20%	100.750	98.595	-0.205	0.000	0.32		0.344
S1.004	S5	120 minute 2 year Winter I+20%	100.750	98.595	0.570	0.000	0.00		173.207

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.000	S1	2.0	16.4	OK
S2.000	S2	1.2	4.5	OK
S2.001	S3	1.4	17.7	OK
S1.001	S2	2.0	43.9	OK
S3.000	S5	0.8	4.5	OK
S3.001	S5	1.7	18.8	OK
S1.002	S3	1.9	69.6	OK
S1.003	S4	1.0	57.0	OK
S1.004	S5	0.1	0.1	SURCHARGED

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 2

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.000
Region	Scotland and Ireland	Ratio R	0.276
Cv (Summer)	1.000		
Cv (Winter)	1.000		

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	120
Return Period(s) (years)	2, 30, 100
Climate Change (%)	20, 20, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)
S1.000	S1	120 minute 30 year Summer I+20%	104.770	103.351	-0.144	0.000	0.28		0.086
S2.000	S2	120 minute 30 year Summer I+20%	104.330	102.406	-0.179	0.000	0.09		0.047
S2.001	S3	120 minute 30 year Summer I+20%	102.870	101.466	-0.204	0.000	0.22		0.515
S1.001	S2	120 minute 30 year Summer I+20%	102.650	101.279	-0.246	0.000	0.26		0.465
S3.000	S5	120 minute 30 year Summer I+20%	102.800	101.512	-0.163	0.000	0.17		0.065
S3.001	S5	120 minute 30 year Summer I+20%	102.730	101.368	-0.127	0.000	0.40		0.170
S1.002	S3	120 minute 30 year Summer I+20%	101.010	99.605	-0.180	0.000	0.53		0.314
S1.003	S4	120 minute 30 year Summer I+20%	100.750	98.909	0.109	0.000	0.82		0.794
S1.004	S5	120 minute 30 year Summer I+20%	100.750	98.908	0.883	0.000	0.00		308.843

PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.000	S1	2.3	29.2	OK
S2.000	S2	1.4	8.1	OK
S2.001	S3	1.6	31.6	OK
S1.001	S2	2.3	78.7	OK
S3.000	S5	0.9	7.9	OK
S3.001	S5	2.0	33.8	OK
S1.002	S3	2.2	124.5	OK
S1.003	S4	1.2	144.2	SURCHARGED
S1.004	S5	0.1	0.1	SURCHARGED

