



FLOOD RISK ASSESSMENT

**Large Residential Development at Kilowen,
Kenmare, Co Kerry.**

KPH Construction

September 2026

Contents

Acronyms & Terms	1
1. Introduction	2
1.1 General	2
1.2 Site Location & Proposed Development.....	2
1.3 Scope & Objectives	4
1.4 Methodology & Report Structure	4
2. The Planning System & Flood Risk	5
2.1 Overview of Guidelines	5
2.2 Flood Risk	5
2.3 The Staged Approach	6
2.4 Climate Change	7
2.5 Vulnerability of Developments	7
2.6 Flood Zones	8
3. Site Characterisation	9
3.1 Topography & Slope	9
3.2 Historical Mapping.....	11
3.3 Soils & Geology	12
3.4 Hydrology & Hydrogeology	14
3.4.1 Hydrology & Catchment Description	14
3.4.2 Hydrogeology	15
4. Flood Risk Identification (Stage 1)	17
4.1 Overview	17
4.2 Historic Flooding – OPW Local Area Summary Reports.....	17
4.3 Kerry County Development Plan 2022 – 2028 SFRA.....	19
4.4 Southwestern Catchment Flood Risk Assessment & Management Study (CFRAMS)	20
4.5 Kenmare Flood Relief Scheme	21
4.6 National Coastal Flood Hazard Mapping	21
4.7 OPW Arterial Drainage Scheme and Drainage Districts.....	22
4.8 GSI Groundwater & Surface Water Mapping	23
4.9 Internet Searches.....	23
4.10 Flood Risk Identification (Stage 1) Summary.....	23
5. Initial Flood Risk Assessment (Stage 2).....	24

5.1	Overview	24
5.2	Flooding Sources.....	24
5.2.1	Fluvial Flooding.....	24
5.2.2	Pluvial Flooding	24
5.2.3	Coastal and Estuarine Flooding	25
5.2.4	Groundwater Flooding.....	25
5.3	Initial Flood Risk Assessment (Stage 2) Summary	25
6.	Detailed Flood Risk Assessment (Stage 3)	26
6.1	Overview	26
6.2	Hydrology & Flow Estimation.....	26
6.2.1	Introduction & Kenmare FRS Consultation.....	26
6.2.2	Flood Flows for Flood Zone Mapping.....	26
6.2.3	Future Scenarios.....	26
6.3	Hydraulic Modelling.....	27
6.3.1	Data Acquisition	27
6.3.2	Modelling Approach.....	27
6.3.3	Comparison with Kenmare FRS Model	29
6.3.4	Flood Zone Mapping & Flood Zone Identification	29
6.3.5	Vulnerability of the Proposed Development	31
6.3.6	Baseline Flood Extents & Levels	31
6.4	Post-Development Hydraulic Modelling.....	34
6.4.1	Overview	34
6.4.2	Post-Development Hydraulic Modelling Flood Levels & Extents.....	34
6.4.3	Mitigation Measures	39
6.4.4	Assessment of Risk to Occupants	39
6.4.5	Impact of Development on Flood Risk Elsewhere	40
6.4.6	Climate Change & Residual Risks.....	42
6.5	Justification Test	48
7.	Summary & Conclusions.....	50

Tables

Table 2-1 - Vulnerability Matrix (PSFRM Paragraph 3.6)	7
Table 2-2 - Flood Zone Definitions & Parameters	8

Table 6-1: Vulnerability Matrix.....	31
Table 6-2: Flood Levels at Node Points - 1% AEP & 1% AEP MRFS.....	38
Table 6-3: Residual Risk - Flood Levels at Node Points - 1% AEP HEFS & 0.1% AEP Current Scenario.....	47
Table 6-4: Justification Test Criterion 2	49

Figures

Figure 1-1: Site Location	3
Figure 1-2: Proposed Site Layout	3
Figure 2-1: Source-Pathway-Receptor Model	6
Figure 3-1: DTM Surface Elevation Map	9
Figure 3-2: Site Surface Topographic Map (Northern and Southern Boundaries)	10
Figure 3-3: 6" Last Edition Historic Map	11
Figure 3-4: 25" Edition Historic Map.....	11
Figure 3-5: GSI Bedrock Geology Map	13
Figure 3-6: GSI Quaternary Sediments Map	13
Figure 3-7: Teagasc/IFS National Soils Map.....	14
Figure 3-8: Watercourse Network Map.....	15
Figure 3-9: GSI Subsoil Permeability	16
Figure 3-10: GSI Groundwater Vulnerability	16
Figure 4-1: Past Flood Event Local Area Summary Report	19
Figure 4-2: Kerry County Development Plan 2022 – 2028 SFRA Zoning Map	20
Figure 4-3: CFRAMS Fluvial Flood Mapping.....	21
Figure 4-4: National Coastal Flood Hazard Mapping - MRFS.....	22
Figure 6-1: Hydraulic Model Schematic.....	28
Figure 6-2: Flood Zone Map	30
Figure 6-3: Baseline Flood Extent - 1% AEP Current Scenario	32
Figure 6-4: Baseline Flood Extent - 1% AEP MRFS.....	32
Figure 6-5: Baseline Flood Depths (m) - 1% AEP Current Scenario	33
Figure 6-6: Baseline Flood Depths (m) - 1% AEP MRFS.....	33
Figure 6-7: Flood Level Node Location Map	35
Figure 6-8: Post-Development Flood Extent - 1% AEP Current Scenario.....	35
Figure 6-9: Post-Development Flood Extent - 1% AEP MRFS	36
Figure 6-10: Post-Development Flood Depths (m) – 1% AEP Current Scenario	36

Figure 6-11: Post-Development Flood Depths (m) – 1% AEP MRFS 37

Figure 6-12: Flood Extent Comparison Map - Baseline v Post Development - 1% AEP MRFS 41

Figure 6-13: Downstream Peak Flow Hydrograph – 1% AEP MRFS 41

Figure 6-14: Baseline Flood Extent - 1% AEP HEFS..... 43

Figure 6-15: Post Development Flood Extent - 1% AEP HEFS..... 43

Figure 6-16: Baseline Flood Extent - 0.1% AEP Current Scenario..... 44

Figure 6-17: Post Development Flood Extent - 0.1% AEP Current Scenario 44

Figure 6-18: Flood Extent Comparison Map - Baseline v Post Development - 0.1% AEP Current Scenario 45

Figure 6-19: Post Development Flood Depths (m) – 1% AEP HEFS..... 45

Figure 6-20: Post Development Flood Depths (m) - 0.1% AEP Current Scenario 46

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Acceptance Code / Status
25631	25631-ZZ-ZZZ-RP-CE-6008	P1	04/09/2026	CA/DM	MF	MF	S/2
25631	25631-ZZ-ZZZ-RP-CE-6008	P1	07/08/2026	CA/DM	MF	MF	S/1
25631	25631-ZZ-ZZZ-RP-CE-6008	P1	21/07/2026	CA/DM	MF	MF	S/0

MWP, Engineering and Environmental Consultants
Address: Park House, Bessboro Road, Blackrock, Cork, T12 X251, Ireland
www.mwp.ie



Disclaimer: This Report, and the information contained in this Report, is Private and Confidential and is intended solely for the use of the individual or entity to which it is addressed (the “Recipient”). The Report is provided strictly on the basis of the terms and conditions contained within the Appointment between MWP and the Recipient. If you are not the Recipient you must not disclose, distribute, copy, print or rely on this Report (unless in accordance with a submission to the planning authority). MWP have prepared this Report for the Recipient using all the reasonable skill and care to be expected of an Engineering and Environmental Consultancy and MWP do not accept any responsibility or liability whatsoever for the use of this Report by any party for any purpose other than that for which the Report has been prepared and provided to the Recipient.

Acronyms & Terms

AEP	Annual Exceedance Probability
CFRAMS	Catchment Flood Risk Assessment and Management Study
DTM	Digital Terrain Model
EPA	Environmental Protection Agency
FFL	Finished Floor Level
FRA	Flood Risk Assessment
FSR	Flood Studies Report
FSU	Flood Studies Update
HEP	Hydrological Estimation Point
HEFS	High End Future Scenario
LAP	Local Area Plan
mOD	Metres Above Ordnance Datum
MRFS	Mid-Range Future Scenario
MWP	Malachy Walsh & Partners
OPW	Office of Public Works
PSFRM	The Planning System and Flood Risk Management Guidelines, November 2009
SAAR	Standard Average Annual Rainfall

1. Introduction

1.1 General

Malachy Walsh and Partners (MWP) Consulting Engineers have been commissioned by KPH Construction to carry out a Flood Risk Assessment for a proposed residential development at Killowen, Kenmare, Co Kerry.

1.2 Site Location & Proposed Development

The proposed LRD site is located within the townland of Killowen, Kenmare, Co. Kerry, approximately 500m northeast of the Kenmare town centre and is within the Kenmare development boundary in the Kenmare refer to Figure 1-1 for a site location map. The site is largely characterised by bare and disturbed ground with limited semi-natural habitat remaining.

The eastern boundary of the site is defined by the local road, known as 'Pat Scarteen Road', which connects to the main Kenmare to Kilgarvan regional road (R569) to the southeast. To the north, the site adjoins the Aldi commercial premises, while Scarteen Park residential development lies to the northwest. The western and southwestern boundaries are bordered by woodland area.

KPH Construction intend to apply for planning permission for a Large-scale Residential Development (LRD) at a site located off Pat Scarteen Road, Killowen, (townland), Kenmare, Co. Kerry.

The proposed development includes the demolition of 2 no. existing single-storey sheds and the construction of 100 no. residential units comprising 30 no. 1-bed units; 30 no. 2-bed units; and 40 no. 3-bed houses, with ancillary landscaping and associated site development works. The development makes provision for 40 no. two-storey houses, comprising 36 no. semi-detached 3 bed units and 4 no. 3 bed mid-terraced units and 60 no. own-door maisonette/apartment units over 2 no. storeys (30 no. 1 bed units, 30 no. 2 bed units).

Vehicular access to the development will be via an upgraded and relocated entrance off the Pat Scarteen Road, with proposed upgrades including amendments to the existing shared pedestrian/cycle path and modifications to the signing and lining on the public road. The proposed development also provides for separate pedestrian/cycle entrances off Pat Scarteen Road and includes dedicated pedestrian and cycling paths traversing the site.

Ancillary infrastructure development works will include wastewater infrastructure, a pumping station, surface water attenuation, water utility services, public lighting, bin stores, bicycle stores, ESB substations, landscaping and all associated site development works.

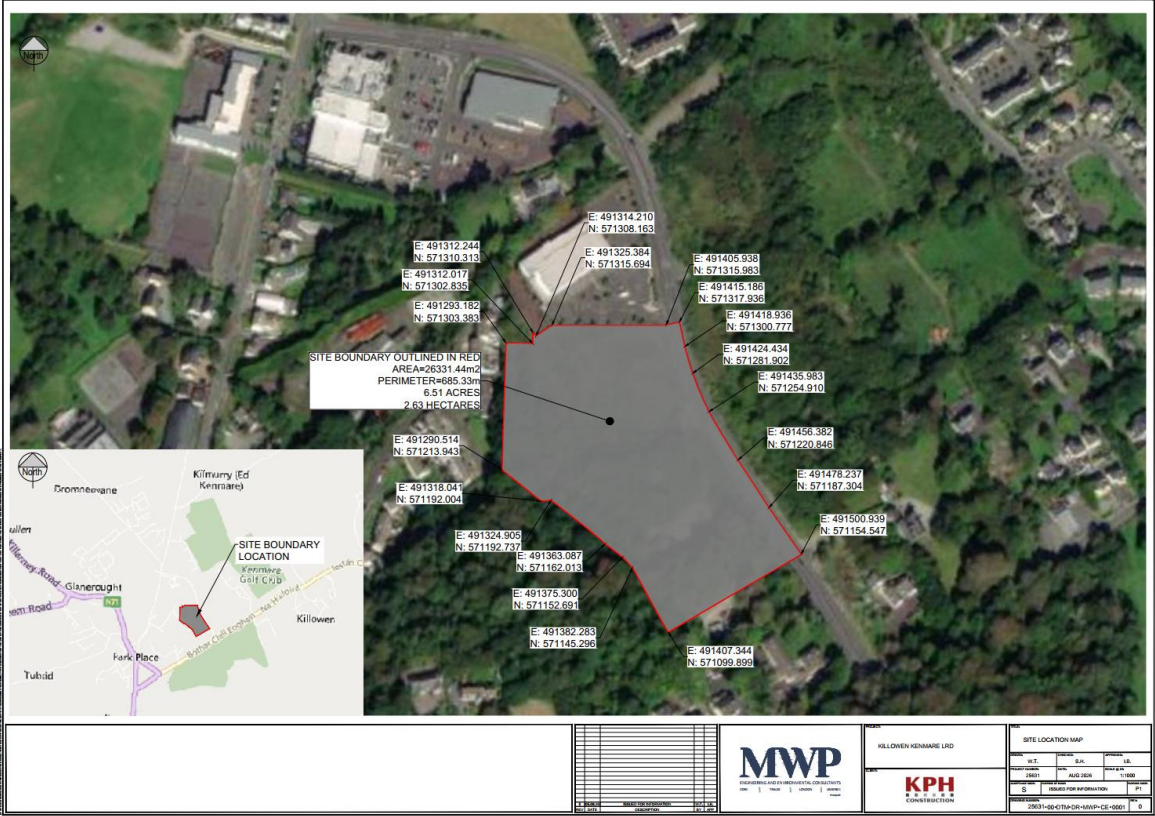


Figure 1-1: Site Location

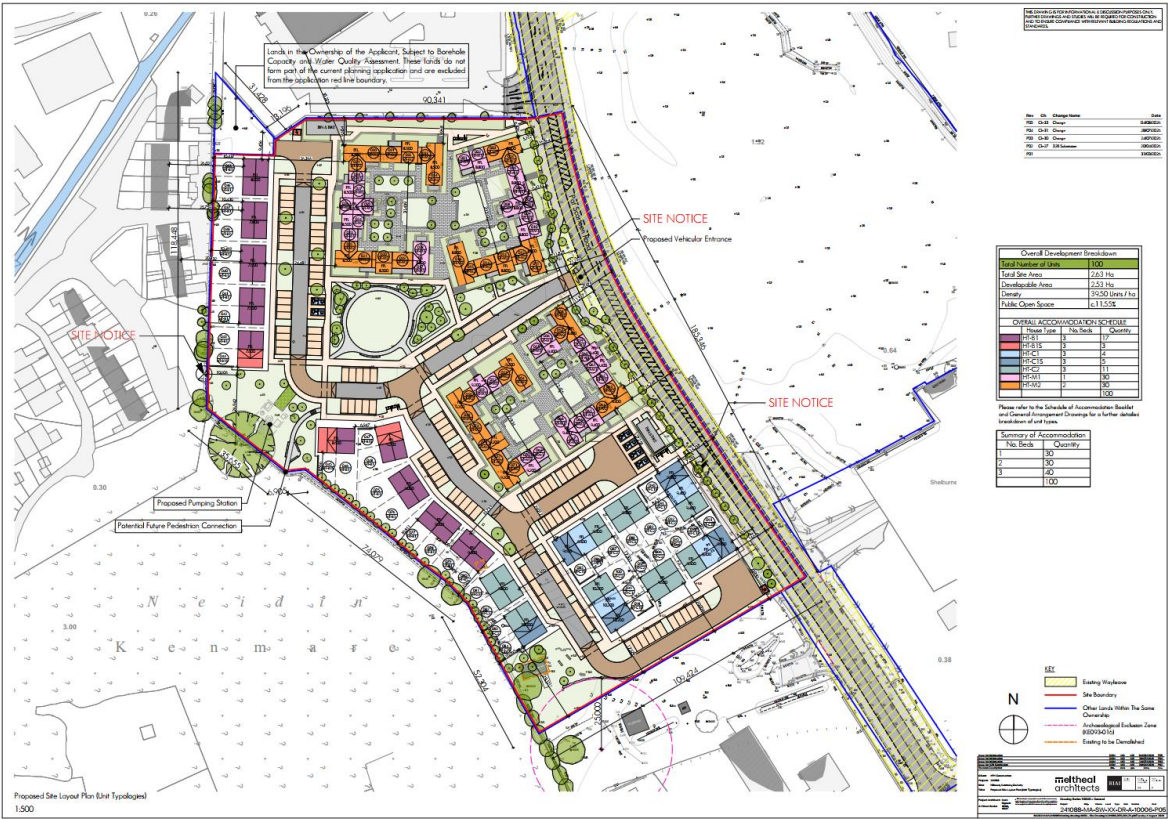


Figure 1-2: Proposed Site Layout

1.3 Scope & Objectives

The objective of this report is to assess the flood risk associated with the site of the proposed development and thus inform the design and ensure there are no adverse effects as a result of the development. This report intends to facilitate a greater understanding of the hydrological characteristics of the area and the potential flood levels within the site. This will include the following key aspects:

1. Collect, collate, and review the available data regarding the study area such as topography, hydrogeological data, or geological characteristics,
2. Review the existing information regarding flood risk in the area, such as historic flood events or predictive mapping,
3. Identify the flooding sources and mechanisms at the site,
4. Appraise the availability and accuracy of the existing information regarding the site,
5. Establish what Flood Zone the proposed development is located within,
6. If appropriate, recommend mitigation measures to prevent any increase in flood risk within the site or externally in the wider area.

This report has been prepared in accordance with The Planning System and Flood Risk Management – Guidelines for Planning Authorities, November 2009 – published by the Office of Public Works (OPW) and the Department of Environment, Heritage, and Local Government (DEHLG). Flood Risk Assessments are carried out at different scales by different organisations. The hierarchy of assessment types are Regional (RFRA), Strategic (SFRA) and Site-specific (SSFRA). This report is site-specific.

1.4 Methodology & Report Structure

In the Flood Risk Management Guidelines document, the likelihood of a flood occurring is established through the identification of Flood Zones which indicate a high, moderate or low risk of flooding from fluvial or tidal sources, with various development types categorised into three Vulnerability Classifications. These classifications and other elements of the Flood Risk Management Guidelines are outlined in further detail in Section 3.

This report has been prepared generally in accordance with the stages of assessment outlined in the Guidelines, with the corresponding report structure as follows:

1. Provide an overview of the Planning System and Flood Risk Management Guidelines, as described in Section 2,
2. Complete a desktop review to characterise the site, as described in Section 3,
3. Compile and review the available information regarding the flood history and existing flood risk in the area, as described in Section 4,
4. Appraise the availability and accuracy of the existing information regarding the site, as described in Section 5,
5. Identify the Flood Zone that the development is located within, as described in Section 6,
6. Conclude on the key items in relation to the flood risk at the site and if appropriate, recommend mitigation measures to prevent any increase in flood risk within the site or externally in the wider area, as described in Section 7.

2. The Planning System & Flood Risk

2.1 Overview of Guidelines

“The Planning System and Flood Risk Management: Guidelines for Planning Authorities”, published in November 2009, describes flooding as a natural process that can occur at any time and in a wide variety of locations. The Guidelines describe good flood risk practice in planning and development management and seek to integrate flood risk management into the planning process, thereby assisting in the delivery of sustainable development. Planning authorities are directed to have regard to the Guidelines in the preparation of Development Plans and Local Area Plans, and for development management purposes. For this to be achieved, flood risk must be assessed as early as possible in the planning process.

Paragraph 1.6 of the Guidelines states that the core objectives are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface run-off;
- 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; and
- Ensure that the requirements of the EU and national law in relation to the natural environment and nature conservation are complied with at all stages of the flood risk management.

The guidelines aim to facilitate “the transparent consideration of flood risk at all levels of the planning process, ensuring a consistency of approach throughout the country”. The Guidelines work on a number of key principles including:

- Adopting a staged and hierarchical approach to the assessment of flood risk;
- Adopting a sequential approach to the management of flood risk, based on the frequency of flooding (identified through Flood Zones) and the vulnerability of the proposed land use.

2.2 Flood Risk

In order to manage flood risk, it is important to understand what the term “flood risk” implies and to define the components of flood risk to apply the principles of the DEHLG Flood Risk Management Guidelines.

Flood risk is generally accepted to be a combination of the likelihood of flooding and the potential consequences arising, and is normally expressed in terms of the following relationship:

$$\text{Flood risk} = \text{Likelihood of Flooding} \times \text{Consequence of Flooding}$$

Flood risk is assessed using the source – pathway – receptor model as illustrated in Figure 2-1.

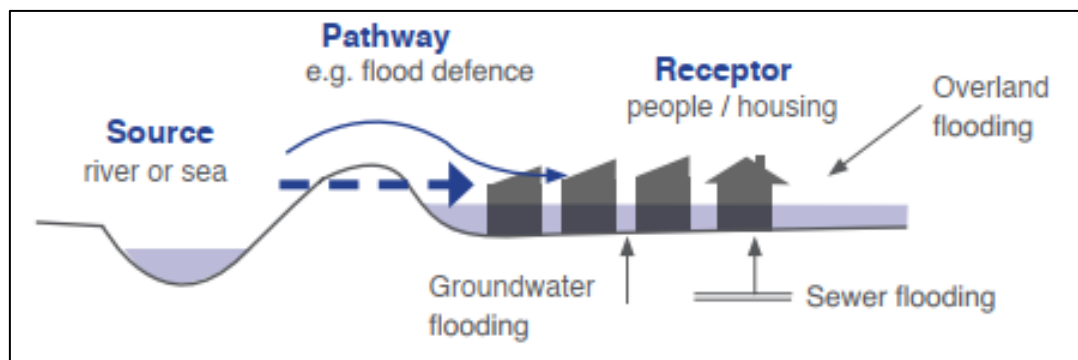


Figure 2-1: Source-Pathway-Receptor Model

Principal sources of flooding are intense or prolonged rainfall or higher than normal sea levels while the most common pathways are rivers, drains, sewers, overland flow, and river and coastal flood plains and their defence assets. Receptors can include people, their property and the environment. All three elements must be present for flood risk to arise. Mitigation measures, such as defences or flood resilient construction, have little or no effect on sources of flooding but they can block or impede pathways or remove receptors.

Flood risk assessments require identification and assessment of all three components:

- The probability and magnitude of the source(s) (e.g. high river levels, sea levels and wave heights);
- The performance and response of pathways and barriers to pathways such as floodplain areas and flood defence systems, and
- The consequences to receptors such as people, properties and the environment.

The planning process is primarily concerned with the location of receptors, taking appropriate account of potential sources and pathways that might put those receptors at risk.

2.3 The Staged Approach

The Guidelines recommend a staged approach to be adopted to ensure that only such an appraisal or assessment as is needed for the purposes of decision making at the various plan levels is undertaken. The stages include:

Stage 1: Flood Risk Identification – To identify whether there may be any flooding or surface water management issues related to either the area of 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. If the Planning Authority considers that there is potential flood risk issue, then Stage 2 shall be entered into.

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. In addition, the requirements of the detailed assessment should be scoped; and

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. This will typically involve use of an existing or construction of a hydraulic model or a river or coastal cell across a wide enough area to appreciate the catchment wide impacts and hydrological processes involved.

2.4 Climate Change

Climate change can be expected to generally increase flood risk and consequences of flooding. Due to the uncertainty associated with the potential effects of climate change, the Guidelines recommend that a precautionary approach to dealing with climate change is adopted and provide the following examples:

- Recognising that increased rainfall or tide events may result in significant changes to the flood extent, and therefore adopting a cautious approach to zoning land in these potential transitional areas;
- Ensuring that any flood protection structure such as flood defences, land-raising, or raised floor levels, are at a sufficient level to cope with the effects of climate change over the lifetime of the development which they are intended to protect; and
- Ensuring that any flood protection structure and the development which it protects are capable of adaption to the effects of climate change when there is more certainty about the effects and still time for such adaption to be effective.

2.5 Vulnerability of Developments

The Guidelines have outlined three Vulnerability Classes for developments based on the proposed land use and type of development. These classifications and particular examples of development types which would be included in each classification are summarised as follows:

- **Highly Vulnerable Development:** This would include emergency services, hospitals, schools, residential institutions, dwelling houses, essential infrastructure, water & sewage treatment, etc.
- **Less Vulnerable Development:** Retail, leisure, commercial, industrial buildings, local transport infrastructure, etc.
- **Water Compatible Development:** Docks, marinas, and wharves, amenity and open space, outdoor sports and recreation and essential facilities such as changing rooms, etc.

The Guidelines also include a matrix of vulnerability versus flood zone to differentiate between developments which are appropriate in various flood zones and those which require a Justification Test. This table is reproduced as

Table 2-1 below.

Table 2-1 - Vulnerability Matrix (PSFRM Paragraph 3.6)

Vulnerability Class	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

2.6 Flood Zones

In the Planning System and Flood Risk Management Guidelines document, the likelihood of a flood occurring is established through the identification of Flood Zones which indicate a high, moderate or low risk of flooding from fluvial or tidal sources. Table 2-2 below indicates the definition of Flood Zones as well as the implications for planning.

An example indicative flood zone map extract which shows the extents of each flood zone in a location is provided in Table 2-2. It is important to note that the Flood Zones do not take other sources of flooding, such as groundwater or pluvial into account, so an assessment of risk arising from such sources should also be made, where appropriate.

Table 2-2 - Flood Zone Definitions & Parameters

Flood Zone	Description & Summary of Planning Implications
Zone A High probability of flooding	More than 1% probability (1 in 100) for river flooding and more than 0.5% probability (1 in 200) for coastal flooding. Most types of development would be considered inappropriate in this zone.
Zone B Moderate probability of flooding	0.1% to 1% probability (between 1 in 100 and 1 in 1,000) for river flooding and 0.1% to 0.5% probability (between 1 in 200 and 1 in 1,000) for coastal flooding. Highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities infrastructure, would generally be considered inappropriate in this zone.
Zone C Low probability of flooding	This zone defines areas with a low risk of flooding from rivers and the coast (i.e. less than 0.1% probability or less than 1 in 1,000). Development in this zone is appropriate from a flooding perspective (subject to assessment of flood hazard from sources other than rivers and the coast).

3. Site Characterisation

3.1 Topography & Slope

The assessment of site topography and ground levels utilised publicly available LiDAR Digital Terrain Model (DTM) data, as presented in Figure 3-1. The DTM mapping indicates that the proposed development site is situated on relatively flat ground immediately east of Kenmare town centre. The site generally comprises relatively level ground, with existing levels typically ranging between approximately 6.5mOD and 12.5mOD across the developable area, with the highest elevations occurring towards the southern portions of the site and lower elevations occurring towards the north and northwest.

A notable topographical feature is the pronounced step change in ground levels from south to north, where elevations rise from approximately 8.0 mOD to 12.5 mOD, representing an increase of around 5.0 m. This change occurs over a relatively short distance and forms a distinct transition between the lower-lying southern portion of the site and the higher ground to the north. Outside of this embankment or stepped area, the site is broadly flat to gently undulating, with only minor localised variations in ground level.

A detailed site-specific topographic survey was undertaken by Geodata in March 2025, and the output of this survey is shown in Figure 3-2. The topographic survey indicates that site levels typically range from 6.50mOD – 12.50mOD. Aside from the rise in ground level at the southern end of the site, the site exhibits relatively minor localised variations in topography, and this compares well with the DTM mapping data.

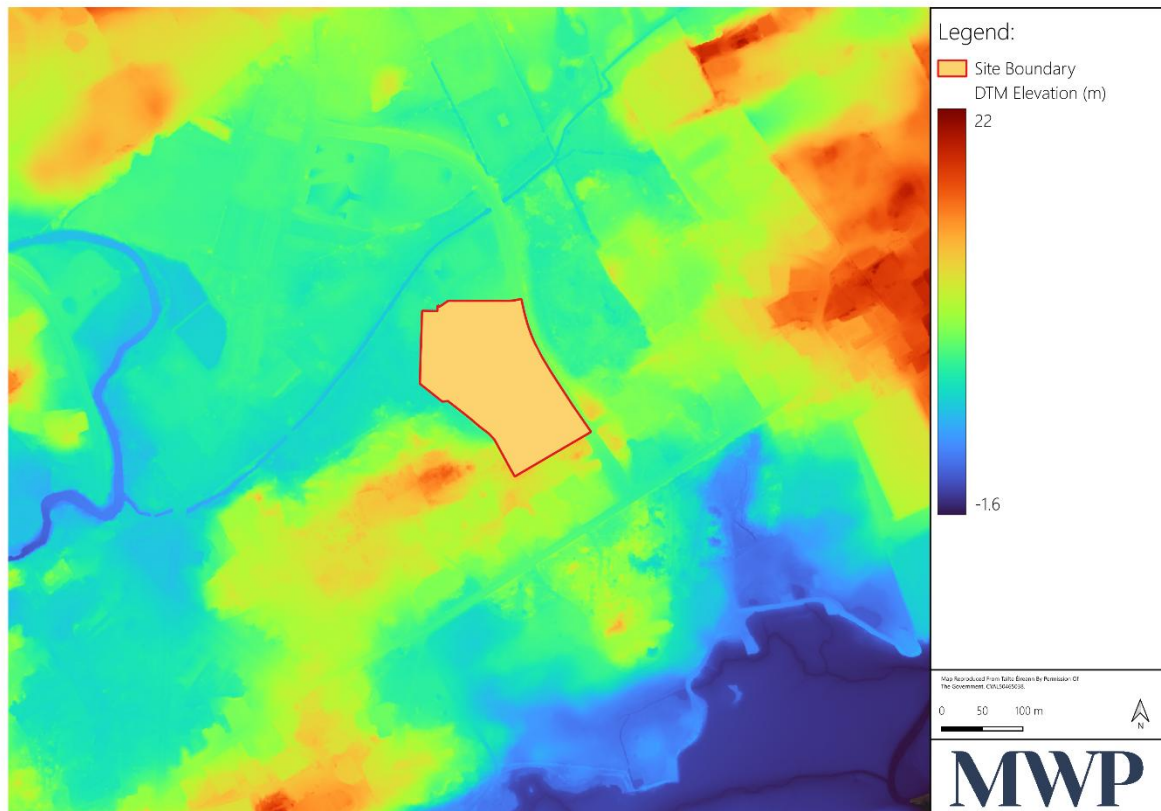


Figure 3-1: DTM Surface Elevation Map

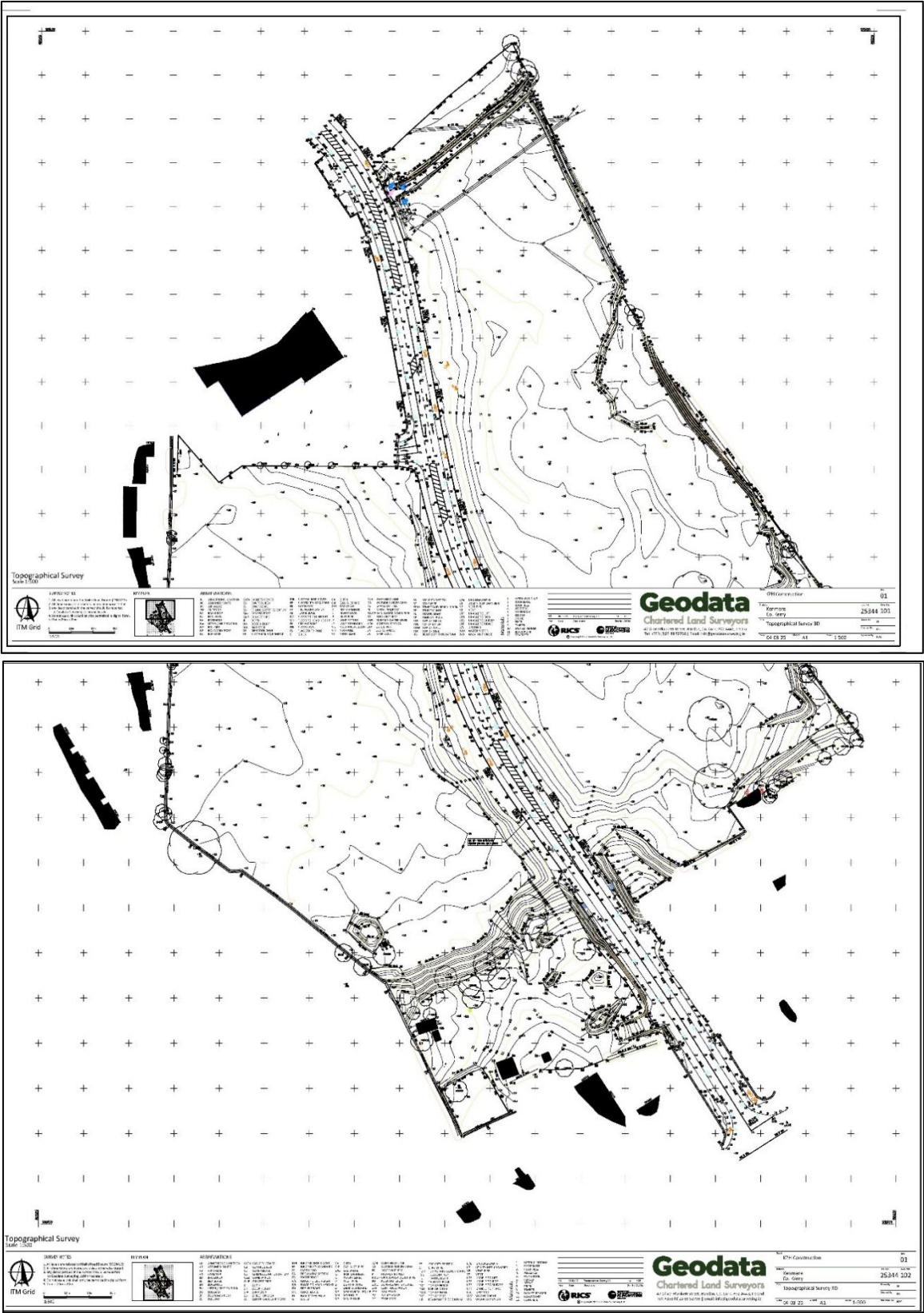


Figure 3-2: Site Surface Topographic Map (Northern and Southern Boundaries)

3.2 Historical Mapping

To identify whether there have been any noticeable changes to the site over time, historic mapping data was used. This was sourced from the publicly available Tailte Éireann Irish Townland and Historical Map Viewer Geohive website, with the 6 Inch First Edition (1829 - 1834) maps used and compared to available Google Earth aerial mapping data. The 6-Inch First Edition Colour Maps were produced between 1829 and 1841, with the survey taking place from 1829 to 1834, and printing occurring from 1829. These were later followed by the 25-Inch Black and White Maps which were surveyed from 1863 to 1924 and provide a greater degree of detail than the 6 Inch maps.

The comparison of the historic (Figure 3-3 and Figure 3-4) mapping data shows that, the no significant changes within the study area are observed between the creation of the 6" and 25" maps. The field boundaries shown on both maps remain largely consistent, with only minor variations in boundary definition and mapping detail evident in the later 25-inch mapping. There is no evidence of significant drainage modifications or flood-related infrastructure within the study area on either map, suggesting that the hydrological and land management characteristics have remained broadly stable over time.

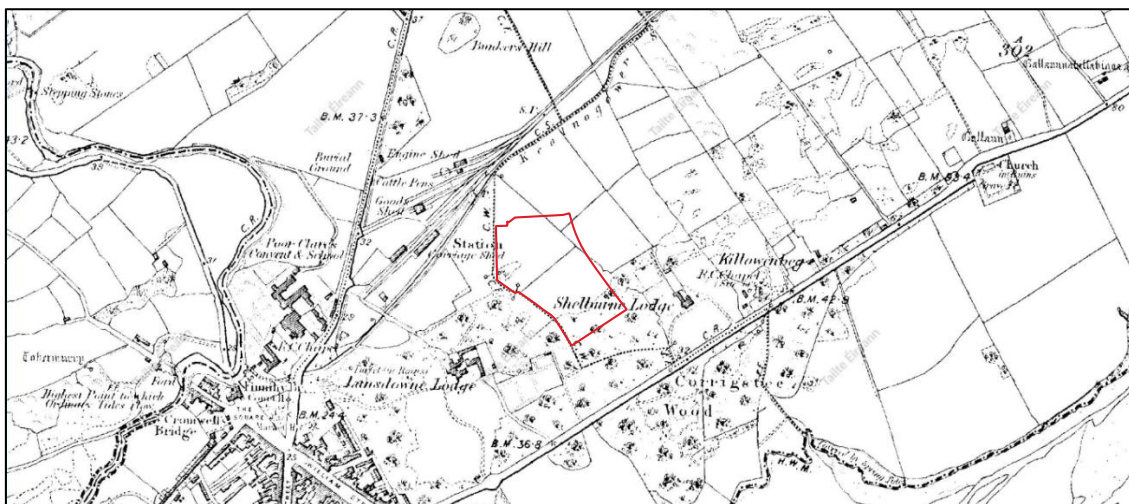


Figure 3-3: 6" Last Edition Historic Map

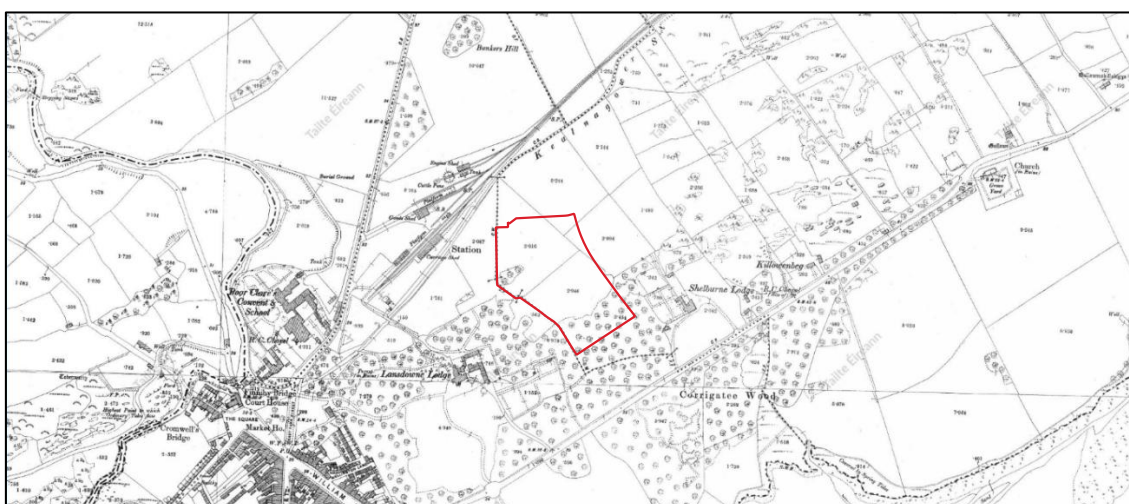


Figure 3-4: 25" Edition Historic Map

3.3 Soils & Geology

The bedrock geology underlying the subject lands comprises Waulsortian Limestones (WA). Waulsortian Limestones are Carboniferous-aged limestones of Tournaisian to Lower Visean age (Dinantian Series), as shown in Figure 3-5. They are described as massive, unbedded lime mudstones, consisting predominantly of pale-grey, crudely bedded to massive limestone. These deposits are sometimes informally referred to as “reef” limestones, although this terminology is considered inaccurate. The Waulsortian Limestones overlie the Ballysteen Formation and grade upwards into various Lower Visean formations. While these limestones exceed 1,200 m in thickness in the Shannon Estuary area, they are typically between 300m and 500m thick.

The Quaternary sediments map is presented in Figure 3-6. The map identifies unconsolidated deposits occurring within approximately 1 m of the ground surface, including glacial, fluvial and marine sediments, as well as areas of exposed bedrock, water bodies and made ground. The Quaternary sediments underlying the site comprise predominantly Alluvium (A), with localised areas mapped as Urban deposits. Alluvium consists of unconsolidated sediments deposited by rivers and streams and is typically composed of varying proportions of sand, silt, clay and gravel. These deposits are generally associated with floodplains and low-lying areas adjacent to watercourses. The occurrence of Urban deposits reflects areas that have been modified by human activity and may comprise a mixture of natural and reworked materials associated with historical development and land-use change.

The National Soils Map is presented in Figure 3-7. The site is predominantly underlain by soils derived from Alluvium (A), classified as AlluvMIN – Alluvial (Mineral) soils. The parent material is described as undifferentiated alluvium, reflecting deposition by fluvial processes. These soils are categorised as mineral alluvial soils and are characterised by variable soil properties depending on the nature and distribution of the deposited sediments. The soil group is classified as Variable, reflecting the heterogeneous composition typically associated with alluvial environments. In addition, a small portion of the site is mapped as made ground, indicating areas where the natural soil profile has been altered or replaced through anthropogenic activity, typically associated with previous construction, land reclamation or site development works.