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Catchment 2

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

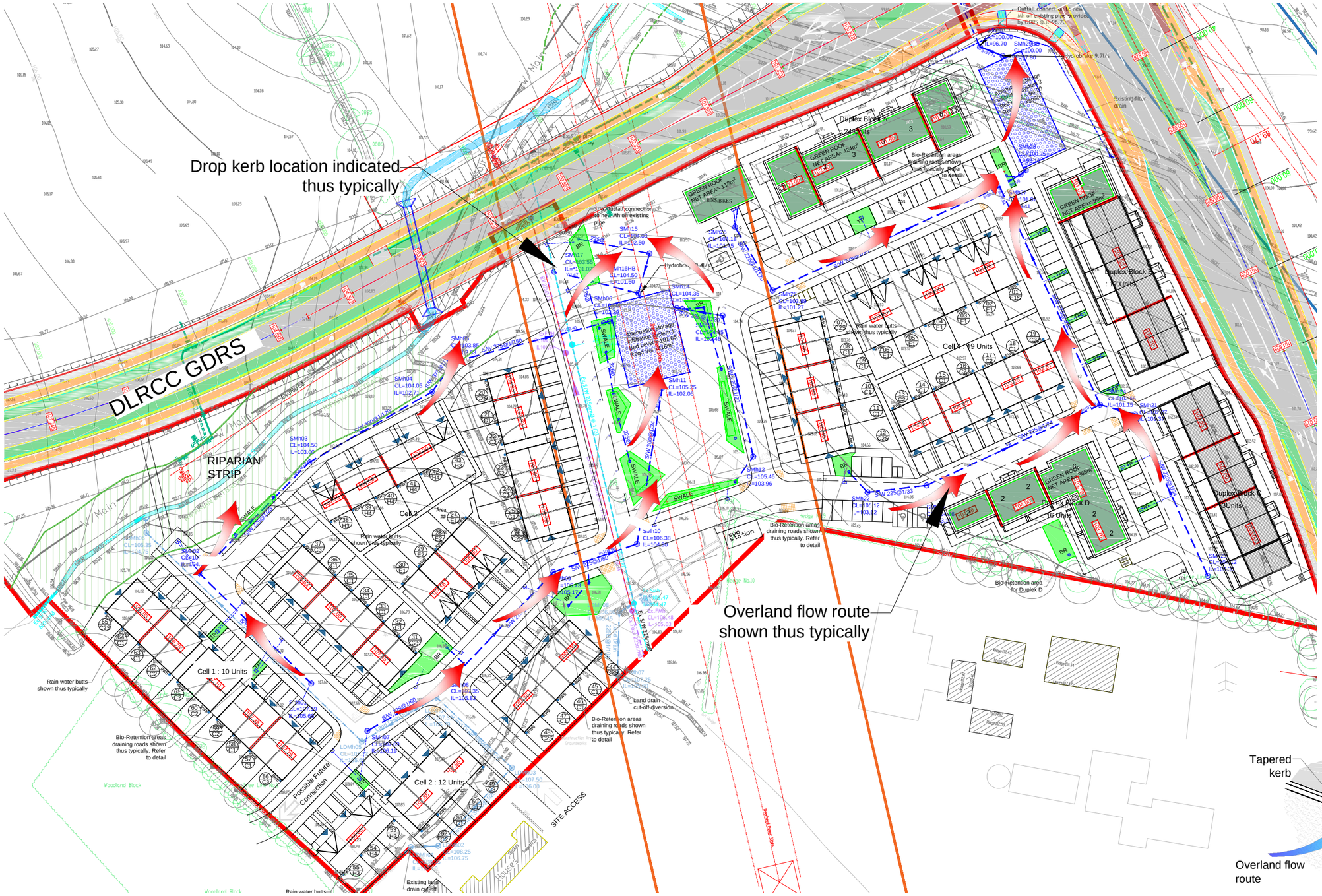
Rainfall Model	FSR	M5-60 (mm)	16.000
Region	Scotland and Ireland	Ratio R	0.276
Cv (Summer)	1.000		
Cv (Winter)	1.000		

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	120
Return Period(s) (years)	2, 30, 100
Climate Change (%)	20, 20, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)
S1.000	S1	120 minute 100 year Summer I+20%	104.770	103.363	-0.132	0.000	0.36		0.100
S2.000	S2	120 minute 100 year Summer I+20%	104.330	102.412	-0.173	0.000	0.12		0.053
S2.001	S3	120 minute 100 year Summer I+20%	102.870	101.480	-0.190	0.000	0.29		0.549
S1.001	S2	120 minute 100 year Summer I+20%	102.650	101.299	-0.226	0.000	0.33		0.532
S3.000	S5	120 minute 100 year Summer I+20%	102.800	101.522	-0.153	0.000	0.22		0.075
S3.001	S5	120 minute 100 year Summer I+20%	102.730	101.384	-0.111	0.000	0.51		0.219
S1.002	S3	120 minute 100 year Summer I+20%	101.010	99.639	-0.146	0.000	0.69		0.421
S1.003	S4	120 minute 100 year Summer I+20%	100.750	99.120	0.320	0.000	1.05		1.106
S1.004	S5	120 minute 100 year Summer I+20%	100.750	99.118	1.093	0.000	0.00		398.727