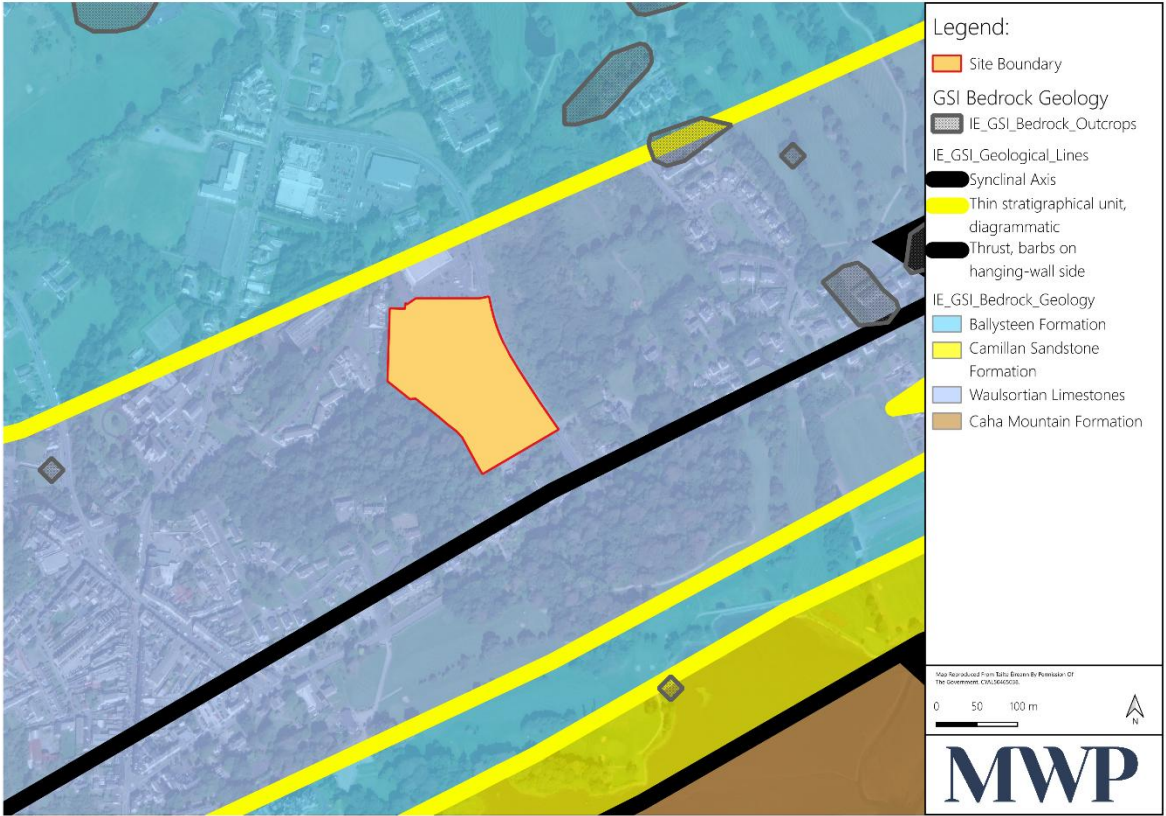


Figure 3-5: GSI Bedrock Geology Map

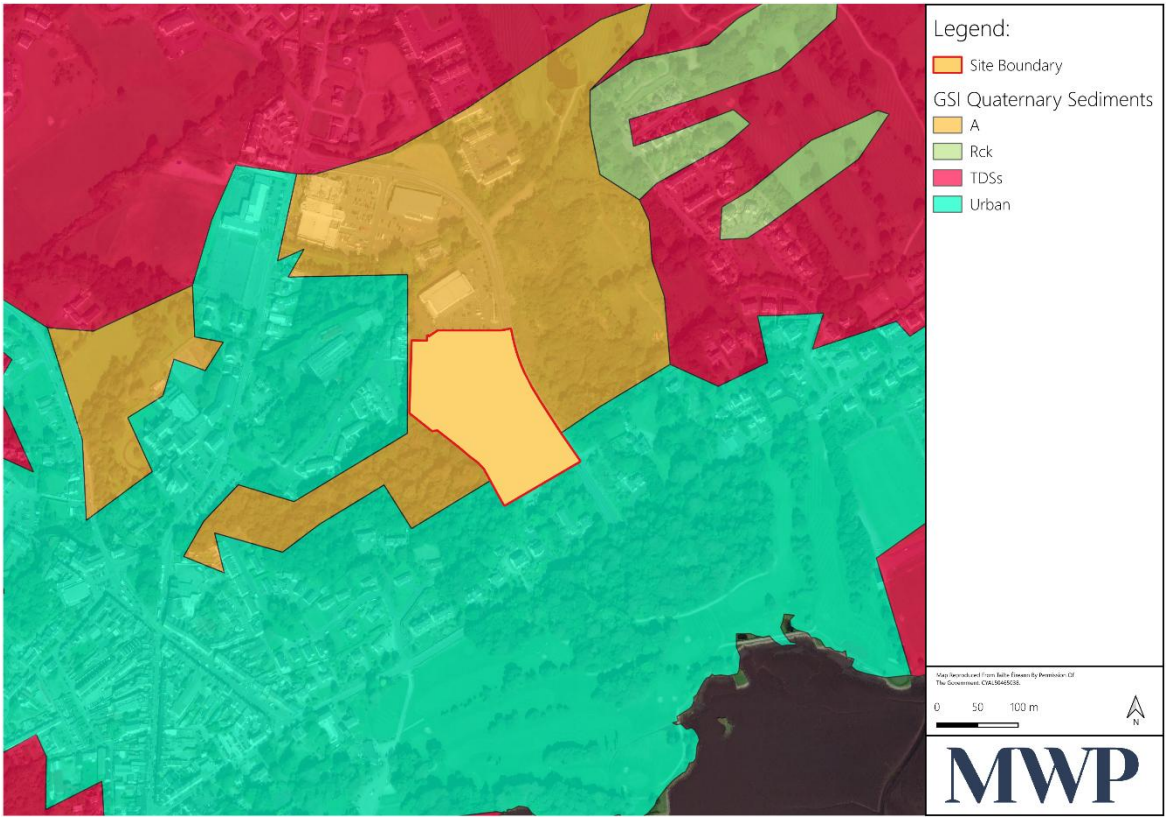


Figure 3-6: GSI Quaternary Sediments Map

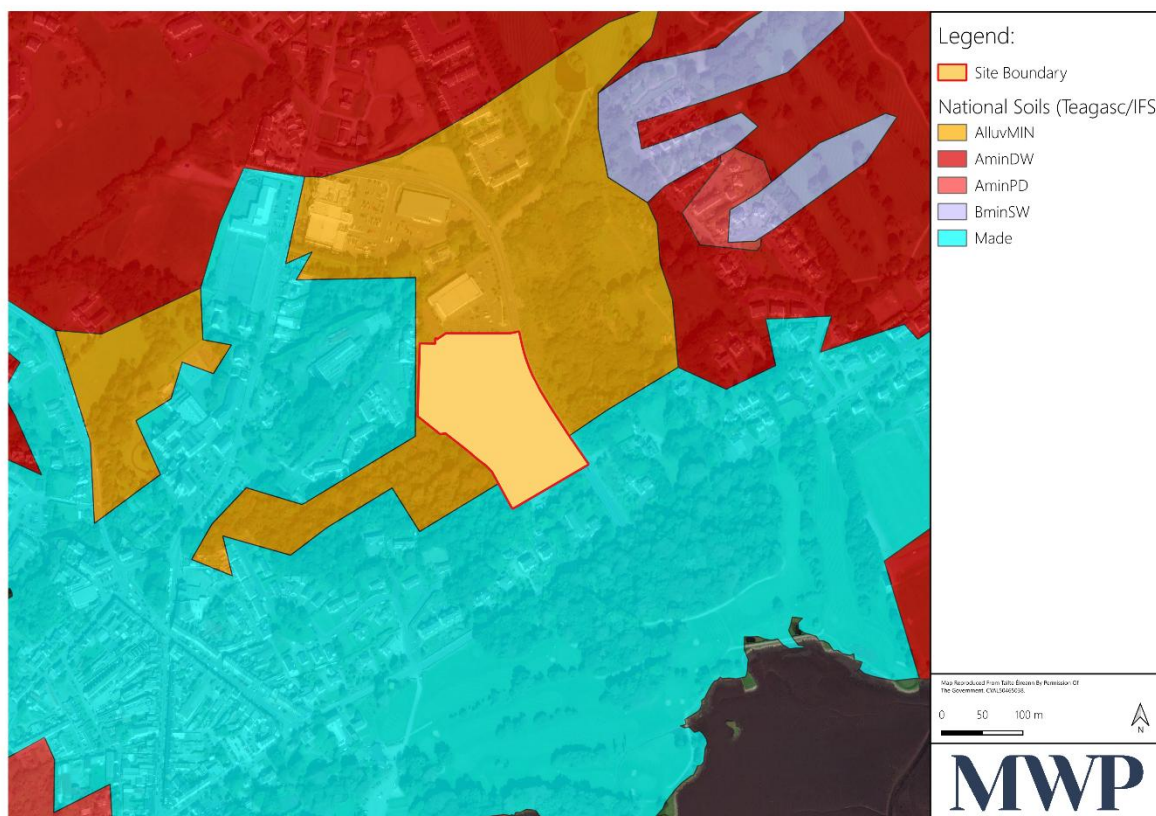


Figure 3-7: Teagasc/IFS National Soils Map

3.4 Hydrology & Hydrogeology

3.4.1 Hydrology & Catchment Description

The site is situated within the Dunmanus-Bantry-Kenmare catchment (Catchment ID: 21). The Kealnagower watercourse is the primary watercourse flowing in close proximity to the site where it flows from northeast to southwest into the Finnihy watercourse approximately 400m – 500m downstream of the proposed development site, as shown in Figure 3-8. The Killowen watercourse is located northeast of the site and flows into the Kealnagower watercourse approximately 300m northeast of the proposed development site. There is an Unknown watercourse which flows into the Kealnagower watercourse approximately 200m north of the proposed development site.

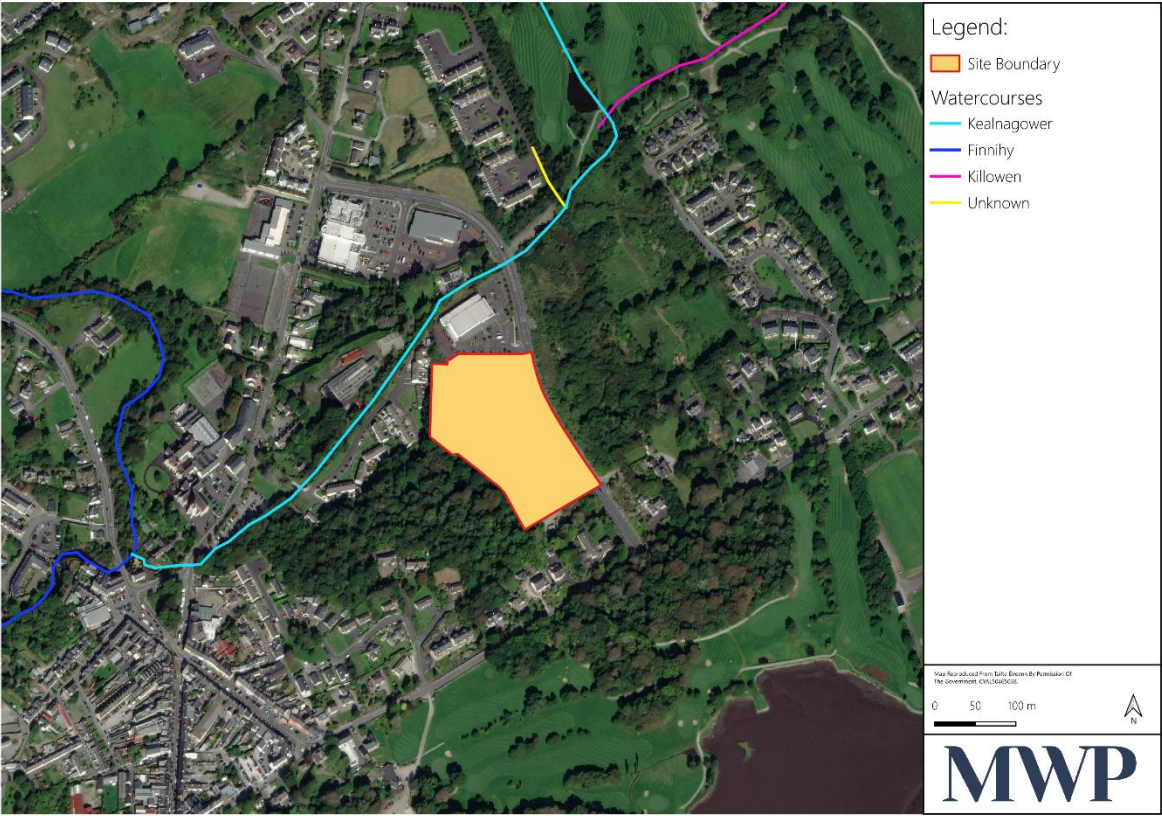


Figure 3-8: Watercourse Network Map

3.4.2 Hydrogeology

According to data provided in the GSI groundwater subsoil permeability map, which classifies how water can infiltrate downwards into the surface at a given point with relative ease, the proposed development site is located within an area of moderate subsoil permeability as seen in Figure 3-9. This corresponds to an area of moderate groundwater vulnerability at the location of the proposed development site, as shown in Figure 3-10.



Figure 3-9: GSI Subsoil Permeability

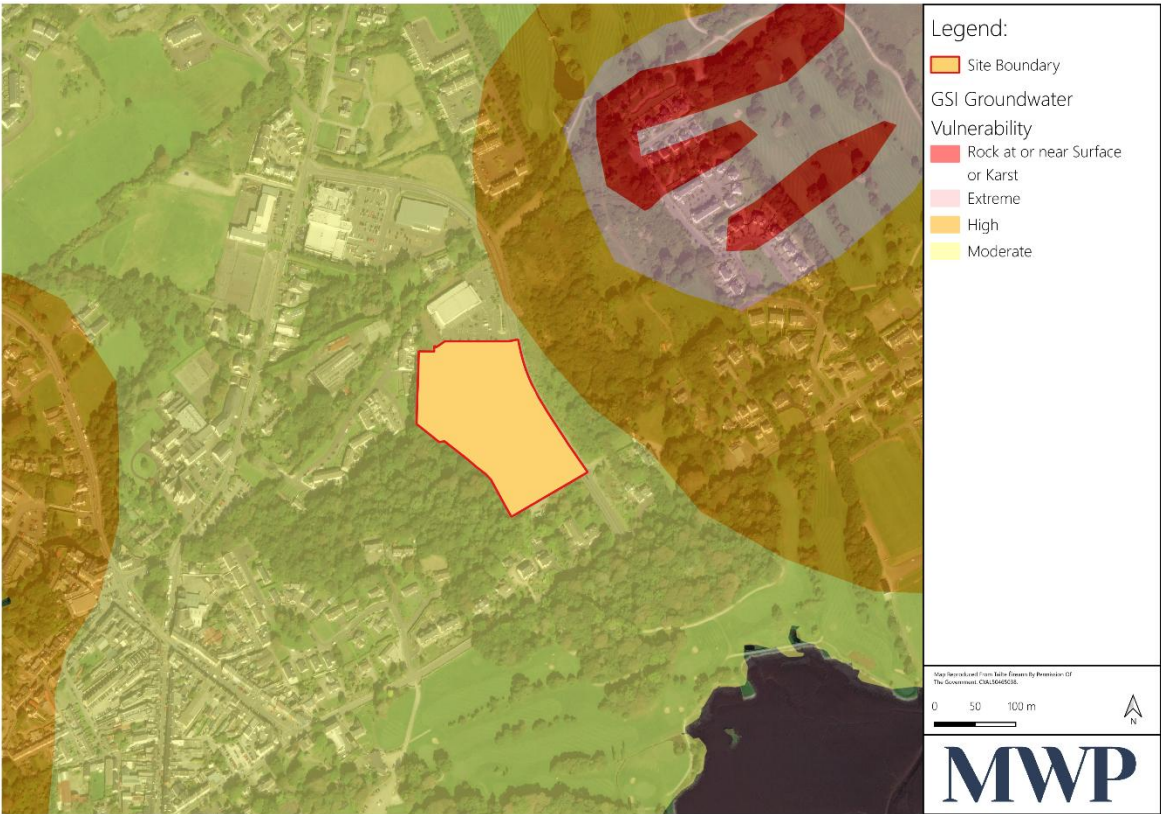


Figure 3-10: GSI Groundwater Vulnerability

4. Flood Risk Identification (Stage 1)

4.1 Overview

As discussed during the Site Characterisation Section of this report, possible sources of flood risk were identified using the GSI Geology and Hydrogeology Maps, the Teagasc Soil Maps, and the EPA Watercourse Maps. This identified that the proposed development is located in close proximity to the Kealnagower watercourse.

In addition to this, the following sources shall be examined in order to identify possible sources of flood risk at the site:

- Flood History - Examination of available information on the OPW website (www.floodinfo.ie)
- Kerry County Development Plan 2022-2028 Strategic Flood Risk Assessment (Kerry CDP SFRA)
- Southwestern Catchment Flood Risk Assessment & Management Study (CFRAMS)
- National Indicative Fluvial Mapping (NIFM)
- Kenmare FRS Draft Flood Mapping
- National Coastal Flood Hazard Mapping
- OPW Arterial Drainage Scheme & Drainage Districts
- GSI Winter 2015/2016 Surface Water Flooding
- GSI Predictive & Historic Groundwater Flood Mapping
- Internet Searches

4.2 Historic Flooding – OPW Local Area Summary Reports

The Past Flood Event Local Area Summary Report, obtained from the Office of Public Works (OPW) floodinfo.ie website, is presented in Figure 4-1. This report summarises recorded past flood events within 2.5 km of the proposed development site. Review of the mapping indicates that a total of 11 flood events were recorded within the wider study area, comprising both recurring flood events and single flood events. Recorded recurring flood events include Gortamullen (ID-4703), Kenmare Town Square (ID-4700), Scarteen Park Kenmare (ID-4701), Finnihy River at Finnihy Bank Estate (ID-4702), N71 North of Suspension Bridge Kenmare (ID-4704), L7606 and Pier Kenmare (ID-4705) and L4055 at Gortalinny (ID-4706). In addition, four single flood events are recorded at Kenmare River Finnihy (22 October 2008; ID-10727), Kenmare (29 July 2020; ID-13719), Kenmare (5 December 2015; ID-13375) and Kenmare Sound (7 December 2021; ID-14091).

While one of the recorded recurring flood events, Scarteen Park Kenmare (ID-4701), is located in proximity to the proposed development site, the available OPW mapping does not identify any recorded past flood events within the site boundary itself. The available historical flood records therefore do not indicate any known flooding directly affecting the proposed development site.

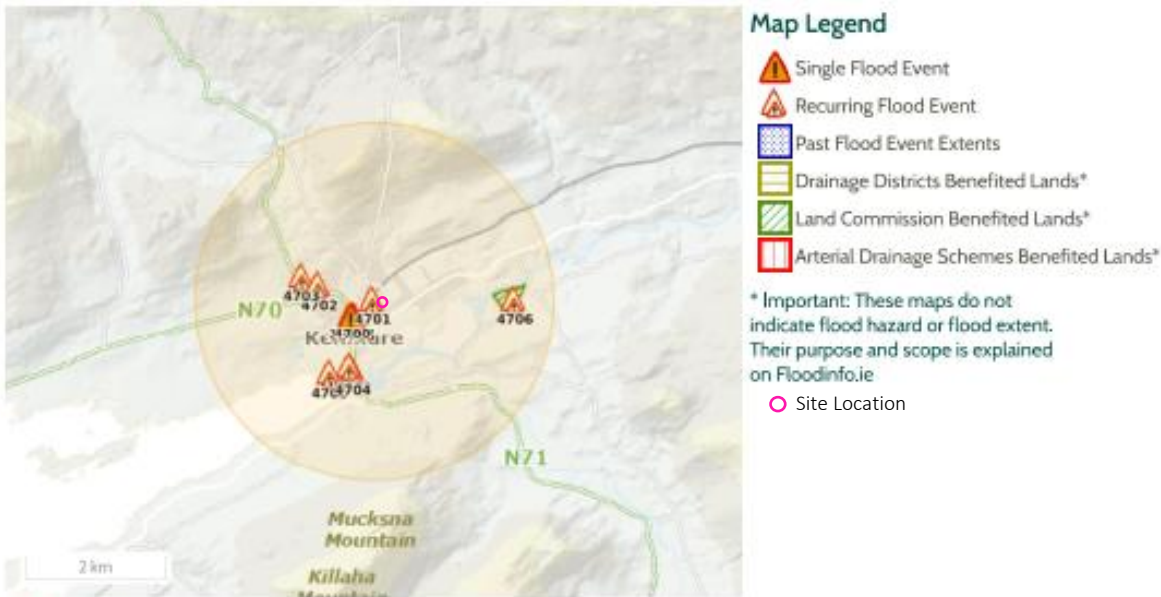
Past Flood Event Local Area Summary Report



Report Produced: 16/7/2026 10:24

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

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



11 Results

Name (Flood_ID)	Start Date	Event Location
1. Gortamullen Recurring (ID-4703) Additional Information: Reports (2) Press Archive (0)	n/a	Exact Point
2. Kenmare Town Square Recurring (ID-4700) Additional Information: Reports (2) Press Archive (1)	n/a	Exact Point
3. Scarteen Park Kenmare Recurring (ID-4701) Additional Information: Reports (2) Press Archive (1)	n/a	Exact Point
4. Finnihy River at Finnihy Banks Estate Recurring (ID-4702) Additional Information: Reports (2) Press Archive (0)	n/a	Exact Point
5. N71 North of suspension bridge Kenmare Recurring (ID-4704) Additional Information: Reports (2) Press Archive (0)	n/a	Exact Point
6. L7606 and Pier Kenmare Recurring (ID-4705) Additional Information: Reports (2) Press Archive (0)	n/a	Exact Point

	Name (Flood_ID)	Start Date	Event Location
7.	 L4055 at Gortalinny Recurring (ID-4706)	n/a	Exact Point
	Additional Information: Reports (2) Press Archive (Q)		
8.	 Kenmare River Finniyh 23 October 2008 (ID-10727)	22/10/2008	Exact Point
	Additional Information: Reports (5) Press Archive (Q)		
9.	 Flooding at Kenmare on 29/07/2020 (ID-13719)	29/07/2020	Approximate Point
	Additional Information: Reports (Q) Press Archive (Q)		
10.	 Flooding at Kenmare on 05/12/2015 (ID-13375)	05/12/2015	Approximate Point
	Additional Information: Reports (Q) Press Archive (Q)		
11.	 Flooding at Kenmare Sound on 07/12/2021 (ID-14091)	07/12/2021	Approximate Point
	Additional Information: Reports (Q) Press Archive (Q)		

Figure 4-1: Past Flood Event Local Area Summary Report

4.3 Kerry County Development Plan 2022 – 2028 SFRA

The Kerry County Development Plan 2022–2028 Strategic Flood Risk Assessment contains flood zone mapping for the area, as illustrated in Figure 4-2. As indicated, the proposed development site is located within Flood Zone A and B based on this mapping. Review of the Kerry County Development Plan 2022–2028 flood zone mapping confirms that there is a Flood Zone C designation within the proposed development site boundary, and a small portion of the western boundary of the site is therefore identified as being within an area of high vulnerability of flooding.