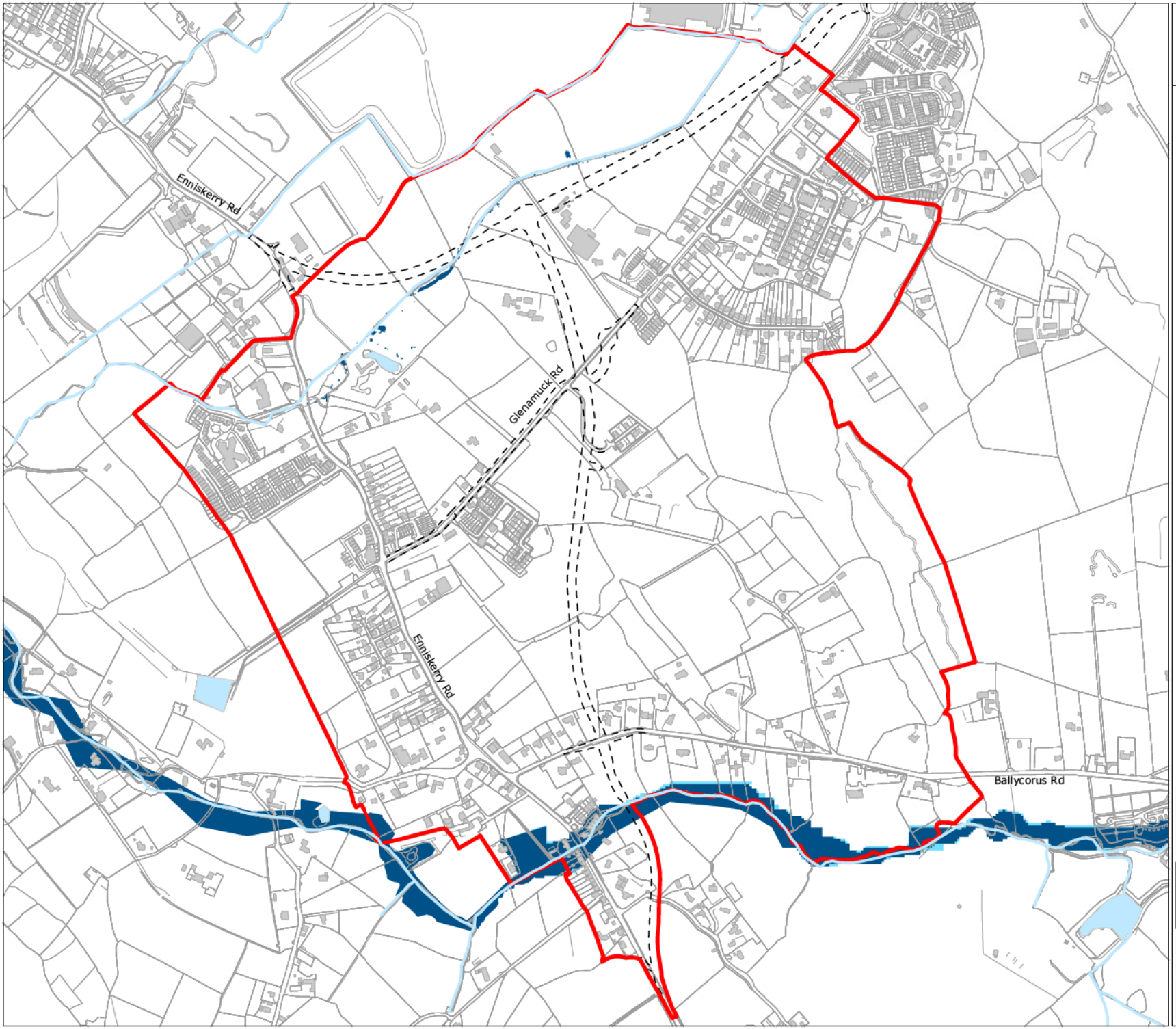
PN	US/MH Name	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.000	S1	2.4	37.7	OK
S2.000	S2	1.5	10.4	OK
S2.001	S3	1.7	40.8	OK
S1.001	S2	2.5	101.5	OK
S3.000	S5	1.0	10.3	OK
S3.001	S5	2.2	43.6	OK
S1.002	S3	2.3	160.7	OK
S1.003	S4	1.2	185.8	SURCHARGED
S1.004	S5	0.1	0.1	SURCHARGED