As the proposed development site is predominantly located within Flood Zone C, with only a small area along the site boundary falling within Flood Zones A and B, a Detailed Flood Risk Assessment (Stage 3), including hydraulic modelling where required, will be undertaken to verify the flood extents and assess the potential flood risk to the proposed development.

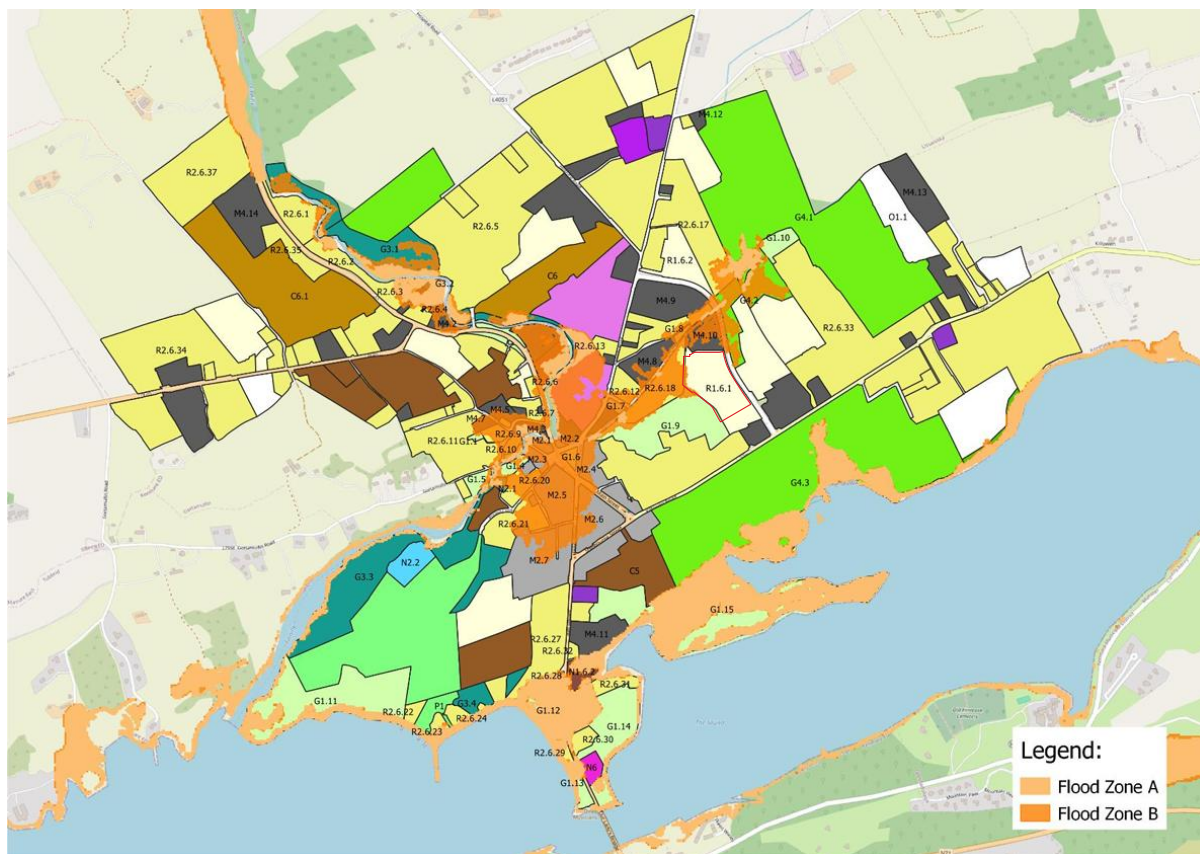


Figure 4-2: Kerry County Development Plan 2022 – 2028 SFRA Zoning Map

4.4 Southwestern Catchment Flood Risk Assessment & Management Study (CFRAMS)

The National Indicative Fluvial Flood Maps have been produced for catchments greater than 5km² in areas for which flood maps were not produced under the National Catchment Flood Risk Assessment and Management Programme (CFRAM) and should be read within this context. These maps are not the best achievable representation of projected flood extents, such as those that could be generated through detailed hydraulic modelling and are only indicative of the predicted flood extent of any given probability at any particular location. They should not be used for local decision-making or any other purpose without verification and seeking the advice of a suitable professional. The CFRAMS mapping for the proposed site can be seen in Figure 4-3.

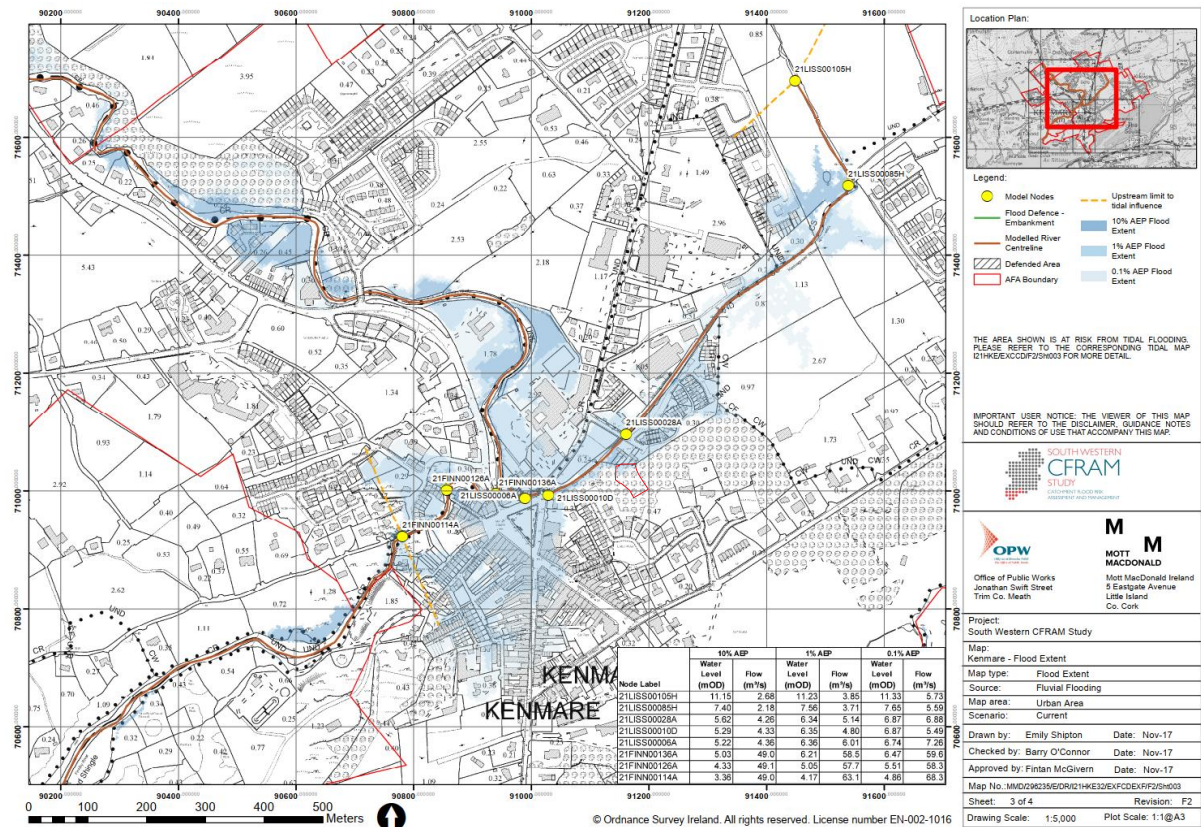


Figure 4-3: CFRAMS Fluvial Flood Mapping

4.5 Kenmare Flood Relief Scheme

Flood mapping produced under the CFRAM Programme previously identified the site as lying largely within Flood Zone C. However, through ongoing engagement with Kerry County Council and the Kenmare Flood Relief Scheme consultants, it was brought to the attention of the project team that the draft flood mapping completed as part of the Flood Relief Scheme assessment indicates that the site is located within Flood Zone B. Considering this updated information, a detailed Site-Specific Flood Risk Assessment was undertaken using detailed hydraulic modelling based on flow inputs and information provided by the Kenmare Flood Relief Scheme consultants. The results of the site-specific assessment are consistent with the findings of the ongoing Flood Relief Scheme study and indicate that the site should be classified within Flood Zone B rather than Flood Zone C.

4.6 National Coastal Flood Hazard Mapping

This data was created by the OPW as part of the National Coastal Flood Hazard Mapping project in 2021. The estimated extreme water level outputs from Phase 1 of the Irish Coastal Wave and Water Level Modelling Study were used as input water level data for this project, which informed the resulting mapping. In the context of tidal flooding, the flood map below indicates the extent of flooding for the 200-year and 1000-year return period floods for the MFRS event are shown in Figure 4-4.



Figure 4-4: National Coastal Flood Hazard Mapping - MRFS

4.7 OPW Arterial Drainage Scheme and Drainage Districts

The OPW Arterial Drainage Schemes (ADS) were carried out under the Arterial Drainage Act, 1945 to improve land for agricultural and to mitigate flooding by ensuring the 3-year flood was retained in bank. Rivers, lakes, weirs, and bridges were modified to enhance conveyance, embankments were built to control the movement of flood water, and various other work was carried out under Part II of the Arterial Drainage Act, 1945. The OPW has a statutory duty to maintain these schemes.

Similarly, Drainage Districts were carried out by the Commissioners of Public Works under a number of drainage and navigation acts from 1842 to the 1930s to improve land for agriculture and to mitigate flooding. Channels and lakes were deepened and widened, weirs removed, embankments constructed, bridges replaced or modified, and various other work was carried out. The purpose of the schemes was to improve land for agriculture, by lowering water levels during the growing season to reduce waterlogging on the land beside watercourses known as callows. Drainage Districts cover approximately 10% of the country, typically the flattest areas. Local Authorities are charged with responsibility to maintain Drainage Districts. The Arterial Drainage Act, 1945 contains several provisions for the management of Drainage Districts in Part III and Part VIII of the act.

A map of the areas in proximity to the site which were included with the ADS and Drainage Districts which indicated that the study area has not been included within the ADS.

4.8 GSI Groundwater & Surface Water Mapping

The Geological Survey of Ireland host a national database of Groundwater Flooding Probability Maps, flood extents of the Winter 2015/2016 Surface Water Flooding event and Maximum Historic Groundwater Flooding extents. These maps were reviewed and no flood risk was identified within the proposed development site.

4.9 Internet Searches

In addition to the resources discussed previously, an internet search was conducted to gather information about whether the site was affected by flooding previously. There was no available additional information or news reports etc. that indicated flooding within the proposed development site.

4.10 Flood Risk Identification (Stage 1) Summary

The above Stage 1 FRA has identified a potential fluvial flood risk at the proposed development site. In order to validate these findings, a Stage 2 FRA will be carried out to provide a more comprehensive assessment of the flood risk in the area, and to verify the conclusions of the Stage 1 FRA.

5. Initial Flood Risk Assessment (Stage 2)

5.1 Overview

The purpose of Initial Flood Risk Assessment is primarily to ensure that the relevant flood risk sources are identified so that they can be addressed, and appropriate mitigation measures recommended, where relevant. The potential sources of flooding and their relevance to the flood risk to the site are outlined in the following subsections.

5.2 Flooding Sources

5.2.1 Fluvial Flooding

Fluvial flooding occurs when the capacity of a river channel is exceeded, resulting in water overtopping the channel banks and inundating adjacent land. The principal watercourse in the vicinity of the proposed development site is the Kealnagower watercourse, which flows generally from northeast to southwest and is located north of the site, as shown in Figure 3-8. A review of the available flood risk information indicates that the Kerry County Development Plan 2022–2028 Strategic Flood Risk Assessment (SFRA) flood zone mapping identifies the site as largely being within Flood Zone C. However, after consultation with Kerry County Council and the Kenmare Flood Relief consultants currently progressing the Kenmare FRS design, the proposed development site was identified as potentially being at risk of flooding.

Given the proximity of the Kealnagower watercourse and results of the draft flood mapping completed as part of the Kenmare FRS, a Stage 3 Detailed Flood Risk Assessment is considered appropriate. This assessment included the development of a detailed hydraulic model to more accurately determine flood levels and extents at the site, confirm the applicable flood zone designation, and, where necessary, identify suitable mitigation measures to ensure that the proposed development will not be at unacceptable risk of flooding or increase flood risk elsewhere.

It will be necessary to complete a Stage 3 -Detailed Flood Risk Assessment for this site. The Stage 3 assessment will determine the required finished Floor Level (FFL) of proposed buildings and will deliver updated flood extent maps, water surface elevations (mOD) and assess the impacts of the development on flood risk elsewhere.

5.2.2 Pluvial Flooding

Overland flow or pluvial flooding occurs when rainfall intensity exceeds the infiltration capacity of the ground. The excess water flows overland to the nearest watercourse or piped drainage system. Intense rainfall events can result in ponding in low areas or upstream of physical obstructions. Overland flow is most likely to occur following periods of sustained and intense rainfall when the ground surface becomes saturated.

Flood risk from pluvial sources exists in all areas. Increase in hardstanding area will increase the risk of pluvial flooding. There is no history of pluvial or surface water flooding on the site and as discussed previously, the general topography of the site falls from south to north. There are no low points within the site which overland flows could pond and the site is currently characterised by largely bare and disturbed ground, with some existing impermeable surfaces associated with previous land use and surrounding urban development. The proposed development will alter the existing runoff characteristics of the site; however, the surface water management drainage design will incorporate appropriate Sustainable Drainage Systems (SuDS) and surface water

management measures to attenuate and control runoff rates and volumes. These measures will ensure that post-development runoff is managed in accordance with best practice and that the proposed development will not increase flood risk within the site or elsewhere within the receiving catchment. Please refer to 25631-ZZ-ZZZ-RP-MWP-CE-6005 DRAINAGE IMPACT REPORT and 25631-ZZ-ZZZ-RP-MWP-CE-6001 CIVIL UTILITIES REPORT for additional details in relation to the proposed SuDS and surface water management design.

5.2.3 Coastal and Estuarine Flooding

Estuarine and tidal flooding occurs when sea levels rise above normal levels because of extreme tidal conditions, storm surges, wave action, or the interaction of elevated river flows with high tide levels. The proposed development site at Killowen, Kenmare is located inland from the coastline. While transitional and coastal waterbodies occur within the wider receiving environment to the south of the site, the subject lands are situated on elevated ground, with existing site levels generally ranging between approximately 6.50 mOD and 12.50 mOD.

Review of the available flood mapping indicates that the site is located upstream of the nearest mapped coastal flood extents and is separated from Kenmare Bay by a considerable distance and intervening higher ground. The presence of transitional and coastal waterbodies in the wider area does not therefore present a significant source of flood risk to the proposed development. Consequently, the risk of estuarine or tidal flooding at the site is considered negligible, and no further assessment of this flood mechanism is required within this report.

5.2.4 Groundwater Flooding

Groundwater flooding occurs when the water table rises to the level of the ground surface due to rainfall and flows out over the surface. Groundwater flooding occurs relatively slowly and generally poses a low hazard to people. There is also no known history of such an occurrence in the vicinity of the site and for these reasons this source of flooding will not be considered further in this report.

5.3 Initial Flood Risk Assessment (Stage 2) Summary

The Stage 2 Flood Risk Assessment identified fluvial flooding as the principal flood risk mechanism requiring further consideration at the proposed development site. The site is located in proximity to the Kealnagower watercourse, and the Kenmare FRS draft flood mapping indicates that portions of the site are located within Flood Zone B.

Given the information provided by the Kenmare FRS consultants in relation to the fluvial flood risk associated with the site, a Stage 3 Detailed Flood Risk Assessment (FRA) will be undertaken. This assessment will include the development of a detailed hydraulic model of the Kealnagower watercourse. The results will be used to define flood levels and flood extents at the site, confirm the applicable flood zone designation, assess residual flood risk and identify any mitigation measures required to ensure that the proposed development will not be at unacceptable risk of flooding and will not increase flood risk elsewhere.

6. Detailed Flood Risk Assessment (Stage 3)

6.1 Overview

The purpose of this Stage 3 FRA is to assess flood risk issues in sufficient detail to provide a quantitative appraisal of potential flood risk to the site, of the potential impact of the development on flood risk elsewhere and to establish what mitigation measures, if any, may be required. The Stage 3 FRA will therefore require carrying out a detailed hydraulic analysis of the Kealnagower river reach to determine key flood risk parameters such as flood levels and flood extents.

6.2 Hydrology & Flow Estimation

6.2.1 Introduction & Kenmare FRS Consultation

As part of the hydrological assessment undertaken for this Site-Specific Flood Risk Assessment, consultation was undertaken with Kerry County Council and the consultants responsible for the ongoing Kenmare Flood Relief Scheme study. The Kenmare FRS study represents the most recent and detailed assessment of hydrological and hydraulic conditions within the study area and incorporates updated catchment characterisation, hydrological analyses and model development for the Finnihy, Kealnagower and Killowen watercourses.

To ensure consistency with the emerging flood risk information for the area, it was considered prudent to align the hydrological assessment with the Kenmare FRS assessment. The design inflows for the hydraulic assessment were provided by the Kenmare FRS design team for various return periods. These flow estimates were provided for use in the site-specific hydraulic model and were adopted as the hydrological inputs for the Site-Specific Flood Risk Assessment. As the Flood Relief Scheme study remains unpublished and subject to ongoing development, the detailed hydrological derivation, methodologies and flow estimates are not reproduced within this report.

The hydraulic modelling undertaken as part of this assessment therefore utilises the design flow estimates supplied by the Kenmare FRS consultants, representing the most up-to-date hydrological information available for the catchment at the time of the study. The approach ensures consistency between the flood risk assessment of the proposed development and the Kenmare FRS study.

6.2.2 Flood Flows for Flood Zone Mapping

The flood flows used for flood zone mapping will be the 1% and 0.1% AEP flows. For the purpose of flood zone mapping, it is considered appropriate to use the flows estimated in the previous sub sections as the design flows (i.e. with no confidence factor applied). In accordance with the Planning System and Flood Risk Management Guidelines 2009, the flood zones are defined without taking the effects of future climate change into account.

6.2.3 Future Scenarios

OPW guidance for climate change recommends allowing for an increase of 20% in extreme rainfall depths and flood flows in the Mid-Range Future Scenario (MRFS). It is deemed most appropriate for this study to use the MRFS (i.e. 20%) on the design 1% AEP flood flow to establish the design flood levels for any possible flood mitigation measures and assessing impacts on flood risk elsewhere.

In addition to climate change effects, current OPW guidance indicates that an allowance of -0.5mm per year be made for future land movement in this part of the country. This allowance will be included where it may prove critical however this effect will be negligible and will not be explicitly allowed for.

6.3 Hydraulic Modelling

6.3.1 Data Acquisition

As the Kenmare FRS includes the proposed development within its study area, MWP approached Kerry County Council with a data request for information relating to the Kenmare FRS hydrological and hydraulic analysis in order to proceed with an aligned hydraulic modelling approach for the proposed development. The following data was provided by Kerry County Council.

- Hydrographic survey data for the Finnihy, Kealnagower and Killowen watercourses,
- Topographic Survey of some areas within the Kenmare FRS study area,
- Flood defence/linear bank/embankment surveys (where applicable) in relation to the Finnihy, Kealnagower and Killowen watercourses,
- Information relating to Kenmare FRS Hydrology such as baseline design flows for each HEP, typical flow hydrographs (shape, duration etc), joint probability used for fluvial/pluvial and tidal/fluvial flood events etc.,
- Property threshold surveys of properties within the Kenmare FRS study area.

The OPW Coastal Aerial LiDAR Survey 2021 - South to West Coast of Ireland was obtained from the OPW Open Spatial Data Portal which was the LiDAR data used as part of the Kenmare FRS study.

This information was reviewed by MWP in conjunction with topographic survey data obtained as part of the proposed development and considered acceptable for use. It was considered prudent to adopt a similar hydraulic modelling approach insofar as practicable to ensure that the hydraulic analysis carried out by MWP in relation to the proposed development aligns with the hydraulic analysis carried out as part of the Kenmare FRS study.