ROGER MULLARKEY & ASSOCIATES
Consulting Structural and Civil Engineers
Duncreevan, Kilcock, Co.Kildare
Tel: +353 1 610 3755 Mob: +353 87 232 4917
E-mail. info@rmullarkey.ie www.rmullarkey.ie

Project: Glenamuck North	Architect: MCORM		Stage: LRD - Stage 3			
Drawing Title: Exceedance Flow Routing	Date: March'25	Drawn By: RM	Scales: 1:1000	Dwg.No.: 2411/104	Rev.: -	

REV	DATE	DESCRIPTION



Kiltiernan-Glenamuck Local Area Plan - Draft

Draft LAP Boundary

Glenamuck District Roads Scheme

Flood Zone A

Flood Zone B

Rivers (Existing)

Lakes and Ponds (Exisitng)

0 100 200 400 Meters

Planning and Economic Development

A. Blighe
Director of Services

dlr Comhairle Contae County Council

Water features and extract of flood zones from CDP 2022-2028

Senior Planner: L. McGauran	**Chief Technician:** M. Hennessy
Prepared By: Z. Horan	**Drawn By:** O. Feighery

Date:	**Scale:**	**Drawing No:**
February 2025	1:8,000	PL-25-010

Mapping Notes

1. The lines of the Road Proposals shown are diagrammatic only and may be subject to change.
2. Wave Overtopping layer is relevant to the following maps only: Map No's. 2, 3, 4, 7, 10 & 14 unless noted otherwise.
3. These flood maps contain Land Use Zonings & Flooding information only. Please refer to the Land Use Zoning maps for more detailed land use objectives.