6.3.2 Modelling Approach

The hydraulic analysis was carried out using the Hydraulic Engineering Centre River Analysis System (HEC-RAS 6.6) software which was developed by the US Army Corps of Engineers.

It was identified at an early stage that there is some potential for overland flow paths to exist within the site boundary, therefore a 1D-2D hydraulic model was created.

A survey of the Finnihy, Kealnagower and Killowen watercourse and the surrounding floodplain was undertaken by Murphys Geospatial in January 2023 for the Kenmare FRS study. This data was provided to MWP by KCC for this study which MWP reviewed and considered acceptable for use and the data was used to create a hydraulic model of the Kealnagower river reach located within proximity of the proposed development site and upstream/downstream of the proposed development site. Additional detailed site-specific topographic surveying was undertaken by GeoData in March 2025 which was also incorporated into the hydraulic model.

The 1-dimensional (1D) model incorporates approximately 150 cross sections representing 1.3km of the Kealnagower watercourse. There are 6no. bridge/culvert structures included in the 1D domain and 2no. inline weir structures. The 1D domain is intended to model the in-bank flows.

The 2D model domain includes the floodplains surrounding the proposed development. Its purpose is to model overland flows towards the development and other complex flow paths surrounding the proposed development site which cannot be adequately represented by a 1D model. A 10m x 10m cell size was adopted however this was refined along roads and other areas for a more accurate assessment of flow paths.

The 1D and 2D models are linked by lateral weirs positioned adjacent to the main banks of the river. The weir elevation was set to coincide with the ground elevation at the interface between the 1D and 2D domains and positive or negative flow is permitted so that any water which enters the floodplain at one location could potentially flow back into the main channel at another location.

A number of later inflow boundary conditions were utilised to allow for point inflows to the hydraulic model. These inflow locations were included at locations which represented key flow location changes such as at confluences with other watercourses and urban inflow locations. This included inflows from the Killowen watercourse.

The hydraulic model schematic is included in Figure 6-1.

An unsteady flow analysis was performed using flow hydrographs which were provided by the Kenmare FRS design team to provide consistency between the modelling approaches. The downstream boundary condition was set as the average hydraulic gradient using the flood level results provided by Kenmare FRS consultants in the vicinity of the downstream boundary location. This was subject to sensitivity analysis to ensure that the downstream boundary condition does not have any significant impact on flood levels at the proposed development site.

Based on a hydrographic survey of the river reach, Manning's 'n' values were assigned based broadly on land use type and terrain.

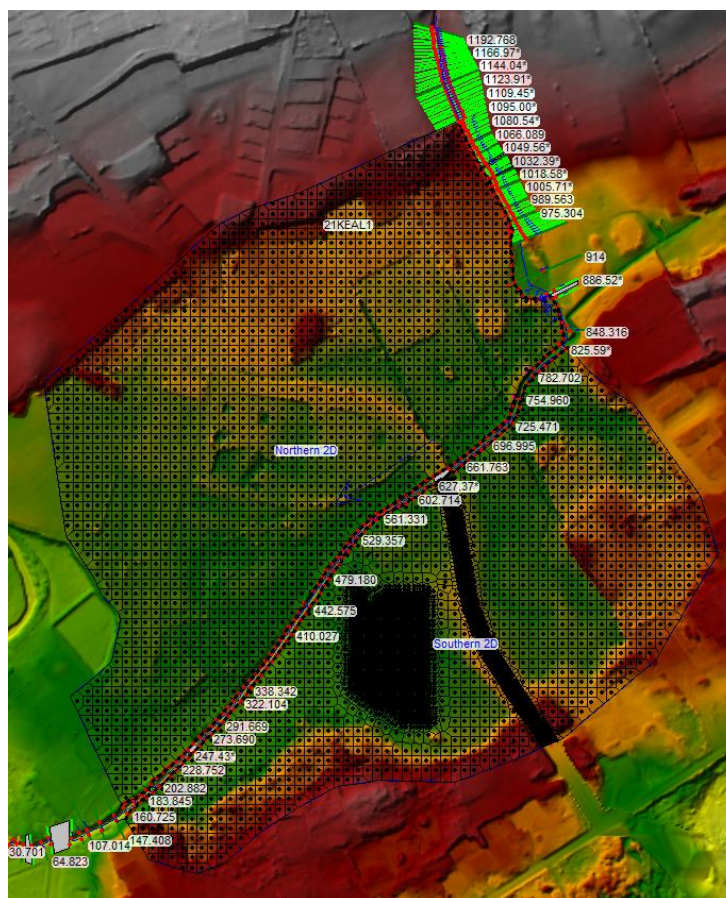


Figure 6-1: Hydraulic Model Schematic

6.3.3 Comparison with Kenmare FRS Model

The baseline hydraulic model was run for the 1% AEP, 1% AEP MRFS and 0.1% AEP flood events to provide a comparison to the Kenmare FRS hydraulic modelling results. The hydraulic model results were compared to the undefended scenario modelled as part of the Kenmare FRS study.

A comparison of the flood levels recorded at Nodes 21KEAL00229 to 21KEAL00947 was undertaken and it was found that the MWP hydraulic model overestimates the flood levels by an average of 120mm, 90mm and 70mm for the 1% AEP, 1% AEP MRFS and 0.1% AEP flood events respectively. These differences is an overestimation compared to the Kenmare FRS hydraulic model so is considered acceptable for use in the detailed Site-Specific Flood Risk Assessment.

6.3.4 Flood Zone Mapping & Flood Zone Identification

The PSFRM Guidelines document defines three flood zone types as follows:

- *Flood Zone A* – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- *Flood Zone B* - where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
- *Flood Zone C* - where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

The flood zones are defined without taking the effects of future climate change into account.

The hydraulic model generated as part of this SSFRA was used to establish the baseline flood levels at the site for the 1% AEP and 0.1% AEP flows and these were used to produce a flood zone map for the site and surrounding floodplains. The Flood Zone Map, which indicate the extent of Flood Zones A and B is shown on Figure 6-2 below.

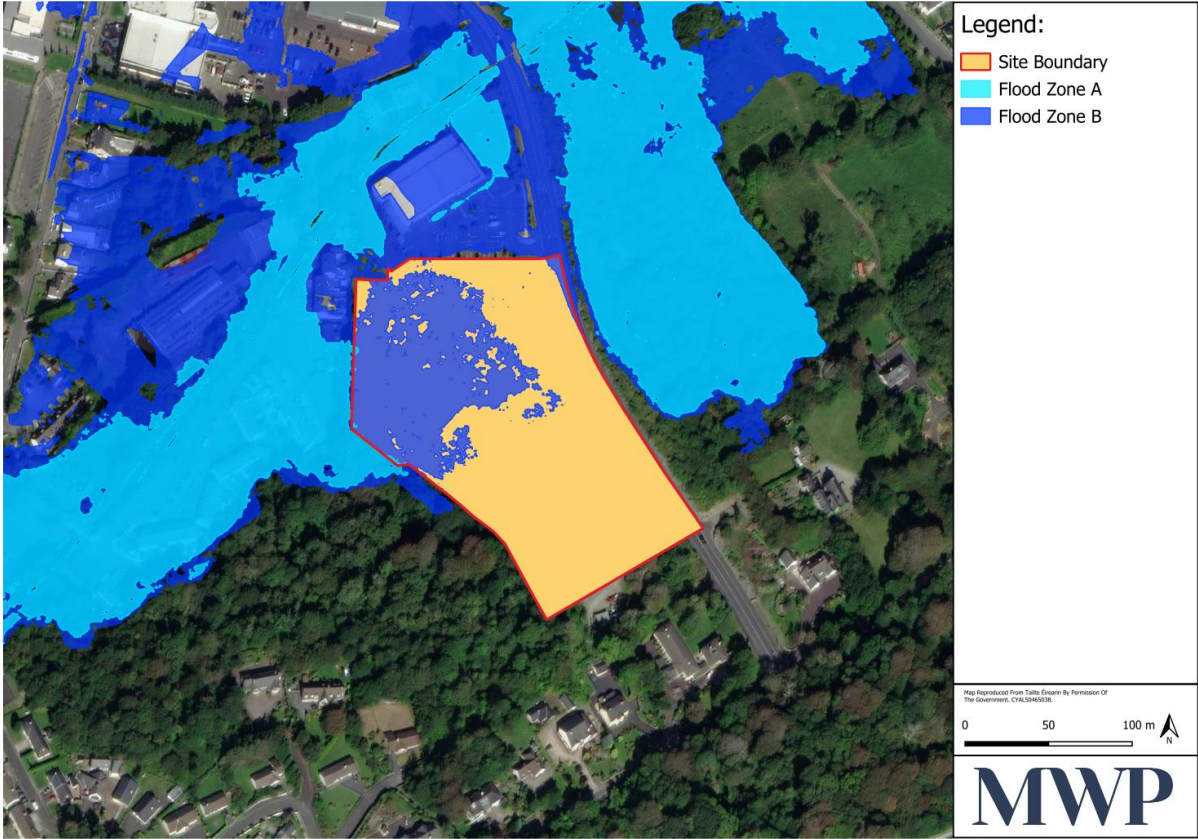


Figure 6-2: Flood Zone Map

6.3.5 Vulnerability of the Proposed Development

The PSFRM Guidelines have outlined three Vulnerability Classifications for developments based on the proposed land use and type of development. These classifications and particular examples of development types which would be included in each classification are summarised as follows;

- 1. Highly Vulnerable Development:** This would include emergency services, hospitals, schools, residential institutions, dwelling houses, essential infrastructure, water & sewage treatment etc.
- 2. Less Vulnerable Development:** Retail, leisure, commercial, industrial buildings, local transport infrastructure.
- 3. Water-compatible development:** Docks, marinas and wharves. Amenity and open space, outdoor sports and recreation and essential facilities such as changing rooms.

The Guidelines also include a matrix of vulnerability versus flood zone to differentiate between developments which are appropriate in various flood zones and those which require a Justification Test. This table is reproduced in Table 6-1 below.

Vulnerability Classification	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

Table 6-1: Vulnerability Matrix

The proposed development is classed as Highly Vulnerable Development in accordance with the PSFRM Guidelines. Therefore, the type of development being proposed is not appropriate for this flood zone (Flood Zone B) and a Development Management Justification Test for the proposed development is required. This will be completed in 6.5 below.

6.3.6 Baseline Flood Extents & Levels

In addition to the flood zone mapping presented above in Figure 6-2, the hydraulic model generated as part of this SSFRA was used to establish the baseline flood levels and extents at the site. The baseline flood extent and depth maps for the 1% AEP and 1% AEP MRFS (design event) flood events are presented below in Figure 6-3 to Figure 6-6.

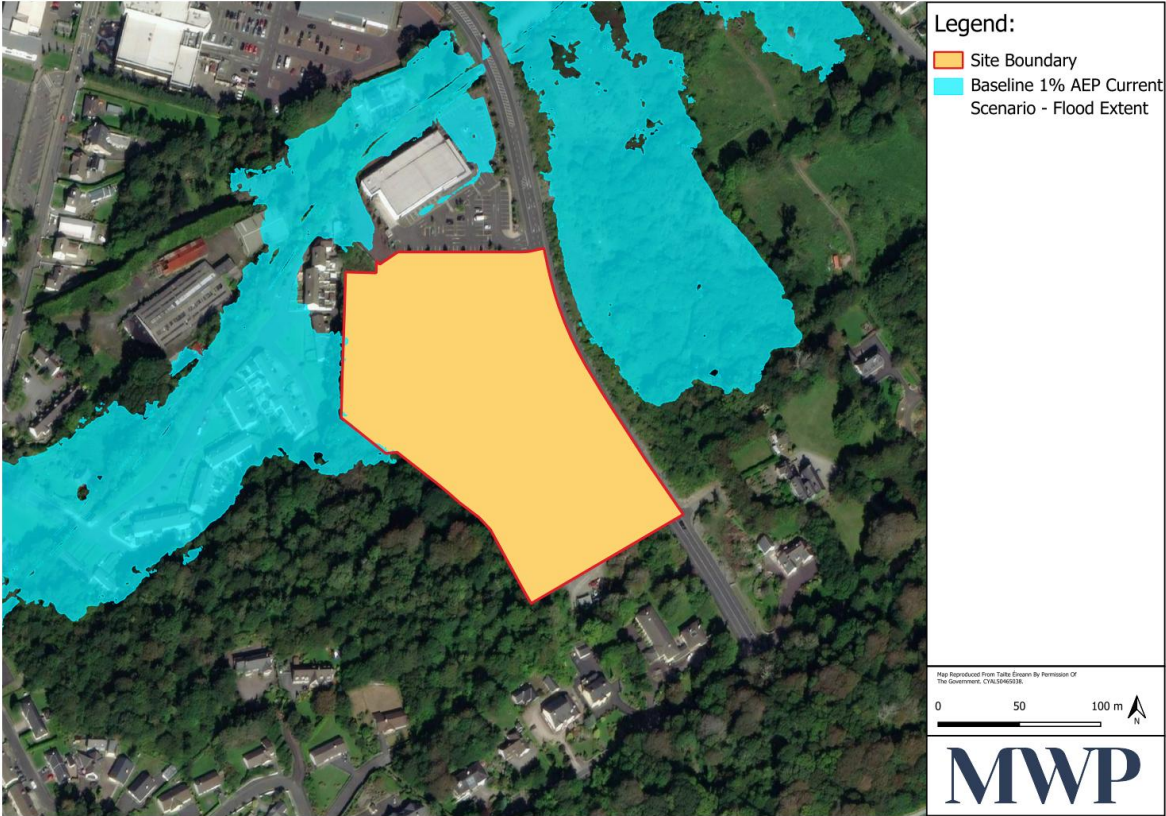


Figure 6-3: Baseline Flood Extent - 1% AEP Current Scenario

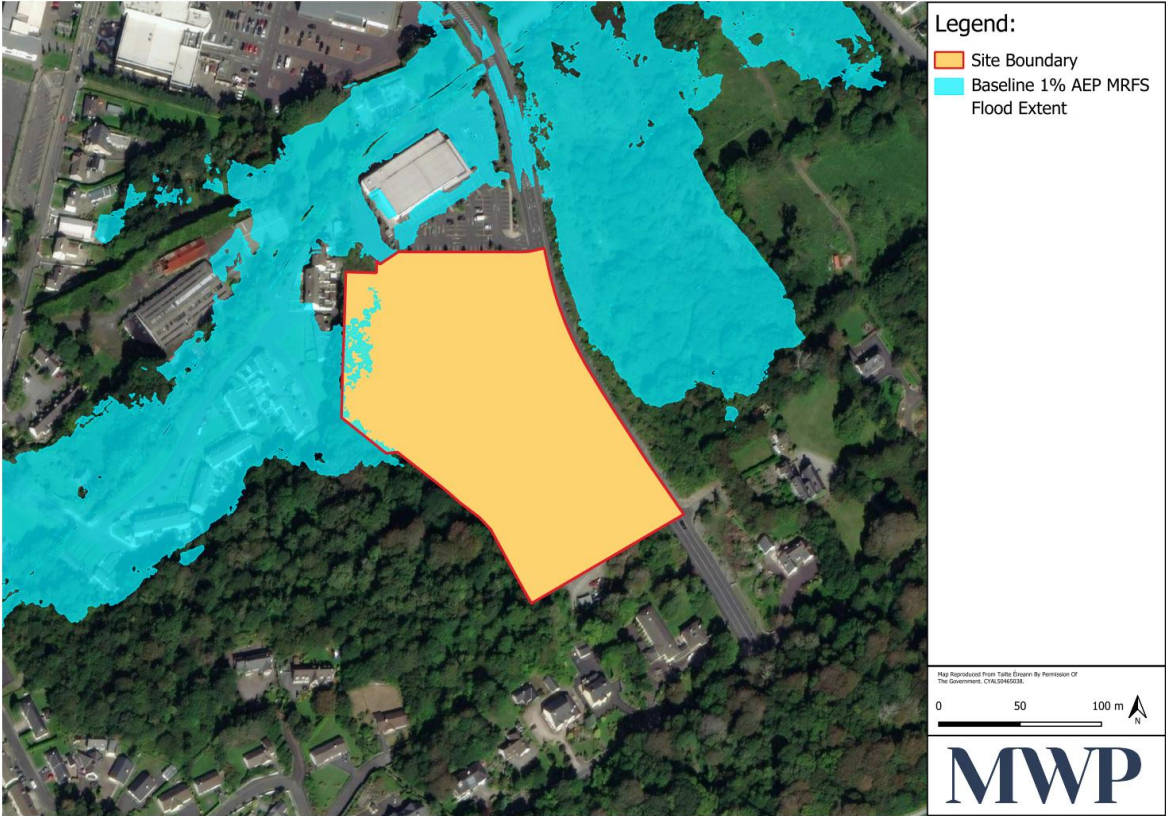


Figure 6-4: Baseline Flood Extent - 1% AEP MRFS

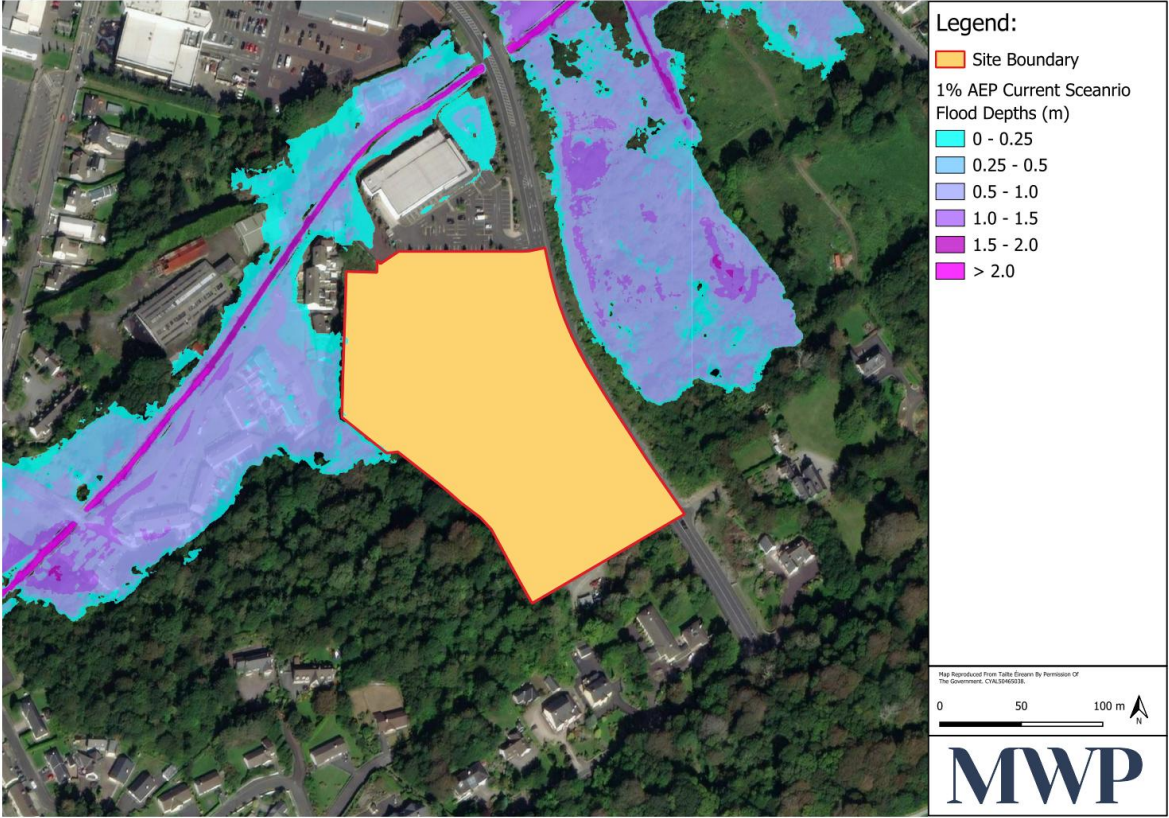


Figure 6-5: Baseline Flood Depths (m) - 1% AEP Current Scenario

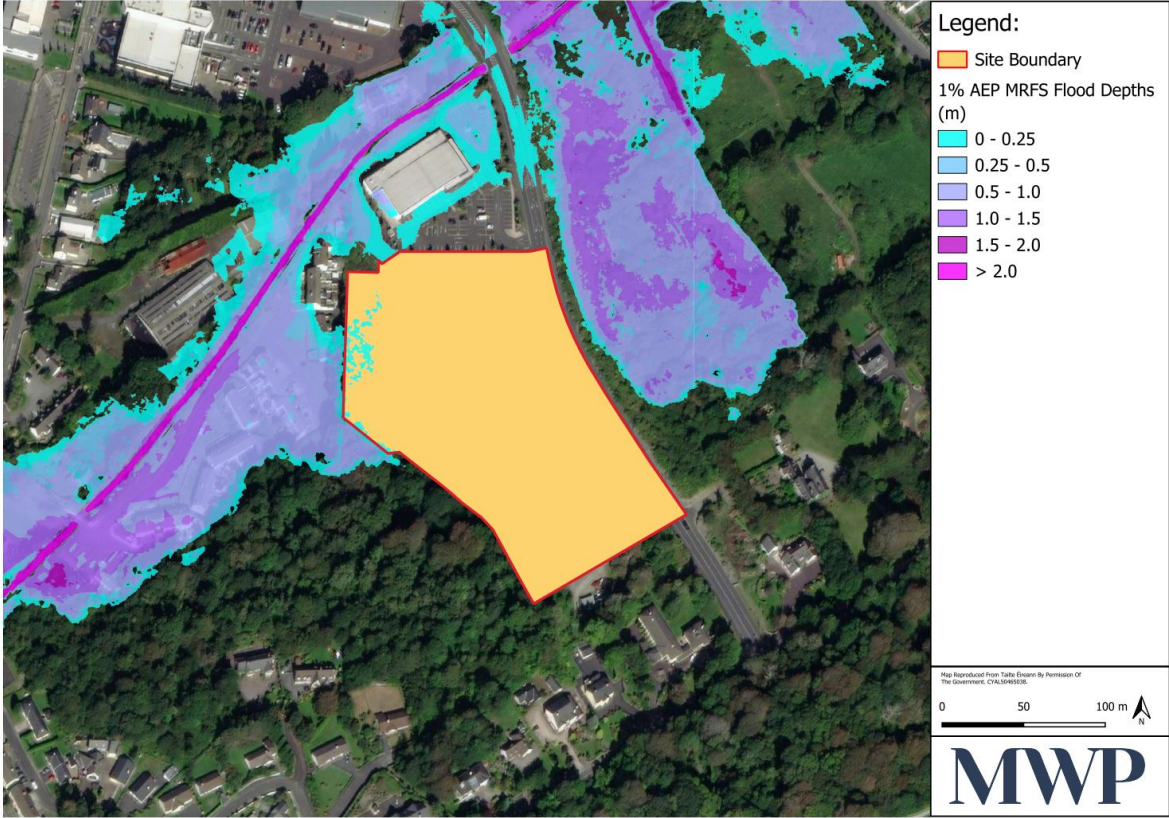


Figure 6-6: Baseline Flood Depths (m) - 1% AEP MRFS

6.4 Post-Development Hydraulic Modelling

6.4.1 Overview

It is necessary to model the impacts of the post development scenario to ensure the proposed development of the subject lands will not increase flood risk to lands upstream or downstream of the subject lands or to those occupying the proposed development of these subject lands.

The adjustments made to the hydraulic model to represent the post development situation are summarized as follows.

1. The infilling associated with the proposed residential development was added to the baseline terrain file used for the hydraulic model computations. The proposed development site was raised to prevent flooding for the purpose of this hydraulic analysis.

6.4.2 Post-Development Hydraulic Modelling Flood Levels & Extents

The hydraulic model was run for the post development situation which confirmed that the proposed development will not adversely impact flood risk elsewhere. The flood extents for this post-development situation compared to the baseline situation are presented in Figure 4.8 to Figure 4.10. The following is noted;

- The flood extent maps for the post-development situation 1% AEP and 1% AEP MRFS flood events are presented below in Figure 6-8 and Figure 6-9.
- The flood depth maps for the post-development situation 1% AEP and 1% AEP MRFS flood events are presented below in Figure 6-10 and Figure 6-11.
- The flood levels for the post-development situation are presented below (See Table 6-2) for the 1% AEP and 1% AEP MRFS flood events. This table also illustrates the baseline flood levels for comparison which demonstrates that there is no impact on flood levels elsewhere up to the design flood event (1% AEP MRFS). Where no flooding is observed at a node, the nearest flood level has been selected for inclusion in this table.

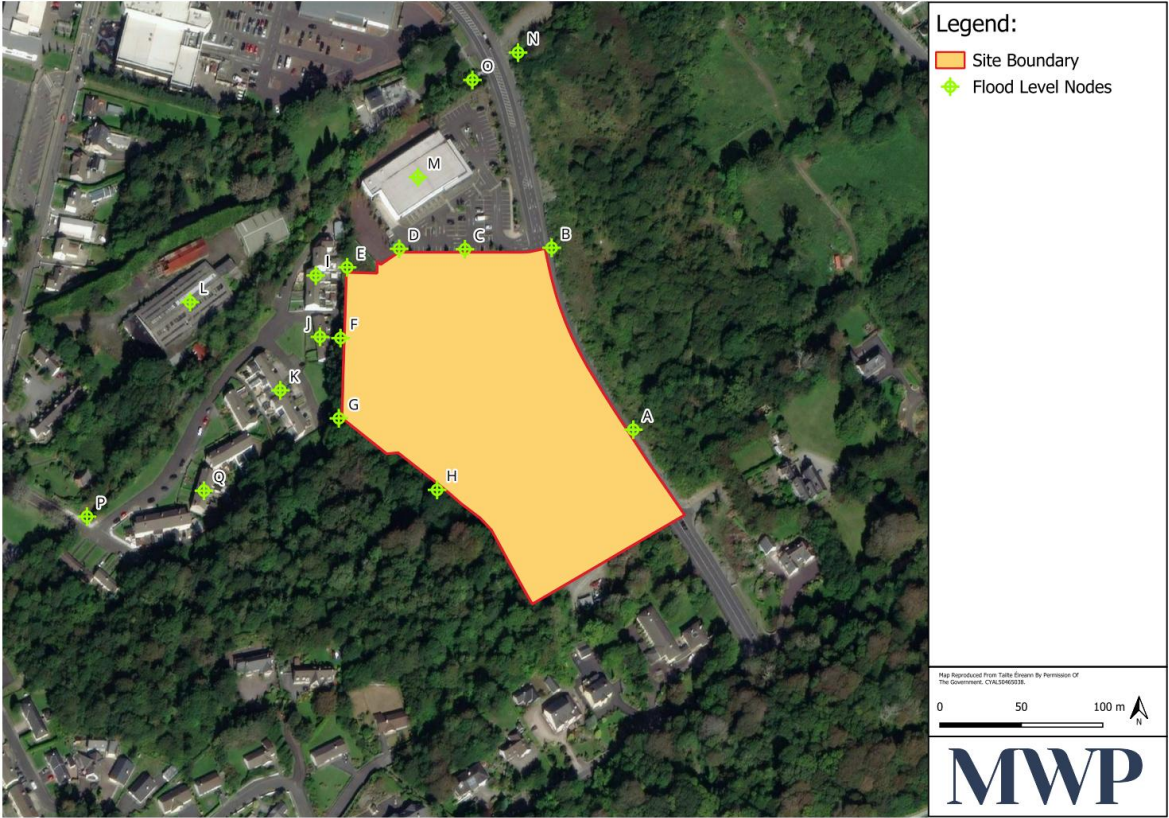


Figure 6-7: Flood Level Node Location Map

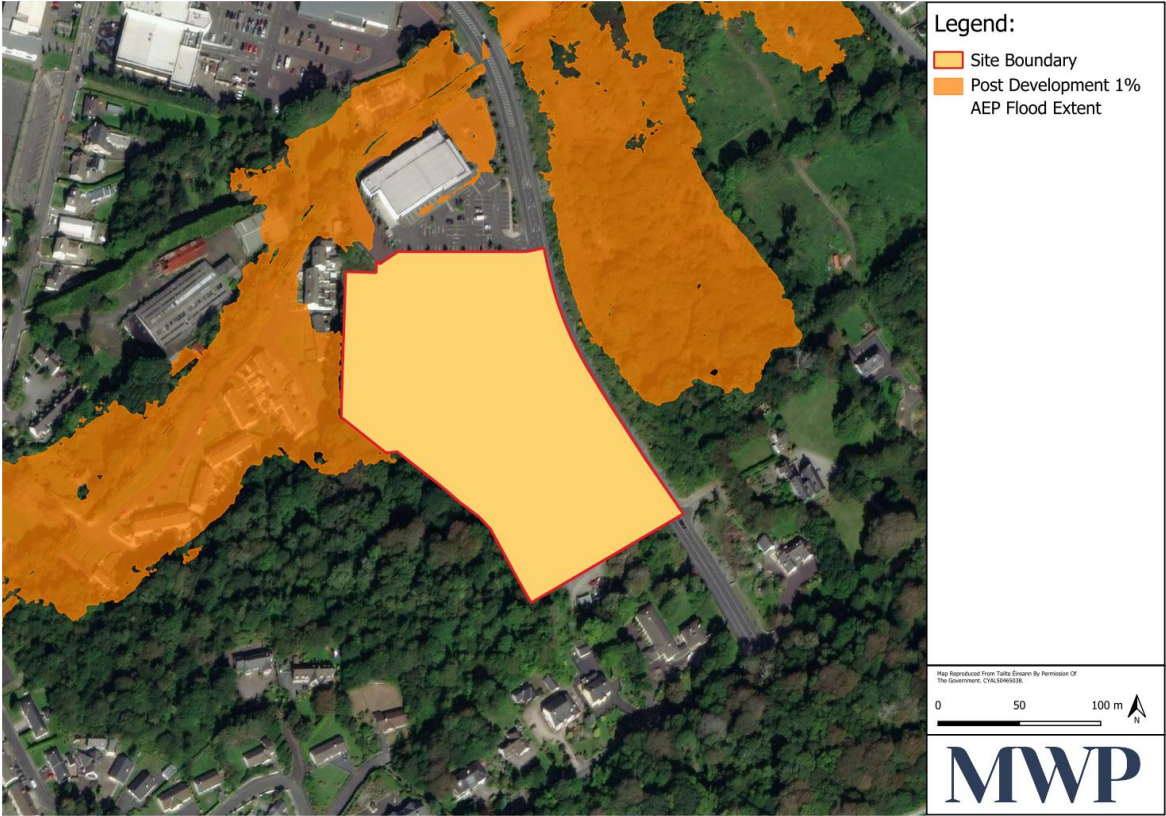


Figure 6-8: Post-Development Flood Extent - 1% AEP Current Scenario

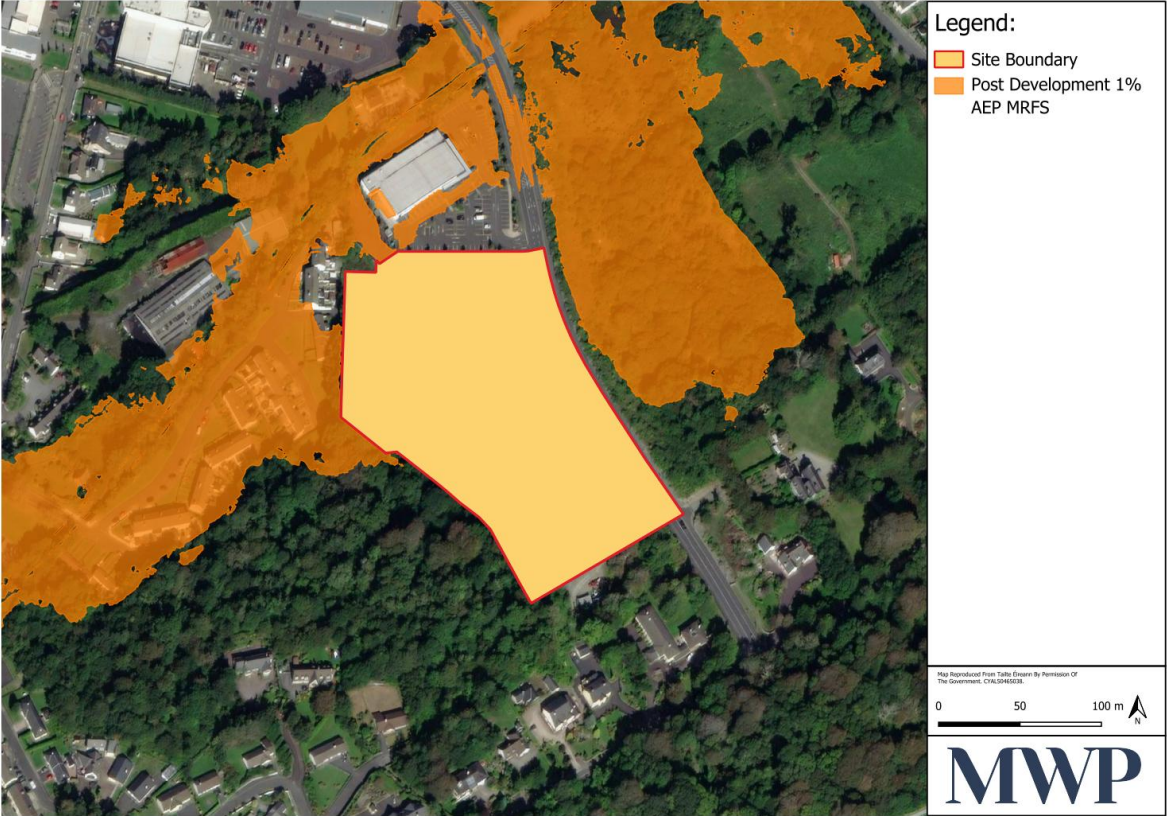


Figure 6-9: Post-Development Flood Extent - 1% AEP MRFS

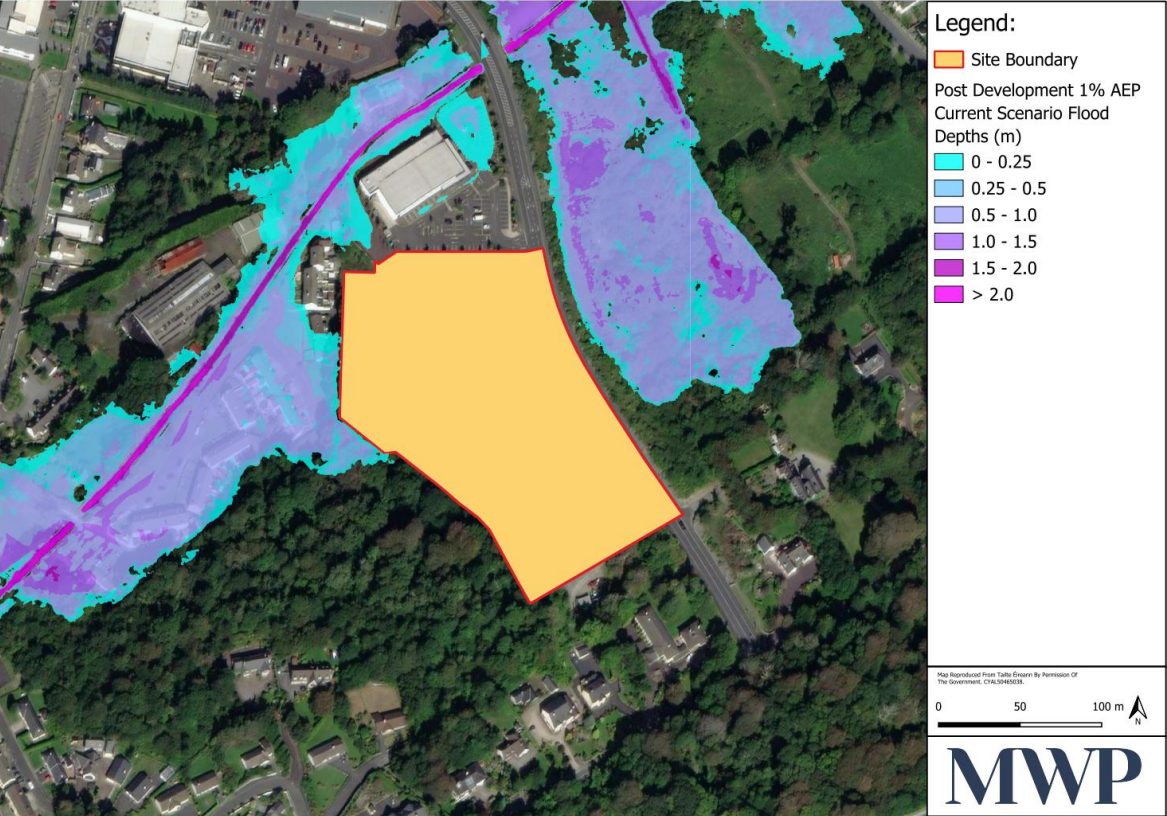


Figure 6-10: Post-Development Flood Depths (m) – 1% AEP Current Scenario



Post Development Flood Levels at Node Points - 1% AEP & 1% AEP MRFS				
Node ID	Post Development - 1% AEP (mOD)	Post-Development - 1% AEP MRFS (mOD)	Difference Compared to Baseline – 1% AEP (m)	Difference Compared to Baseline – 1% AEP MRFS (m)
A	8.05	8.25	0.00	0.00
B	8.05	8.25	0.00	0.00
C	7.30	8.00	0.00	0.00
D	6.95	7.10	0.00	0.00
E	6.60	6.75	0.00	0.00
F	6.60	6.75	0.00	0.00
G	6.60	6.75	0.00	0.00
H	6.90	7.05	0.00	0.00
I	6.60	6.75	0.00	0.00
J	6.59	6.72	0.00	0.00
K	6.61	6.73	0.00	0.00
L	7.28	7.40	0.00	0.00
M	7.95	8.15	0.00	0.00
N	7.34	7.45	0.00	0.00
O	6.59	6.72	0.00	0.00
P	6.57	6.69	0.00	0.00
Q	6.59	6.72	0.00	0.00

Table 6-2: Flood Levels at Node Points - 1% AEP & 1% AEP MRFS

6.4.3 Mitigation Measures

To ensure there is no unacceptable flood risk to the proposed development site, the following mitigation measures are recommended;

- The finished floor level (FFL) of all buildings should be set above the 1% AEP flood level for the MRFS plus 500mm freeboard. This recommendation is in line with the requirements of Criterion 3 of the Greater Dublin Strategic Drainage Study (GDSDS), 2005.
- The proposed minimum finished floor level of all buildings typically ranges from 7.60mOD – 10.20mOD. This is at least 500mm above the predicted design flood level (6.75mOD – 8.23mOD) for the associated 1% AEP MRFS.
- The northwestern corner of the landholding boundary will be maintained at existing ground levels to ensure flow conveyance is maintained in this area.
- It is proposed to install a new stormwater sewer system within the development. The design has been completed taking cognisance of the Greater Dublin Regional Code of Practice for Drainage Works (GDSDS) and the CIRIA SUDS manual 2015.
- The surface water drainage system will incorporate all hardstand areas including rainwater from the roofs of each of the houses which will be discharged into a central carrier pipe directed to an attenuation area within the green public space. The system is designed to collect the stormwater runoff generated on the site and store it in an underground aquacell attenuation tank and outfall to the Kealnagower watercourse west of the site.
- The proposed sewer pipes and sub-surface attenuation systems have been designed for storage of a 1 in 100-year storm plus 20% Climate Change allowance. Please refer to *25631-ZZ-ZZZ-RP-MWP-CE-6005 DRAINAGE IMPACT REPORT* for additional information relating to the proposed stormwater drainage design.
- The proposed outfall associated with the stormwater drainage system is located west of the proposed development site along the Kealnagower watercourse as indicated in *25631-ZZ-ZZZ-RP-MWP-CE-6005 DRAINAGE IMPACT REPORT*. The impact of the controlled stormwater discharge on flood risk elsewhere was assessed and has been assessed in conjunction with the various flood event scenarios. There is no impact on flood levels within the Kealnagower watercourse as a result of the proposed controlled discharge (greenfield runoff rate) from the proposed development site storm water drainage system. This is discussed further in the following sub-sections.

6.4.4 Assessment of Risk to Occupants

The proposed finished floor level of any proposed buildings will be at least 500mm above the predicted design flood level (1% AEP MRFS) and therefore the risk to occupants of the proposed residential units is low. This recommendation is in line with the requirements of Criterion 3 of the Greater Dublin Strategic Drainage Study (GDSDS), 2005. On this basis, the design flood level ranges from 6.75 mOD to 8.25mOD. The proposed minimum F.F.L of the residential units ranges from 7.60mOD to 10.20mOD and any proposed F.F.L is a minimum of 500mm above the adjacent design flood level and therefore the risk to occupants of the proposed residential units is considered low.

The adjacent Pat Scarteen bypass road is elevated above the design flood level and therefore safe access, and egress is available to the site during flood events in the event emergency access to the site is required during an extreme flood event.

6.4.5 Impact of Development on Flood Risk Elsewhere

Generally, potential impacts outside the site can occur due to loss of water storage where part of a floodplain is filled to accommodate development.

The mitigation measures outlined in this report have been formulated to ensure that the proposed development will not adversely impact flood risk elsewhere.