Flood Zone Map

COMHAIRLE CHONTAE DHÚN LAOGHAIRE-RÁTH AN DÚIN

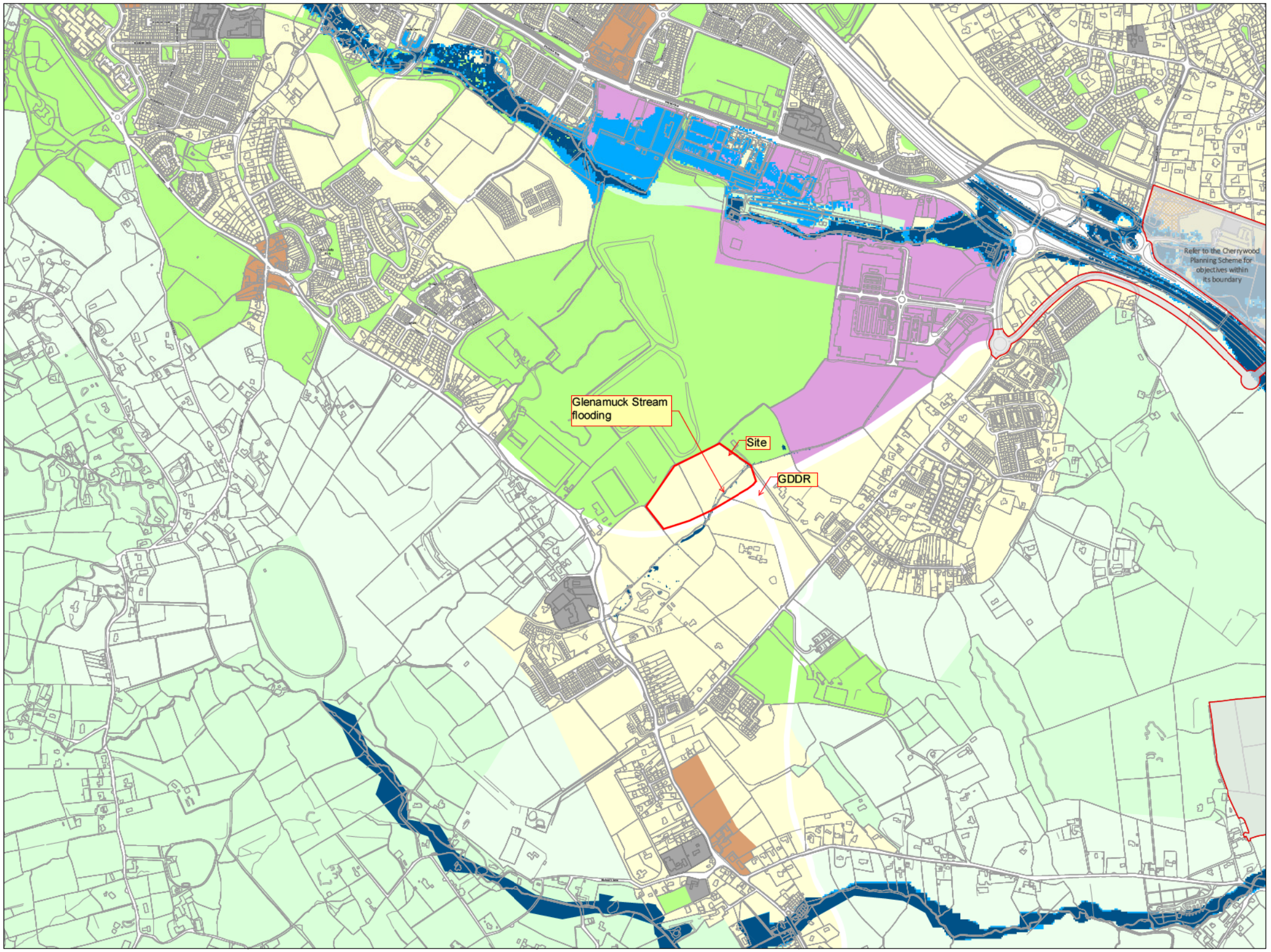
DÚN LAOGHAIRE-RATHDOWN COUNTY COUNCIL

COUNTY DEVELOPMENT PLAN 2022-2028

Adopted March 2022

dlr Comhairle Contae County Council

INDEX



Land Use Zonings

Objective A	To provide residential development and improve residential amenity while protecting the existing residential amenities.
Objective A1	To provide for new residential communities and Sustainable Neighbourhood infrastructure in accordance with approved local area plans.
Objective A2	To provide for the creation of sustainable residential neighbourhoods and preserve and protect residential amenity.
Objective B	To protect and improve rural amenity and to provide for the development of agriculture.
Objective DC	To protect, provide for and-or improve mixed-use district centre facilities.
Objective E	To provide for economic development and employment.
Objective F	To preserve and provide for open space with ancillary active recreational amenities.
Objective G	To protect and improve high amenity areas.
Objective GB	To protect and enhance the open nature of lands between urban areas.
Objective LIW	To improve and provide for low density warehousing/light industrial warehousing uses
Objective MIC	To consolidate and complete the development of the mixed use inner core to enhance and reinforce sustainable development.
Objective MOC	To provide for a mix of uses which complements the inner core, but with less retail and residential and more emphasis on employment and services.
Objective MTC	To protect, provide for and-or improve major town centre facilities.
Objective NC	To protect, provide for and-or improve mixed-use neighbourhood centre facilities.
Objective OE	To provide for office and enterprise development.
Objective TU	To facilitate, support and enhance the development of third level education institutions.
Objective W	To provide for waterfront development and harbour related uses.
Objective SNI	To protect, improve and encourage the provision of sustainable neighbourhood infrastructure

Areas of Flood Risk Concern

- Fluvial - Surface Water
- Pluvial - Surface Water
- Pluvial - Foul
- Flood Zone A
- Flood Zone B
- Wave Overtopping
- County Boundary
- Boundary of Adopted Cherrywood Planning Scheme