The following observations in relation to the impact of the development on flood risk elsewhere can be made;

- Table 6-2 presented above presents the post-development flood levels for the 1% AEP MRFS design flood event and provides a comparison compared to the baseline flood levels. There is no increase in flood levels upstream or downstream of the site due to the proposed development up to the design flood event.
- As demonstrated by the comparative flood extent map provided on Figure 6-12 below, there is no increase in flood extent upstream or downstream of the proposed development site due to the proposed infill. Therefore, the proposed development will not increase flood risk upstream or downstream of the site. Table 6-2 presented above presents the baseline and post-development flood levels for the 1% AEP flood event and the 1% AEP MRFS design flood event. There is no increase in flood levels upstream or downstream of the site due to the proposed development infill up to the design flood event.
- Figure 6-13 shows the flow hydrographs for the pre and post development situations downstream of the site in the 1% AEP MRFS event. This demonstrates that there is no change to the post- development hydrograph shape or peak flow passing downstream. Consequently, it is concluded that the proposed development will not increase flood risk downstream of the site.
- The northwestern corner of the landholding will be maintained at existing ground levels. This ensures there is no increase in flood risk to 3rd party landowners outside of the landholding boundary associated with the proposed development and existing flow conveyance paths are maintained in this area.
- Without mitigation, hardstanding and roof areas could increase the rate and volume of surface water runoff, potentially contributing to flooding downstream. In order to ensure that peak flows discharging from the developed site do not exceed pre-development runoff rates, appropriate SuDS systems should be implemented. It is proposed to locate the proposed storm water outfall immediately west of the proposed development site. Please refer to *25631-ZZ-ZZZ-RP-MWP-CE-6005 DRAINAGE IMPACT REPORT* for additional information relating to the proposed stormwater drainage design. An assessment has been undertaken to assess the impact of the controlled discharge of the peak flow rates (greenfield runoff rate) associated with the proposed storm water system from the proposed development site to the Kealnagower watercourse.
- In order to provide a robust assessment of the impact of this discharge on flood levels elsewhere, the hydraulic assessment assumed a constant discharge of the peak flow discharge rates to the Kealnagower watercourse for the entire duration of the flood hydrograph for the 1% AEP and 1% AEP MRFS extreme flood events. The impact of this discharge on the more frequent 50% AEP flood event was also assessed. No increase in flood levels is observed for the duration of the flood flow hydrograph for these flood events.

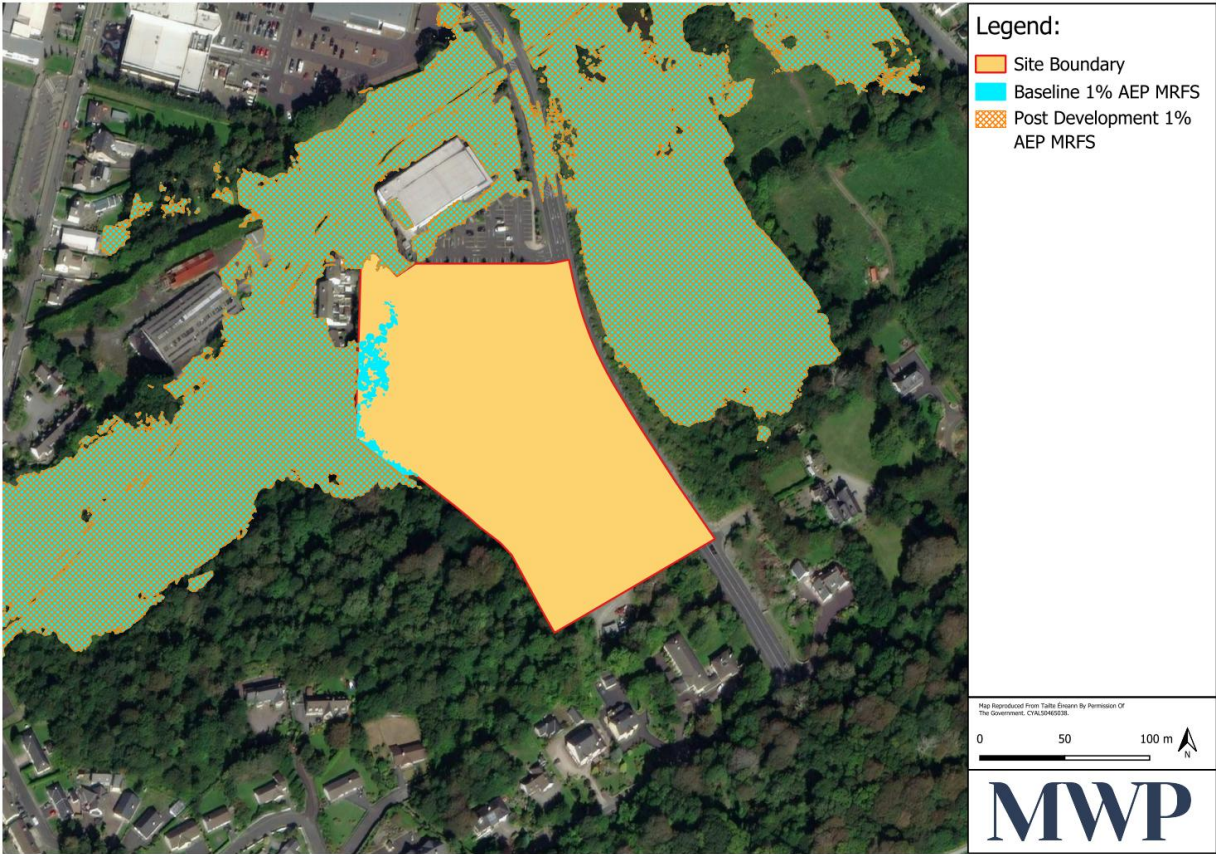


Figure 6-12: Flood Extent Comparison Map - Baseline v Post Development - 1% AEP MRFS

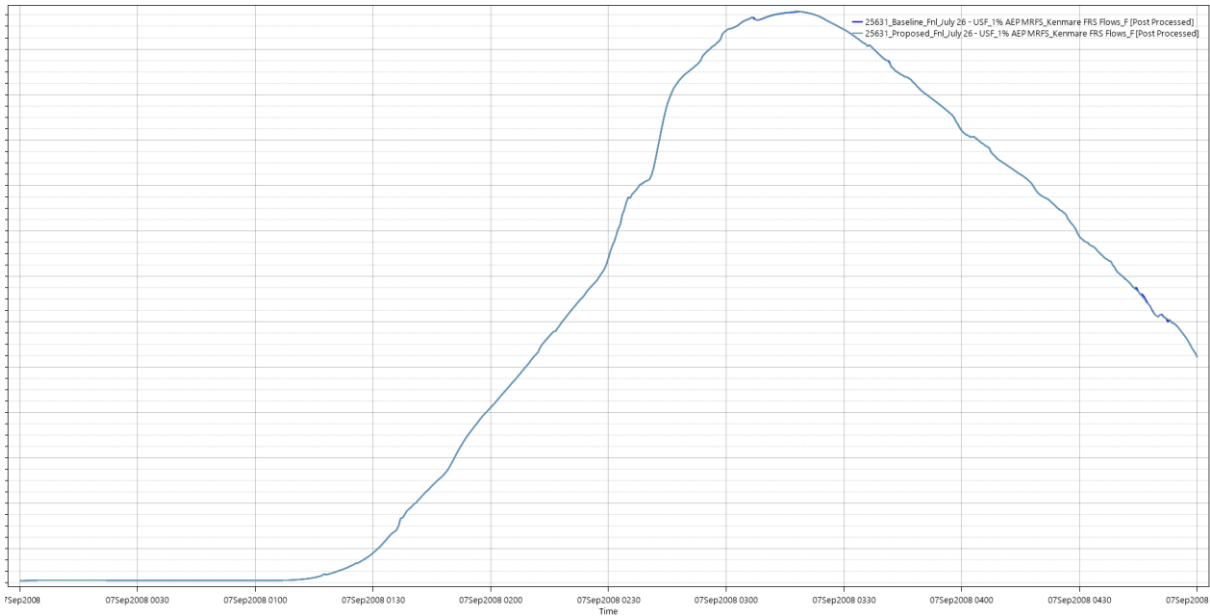


Figure 6-13: Downstream Peak Flow Hydrograph – 1% AEP MRFS

6.4.6 Climate Change & Residual Risks

The following residual risks have been identified;

1. Climate change effects larger than currently estimated;
2. Flood flows larger than the design flow estimate.

The Planning System and Flood Risk Management Guidelines (2009) note that flood zones are defined without consideration of the potential effects of climate change. Over the lifetime of the proposed development, increases in rainfall intensity may lead to higher fluvial flood levels, resulting in flooding that is more frequent or severe than currently predicted. To address this, the Finished Floor Levels (F.F.L's) of all proposed residential buildings have been set with reference to the 1% AEP Mid-Range Future Scenario (MRFS) event providing a minimum 0.5m freeboard in line with the requirements of Criterion 3 of the Greater Dublin Strategic Drainage Study (GDSDS), 2005., thereby incorporating an allowance for climate change and providing additional resilience against future flood risk.

During the sensitivity analysis an assessment was carried out to determine the impact a 1% AEP flood event for the HEFS (i.e. 30% increase in flows to allow for climate change). The predicted flood level for the 1% AEP HEFS flood event is 6.79mOD to 8.32mOD and the proposed F.F.L of all residential buildings are above the associated 1% AEP HEFS flood event. The flood level impacts elsewhere are consistent with the impacts identified above as presented in Table 6-3 below.

Based on this, the proposed development of this site does not increase flood risk elsewhere and the proposed development is not at risk during the 1%AEP HEFS and the residual risk associated with climate change effects larger than currently estimated is considered acceptable. The flood extent and flood depth maps for the baseline and post-development scenarios for the 1% AEP HEFS are presented below in Figure 6-14 to Figure 6-20.

In addition, the sensitivity analysis assessment also assessed the impacts of a 0.1% AEP flood event for the current scenario to assess the impact of flood flows larger than estimated for the design flow. This equates to an increase of approximately 60% on the design flow. The predicted flood level for the 0.1% AEP flood event is 7.15mOD to 8.49mOD and the proposed F.F.L of all residential buildings are above the associated 0.1% AEP flood event and no flooding of buildings is observed.

Flood levels elsewhere are not adversely affected by the proposed development in this scenario with a maximum increase in flood levels of 10mm -15mm observed downstream of the site and no increase in flood levels upstream of the site as presented in Table 6-3 below. This increase is considered negligible. Outside of the site boundary, there is no observable impacts on flood extents elsewhere because of the proposed development as indicated in Figure 6-18 below.

Given the conservative nature of the flood flow increase for this residual risk assessment and the conservative nature of the hydraulic model compared to the Kenmare FRS hydraulic model, it is considered to represent an inconsequential impact for a residual risk scenario and therefore the residual risk of flood flows larger than the design flow estimate is considered acceptable. The flood extent and flood depth maps for the baseline and post-development scenarios for the 0.1% AEP are presented below in Figure 6-14 to Figure 6-20.

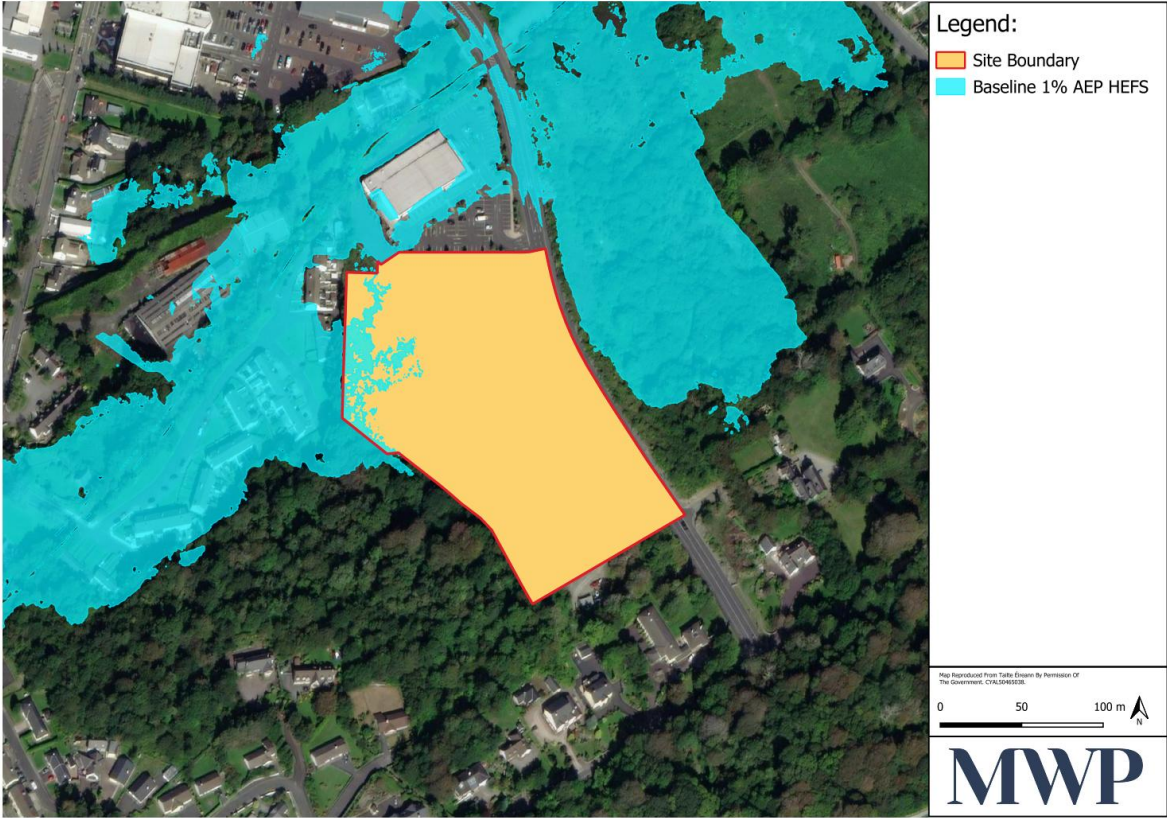


Figure 6-14: Baseline Flood Extent - 1% AEP HEFS

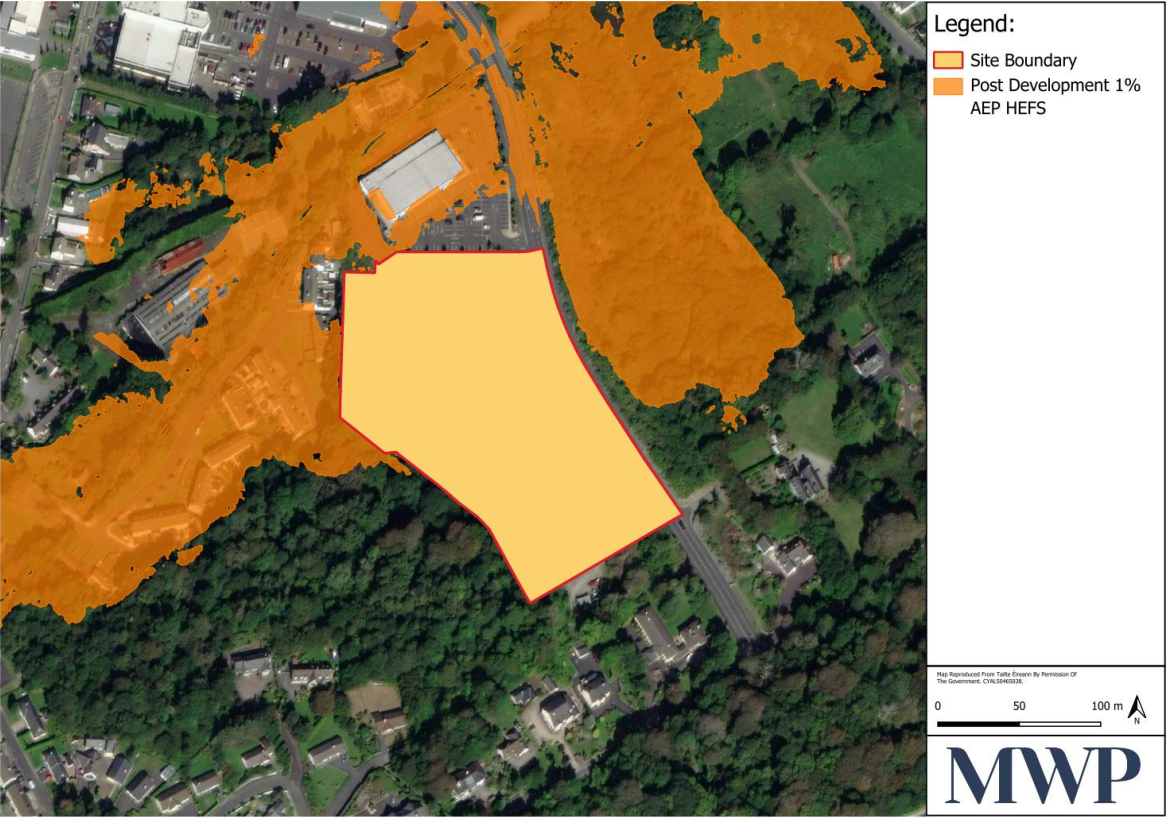


Figure 6-15: Post Development Flood Extent - 1% AEP HEFS

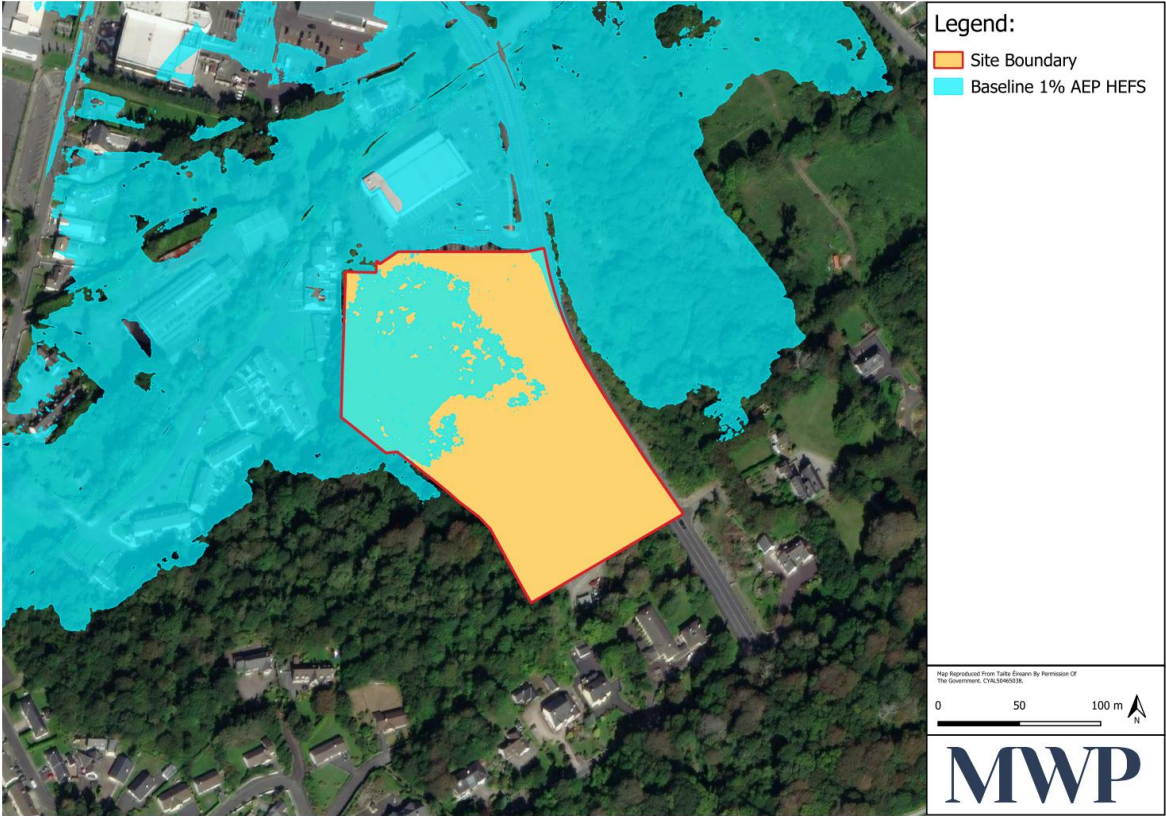


Figure 6-16: Baseline Flood Extent - 0.1% AEP Current Scenario

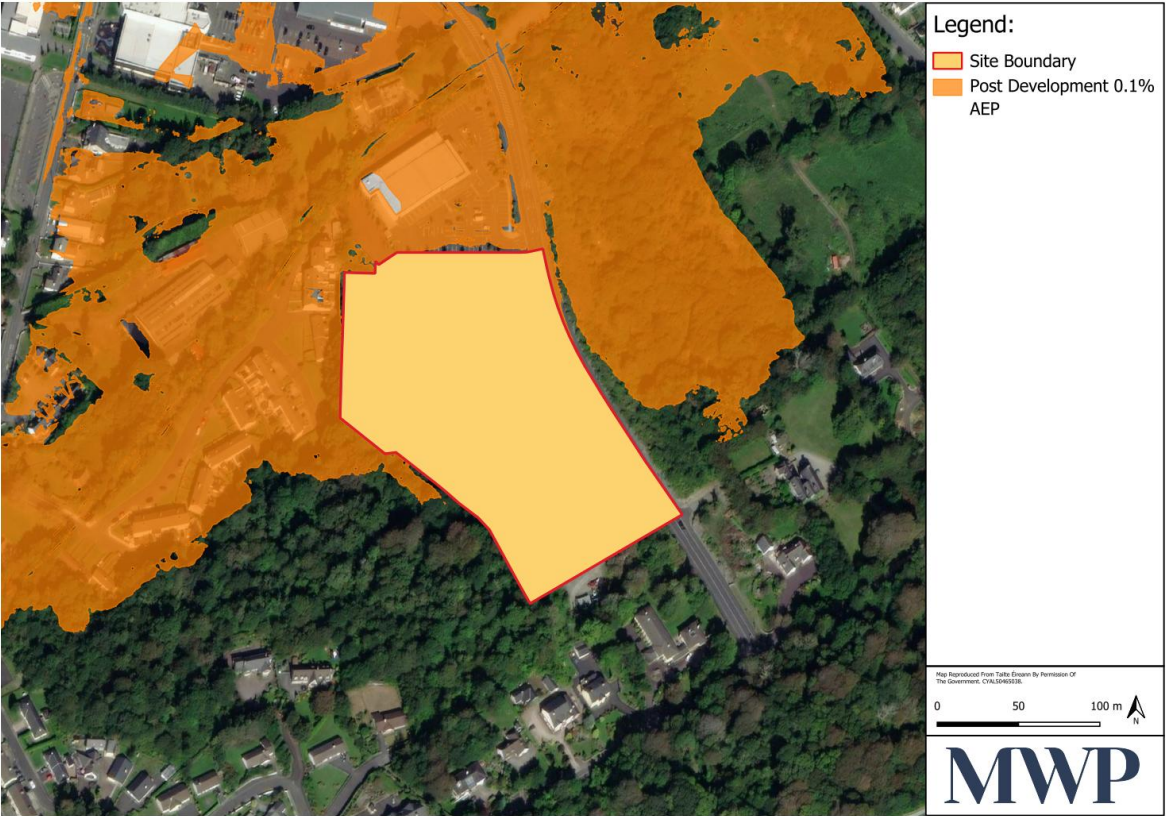


Figure 6-17: Post Development Flood Extent - 0.1% AEP Current Scenario

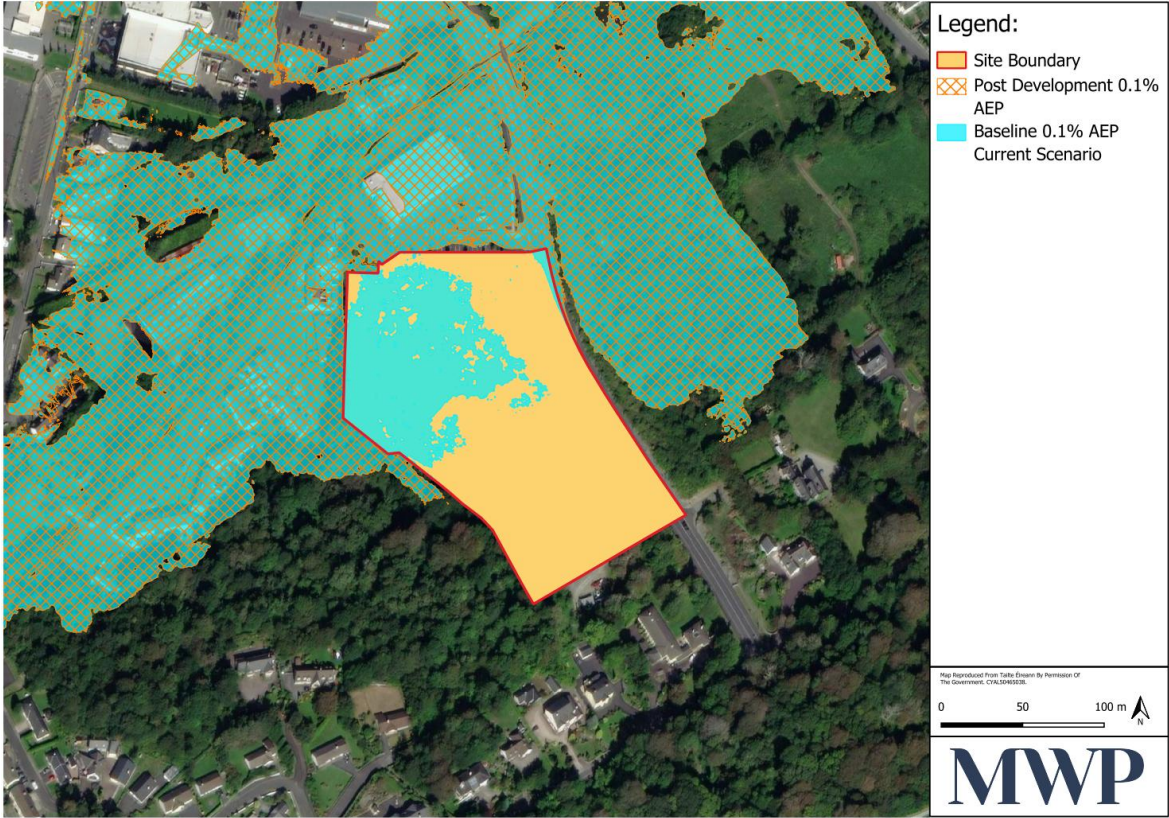


Figure 6-18: Flood Extent Comparison Map - Baseline v Post Development - 0.1% AEP Current Scenario

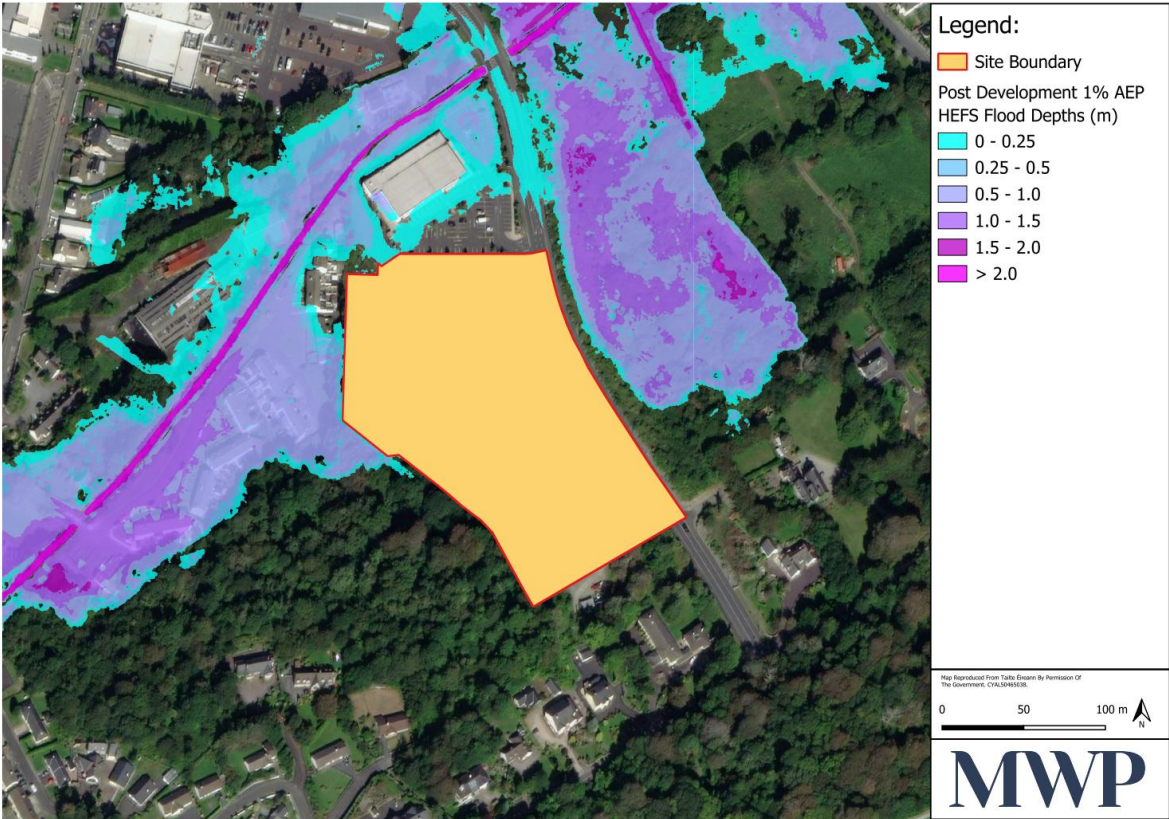


Figure 6-19: Post Development Flood Depths (m) – 1% AEP HEFS

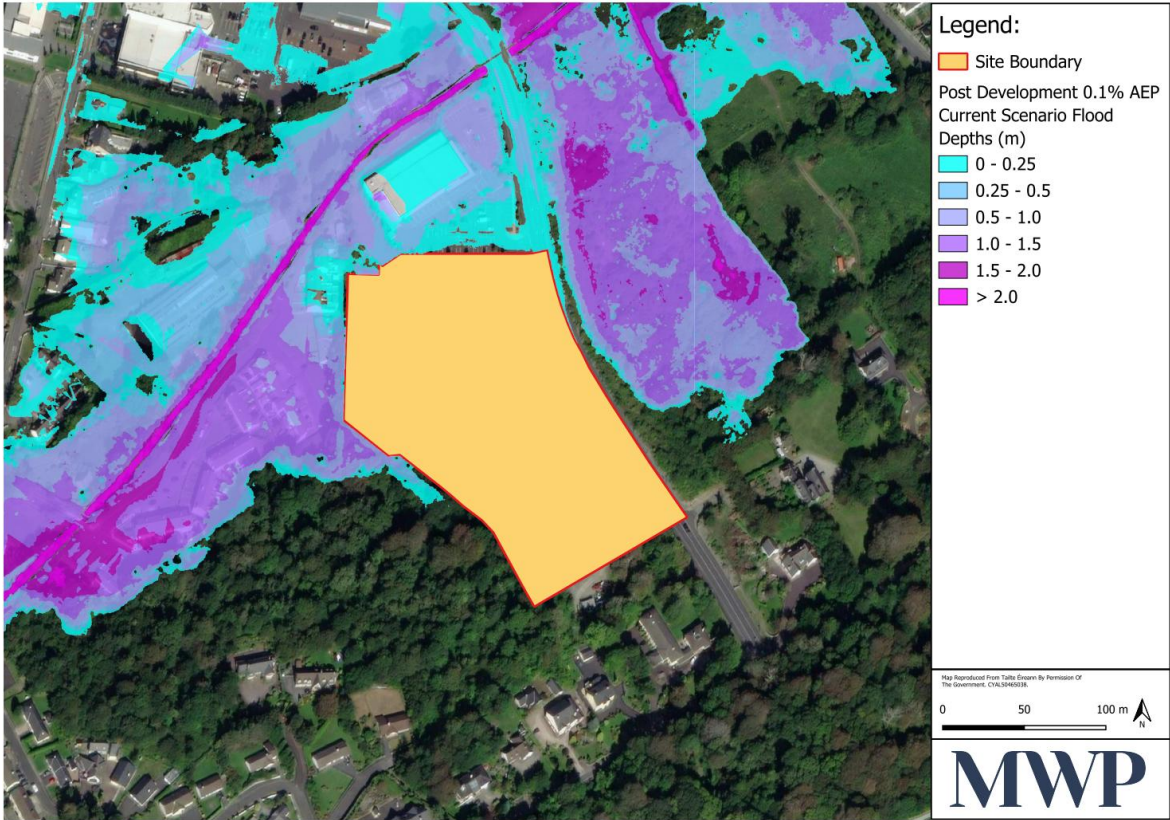


Figure 6-20: Post Development Flood Depths (m) - 0.1% AEP Current Scenario

Residual Risk Assessment - Post Development Flood Levels at Node Points - 1% AEP HEFS & 0.1% AEP Current Scenario				
Node ID	Post Development - 1% AEP HEFS (mOD)	Post-Development – 0.1% AEP Current Scenario (mOD)	Difference Compared to Baseline – 1% AEP HEFS (m)	Difference Compared to Baseline – 0.1% AEP (m)
A	8.32	8.49	0.00	0.000
B	8.32	8.49	0.00	0.000
C	7.50	7.80	0.00	0.000
D	7.30	7.50	0.00	0.010
E	7.15	7.35	0.00	0.015
F	6.79	7.15	0.00	0.015
G	6.79	7.15	0.00	0.010
H	6.79	7.15	0.00	0.010
I	7.02	7.25	0.00	0.015
J	6.79	7.14	0.00	0.015
K	6.79	7.13	0.00	0.015
L	6.81	7.15	0.00	0.015
M	7.47	7.70	0.00	0.000
N	8.20	8.42	0.00	0.000
O	7.51	7.79	0.00	0.000
P	6.80	7.17	0.00	0.015
Q	6.76	7.13	0.00	0.015

Table 6-3: Residual Risk - Flood Levels at Node Points - 1% AEP HEFS & 0.1% AEP Current Scenario

6.5 Justification Test

The PSFRM Guidelines outlines two types of Justification Test, namely Plan-making Justification Tests and Development Management Justification Tests. The latter is appropriate at the planning application stage for developments in moderate or high risk flood areas.

The PSFRM Guidelines state that when applying the Justification Test to developments which may be vulnerable to flooding a number of criteria should be satisfied. These are listed and commented on below.

Criterion 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”.

The Kenmare Municipal District Local Area Plan 2024-2030 was adopted on 4th July 2022 and came into effect on 15th August 2022 and requires proposals for residential development in Kenmare to comply with objectives Objective No. KENMD 80 – KENMD 84. The Site-Specific Flood Risk Assessment has been carried out in accordance with these objectives. The following objectives have been extracted from the Kenmare Municipal District Local Area Plan 2024-2030.

Objective KENMD-80. Facilitate sustainable residential growth and KENMD – 80 prioritise development of the Plan area’s settlements in accordance with the Settlement Hierarchy and the Core Strategy set out in the KCDP 2022-2028.

The Kenmare Municipal District Local Area Plan 2024-2030 states that within settlements, future residential development will only be permitted on appropriately zoned lands, infill sites and on sites Kenmare MD LAP 2024-2030 contiguous with the town/village centre, or where otherwise compatible with the KCDP Core Strategy. The site has been zoned R1 – New/Proposed Residential which aims to facilitate the development of residential units in accordance with the Core Strategy under the Kenmare Municipal District Local Area Plan 2024-2030.

This demonstrates that the proposed development is in compliance with the relevant zoning objectives for the site.

Criterion 1 of the justification test is therefore considered to be satisfied.

Criterion 2: Table 6-4 outlines the justification for Criterion 2 of the Justification Test.

Justification Test Criterion 2	
Justification Criteria	Justification
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 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.	These criteria are addressed in the previous sub-sections and have been fulfilled by carrying out appropriate risk assessments, the implementation of mitigation measures and by adequately assessing all associated risks as summarised below: i. As outlined in Section 6.4.2 and 0, there is no unacceptable increase in flood levels due to the proposed development that and the proposed development will not increase flood risk elsewhere. ii. As outlined in the site-specific FRA, the provision of mitigation measures such as ensuring F.F.L have appropriate freeboard above flood levels and the provision of a suitably designed storm drainage system to control surface runoff, will minimise flood risk to people, property the economy and the environment as far as reasonably possible. iii. As outlined in Section 6.4.6, there are uncertainties with regard to climate change impacts on peak flows. The best approach is to be flexible with regard to management of flood risk. The proposed minimum F.F.L of the residential development units ranges from 7.60mOD to 10.20mOD. This provides freeboard above the 1% AEP HEFS flood event. The HEFS is deemed an appropriate uplift in flood levels due to climate change for residual risk assessment. The development proposed therefore 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. iv. As outlined throughout the FRA, 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.

Table 6-4: Justification Test Criterion 2

7. Summary & Conclusions

A summary of the main findings of this FRA is as follows;

1. This report has been prepared in the context of The Planning System and Flood Risk Management – Guidelines for Planning Authorities, November 2009 (PSFRM), published by the Office of Public Works and the Department of Environment, Heritage and Local Government.
2. The proposed development will be on an area of approximately 2.62ha and consists of a LRD comprising 100 no. residential units, car parking, shared open spaces, landscaping, and all associated and ancillary site works to facilitate the proposed development.
3. The Stage 1 and 2 flood risk assessments indicated that there is potential for fluvial flooding at this site. The potential source of flooding was identified as the Kealnagower watercourse located north of the site.
4. A Stage 3 Detailed Flood Risk Assessment (FRA) was carried out to assess flood risk issues in sufficient detail to provide a quantitative appraisal of potential flood risk to the site.
5. A detailed hydraulic model was created to predict the flood zones and flood levels at the site. This demonstrated that the proposed residential development of the site is located in Flood Zone B & Flood Zone C and therefore has a moderate/low probability of flooding.
6. A Justification Test is required for the proposed residential development as it encroaches into Flood Zone B. A Justification Test was carried out which demonstrates that the proposed development is compliant with PSFRM Guidelines and the Objectives of Kerry County Development Plan 2022 - 2028.
7. To ensure that there is no unacceptable flood risk, the following mitigation measures are recommended:
 - a. The finished floor level (FFL) of all buildings should be set above the 1% AEP flood level for the MRFS plus 500mm freeboard. This recommendation is in line with the requirements of Criterion 3 of the Greater Dublin Strategic Drainage Study (GDSDS), 2005. On this basis, the design flood level ranges from 6.75mOD to 8.25mOD. The proposed minimum F.F.L of the residential units ranges from 7.60mOD to 10.20mOD and any proposed F.F.L is a minimum of 500mm above the adjacent design flood level.
 - b. The land within the site will be raised above the design flood level.
 - c. Surface water drainage from the proposed development site will manage the associated pluvial flood risk using a suitably design surface water management strategy that incorporates Sustainable Urban Drainage System (SUDs).
8. It was also concluded that, once these mitigation measures are implemented, the proposed development would not have an adverse impact on flooding on third party lands upstream or downstream of the proposed development site.
9. It was demonstrated that the risk to occupants of the site would be low.
10. Residual risks associated with the development were also assessed and are considered to be acceptable.

Appendix 1

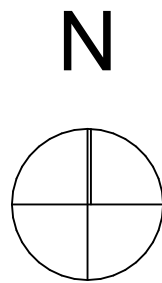
Site Layout Plan

THIS DRAWING IS FOR INFORMATIONAL & DISCUSSION PURPOSES ONLY. FURTHER DRAWINGS AND STUDIES WILL BE REQUIRED FOR CONSTRUCTION AND TO ENSURE COMPLIANCE WITH RELEVANT BUILDING REGULATIONS AND STANDARDS.

Rev	Ch	Change Name	Date
P03	Ch-34	Change	04/08/2026
P02	Ch-27	32B Submission	20/04/2026
P01			31/03/2026

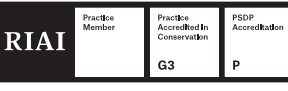
Overall Development Breakdown	
Total Number of Units	100
Total Site Area	2.63 Ha
Developable Area	2.53 Ha
Density	39.50 Units / ha
Public Open Space	c.11.55%

- KEY
- Existing Wayleave
 - Site Boundary
 - Other Lands Within The Same Ownership
 - Archaeological Exclusion Zone (KE093-016)
 - Existing to be Demolished



Drawn for Planning	04/08/2026	P03
Drawn for 32B Submission	20/04/2026	P02
Drawn for 32B Submission	31/03/2026	P01
Revision Description	Rev	
001	Initial	
002	Initial	
003	Initial	
004	Initial	
005	Initial	
006	Initial	
007	Initial	
008	Initial	
009	Initial	
010	Initial	
011	Initial	
012	Initial	
013	Initial	
014	Initial	
015	Initial	
016	Initial	
017	Initial	
018	Initial	
019	Initial	
020	Initial	
021	Initial	
022	Initial	
023	Initial	
024	Initial	
025	Initial	
026	Initial	
027	Initial	
028	Initial	
029	Initial	
030	Initial	
031	Initial	
032	Initial	
033	Initial	
034	Initial	
035	Initial	
036	Initial	
037	Initial	
038	Initial	
039	Initial	
040	Initial	
041	Initial	
042	Initial	
043	Initial	
044	Initial	
045	Initial	
046	Initial	
047	Initial	
048	Initial	
049	Initial	
050	Initial	
051	Initial	
052	Initial	
053	Initial	
054	Initial	
055	Initial	
056	Initial	
057	Initial	
058	Initial	
059	Initial	
060	Initial	
061	Initial	
062	Initial	
063	Initial	
064	Initial	
065	Initial	
066	Initial	
067	Initial	
068	Initial	
069	Initial	
070	Initial	
071	Initial	
072	Initial	
073	Initial	
074	Initial	
075	Initial	
076	Initial	
077	Initial	
078	Initial	
079	Initial	
080	Initial	
081	Initial	
082	Initial	
083	Initial	
084	Initial	
085	Initial	
086	Initial	
087	Initial	
088	Initial	
089	Initial	
090	Initial	
091	Initial	
092	Initial	
093	Initial	
094	Initial	
095	Initial	
096	Initial	
097	Initial	
098	Initial	
099	Initial	
100	Initial	

meitheal architects



Project Architect: Mark	Diagram	1:500	Project	Orig	Volume	Level	Type	Role	Number	Rev
24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026	24/08/2026
241088-MA-SW-XX-DR-A-10005-P03										
S:\2024\MA\241088\Working\Drawings\1000 - Site Drawings\241088-DEIS-001-24.plt Tuesday 11 August 2026										



Proposed Site Layout Plan (Grey Roofs)

1:500