Metres 0 50 100 200 300 400 500

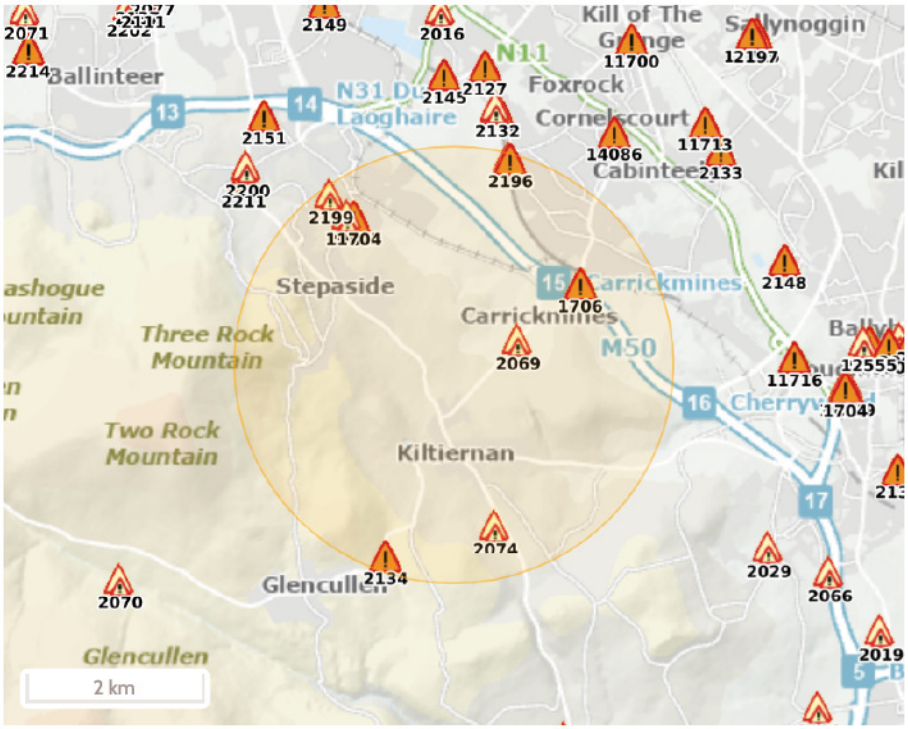
Director of Planning: M Hench
Senior Planner: L McGauran


Stepaside Golf Course
The Park
Shopping Centre
Carrickmines
JAMESTOWN
Aprox. Site location
R842
SLENAMUCK
NORTH
GLEBE
R842

Past Flood Event Local Area Summary Report

Report Produced: **8/3/2025 16:28**

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



Map Legend

- Single Flood Event
- Recurring Flood Event
- Past Flood Event Extents
- Drainage Districts Benefited Lands*
- Land Commission Benefited Lands*
- Arterial Drainage Schemes Benefited Lands*

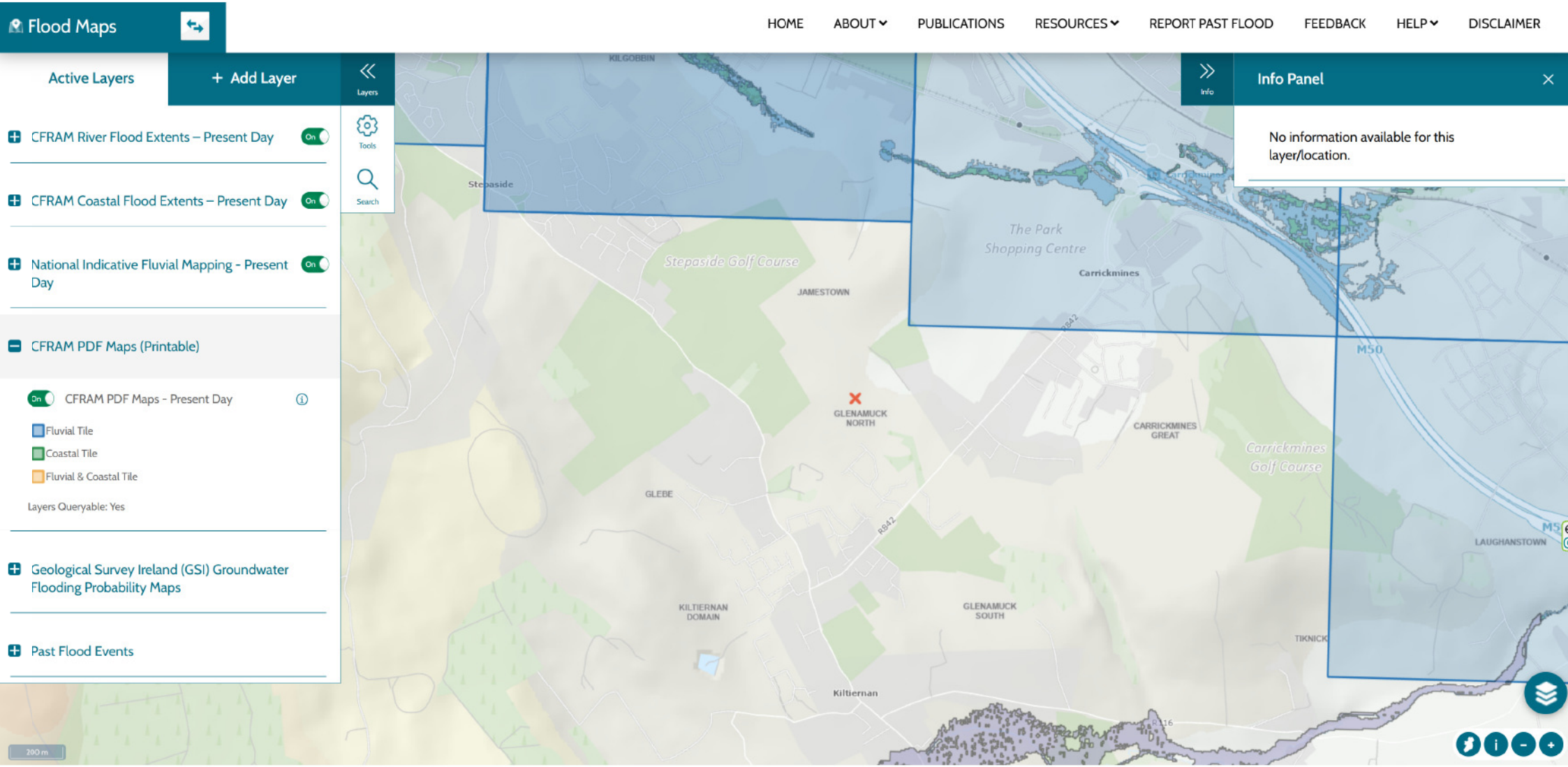
* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained on Floodinfo.ie

14 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Flooding at Clonskeagh Road, Dublin 6 on 24th Oct 2011 (ID-11704)	23/10/2011	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
2.	Flooding at Kilgobbin Road, Stepaside, Co. Dublin on 24th Oct 2011 (ID-11712)	23/10/2011	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
3.	Brighton Cottages Foxrock Recurring (ID-2196)	n/a	Exact Point
	Additional Information: Reports (7) Press Archive (0)		
4.	Shanganagh Carrickmines Nov 1982 (ID-1706)	06/11/1982	Approximate Point
	Additional Information: Reports (3) Press Archive (0)		
5.	Shanganagh Carrickmines May 1993 (ID-1707)	25/05/1993	Approximate Point
	Additional Information: Reports (7) Press Archive (0)		
6.	Shanganagh Carrickmines Dec 1997 (ID-1708)	18/12/1997	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		

	Name (Flood_ID)	Start Date	Event Location
7.	Brighton Terrace Jan 1980 (ID-2152)	01/01/1980	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
8.	Brighton Cottages Dec 1978 (ID-2154)	26/12/1978	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
9.	Kilternan Glencullen Road Nov 1982 (ID-2134)	05/11/1982	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
10.	Enniskerry Road Recurring (ID-2074)	n/a	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
11.	Kilgobbin Road Recurring (ID-2068)	n/a	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
12.	Glenamuck Stream Glenamuck Road Recurring (ID-2069)	n/a	Exact Point
	Additional Information: Reports (2) Press Archive (0)		
13.	Carrickmines River Sandyford Hall Recurring (ID-2199)	n/a	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
14.	Shanganagh Carrickmines Nov 2002 (ID-1703)	26/11/2002	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		


Water
WATER, LAND & SOIL
PROTECTED AREAS
MONITORING & FLOW
STATUS & RISK
PRESSURES & ACTIVITIES
TAKING ACTION
HELP
Results
Keep Previous Results
River Waterbodies
IE_EA_10C040350
EU_CD IE_EA_10C040350
NAME CARRICKMINES STREAM_010
URL View the Data Page
MS_CD EA_10C040350
REGION_CD 17
INS_WHEN 2014-11-14T00:00:00Z
BASIN_CD x1_10 Coastal
LAT 53.2583712
LON -6.18506205
LENGTHKM 27.11683814
SUB_CD 10_5
DateChanged 2019-11-20T00:00:00Z
Change Rivers updated
GEOLOGY 1
CatchmentAreaKm2 20.11962505
CatchmentAreaHectares 2011.962505
Slope -0.00791713
Altitude 18.38450813
WaterManagementUnit IE_EA_Shanganagh
EdenEntityCode 10C04
Easting 321168.94
Northing 224621.96
LocalAuthority DUN LAOGHAIRE/RATHDOWN CC
MODIFIED Unknown
ARTIFICIAL Unknown
SYSTEM B
CATEGORY River Waterbody
CARRICKMINES STREAM_010
Beehive Wanderers FC
De la Salle Palmerston Rugby Club
De la Salle Palmerstown Clubhouse
Glenamuck District Distributor Road
Glenamuck Link Distributor Road
Glenamuck Road South
Ashwood Farm
Westgate
Sheldon Grange
Golf stream
Carrickmines Great
Cabinteely-Loughlinstown DED 1986
Glencullen Electoral Division
Willow Glen
Rockville Drive
Glenamuck Cottages
Brambledown
Cairnbrook
Cairnbrook Avenue
Inglenook Wood
Mulberry
Drumkeen
R842
Hollybrook House
Glenhest
Avalon
Cairnlea
Copperbeech Montessori
Carrickglen
Glen View
Clahane Cottage
Aisling
Clogherriach
The Pines
Tir na Nog
Sheelin
Glenamuck Road South Dunluce
The Leys
50 m


Flood Maps
HOME
ABOUT
PUBLICATIONS
RESOURCES
REPORT PAST FLOOD
FEEDBACK
HELP
DISCLAIMER
Active Layers
+ Add Layer
Layers
Tools
Search
CFRAM River Flood Extents – Present Day
On
CFRAM Coastal Flood Extents – Present Day
On
National Indicative Fluvial Mapping - Present Day
On
CFRAM PDF Maps (Printable)
On
CFRAM PDF Maps - Present Day
Fluvial Tile
Coastal Tile
Fluvial & Coastal Tile
Layers Queryable: Yes
Geological Survey Ireland (GSI) Groundwater Flooding Probability Maps
Past Flood Events
Info
Info Panel
No information available for this layer/location.
KILGOBBIN
Stepaside
Stepaside Golf Course
The Park Shopping Centre
Carrickmines
JAMESTOWN
GLENAMUCK NORTH
CARRICKMINES GREAT
Carrickmines Golf Course
M50
GLEBE
R842
LAUGHANSTOWN
KILTIERNAN DOMAIN
GLENAMUCK SOUTH
TIKNICK
Kiltiernan
200 m