McCloy Consulting

Flood Risk Assessment

The Common, Lifford, Co. Donegal

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WATER & ENVIRONMENTAL CONSULTANTS

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1 INTRODUCTION

1.1 Terms of Reference

This Flood Risk Assessment (FRA) was commissioned by McAdam Design Ltd to support a planning application for the proposed development of lands at The Common, Lifford, Co. Donegal (hereafter referred to as 'the site').

1.2 Statement of Authority

This FRA report has been prepared and reviewed by qualified professionals specialising in flood risk, hydrology, and drainage. The key staff members involved in this project are:

- Duncan Hartwick BEng (Hons) BSc (Hons) MIEI – Project Engineer with experience in flood risk assessment, hydrology, and hydraulic modelling.
- Paul Singleton BEng (Hons) MSc CEng MIEI – Chartered Civil / Environmental Engineer specialising in flood risk assessment, hydrology, and sustainable drainage; recognised industry professional providing training courses on these topics to the public and private sectors in Ireland and the UK.

1.3 Purpose

The assessment is intended to produce a detailed site-specific FRA to ensure that all relevant issues related to flooding are addressed. This Stage 3 FRA will assess the adequacy of existing information and present analysis undertaken to supplement existing data.

The assessment will ultimately determine potential sources of flooding at the site and their associated risk to life and property. It will also determine the suitability of the site for future development based on relevant flood risk management planning policy guidelines and propose appropriate design and mitigation measures, where appropriate, to be considered as part of the development proposal.

1.4 Approach to the Assessment

1.4.1 Method of Assessment

The method of assessment applied complies with the Source-Pathway-Receptor model and provides a spatial assessment of flood risk at the site. Consideration has been given to the sources and extent of all potential flood mechanisms at the site, including fluvial, pluvial, urban drainage and groundwater flooding. Existing runoff characteristics and the risk of flooding from surface water have also been considered.

A walkover survey of the site was conducted by McCloy Consulting Ltd on 26th October 2021 as part of the assessment.

1.4.2 Hydraulic Model Status

For the purposes of this FRA, the primary stakeholders are the Office of Public Works (OPW) and Donegal County Council (CC). OPW and Donegal CC data has been used to form the basis of this FRA and is presented in line with the relevant flood risk management guidance.

The site and surrounding area are included in the detailed 'Lifford Fluvial Flood Extents' maps produced as part of an OPW Catchment Flood Risk Assessment and Management (CFRAM) study. The relevant maps, published in August 2016, have been considered in this FRA.

1.4.3 Planning Guidelines

The requirements for FRAs are generally as set out in the OPW's 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (hereafter referred to as 'the OPW Guidelines') and accompanying 'Technical Appendices' published in 2009. Further guidance is provided in the OPW's 'Flood Risk Management Climate Change Sectoral Adaptation Plan' published in 2019.

Planning guidelines applicable to the site are set out in Section 5.4 of the 'County Donegal Development Plan 2018-2024' and in the Stage 1 Strategic Flood Risk Assessment undertaken to inform the development plan (hereafter 'the SFRA').

1.4.3.1 Flood Zones

The SFRA was prepared in accordance with the OPW Guidelines and adopts an identical Flood Zone standard. Flood Zones are extents associated with specific design flood events used to determine the suitability of different types of development from a flood risk perspective. Flood Zones are defined in both the OPW Guidelines and SFRA as follows:

- Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding)
- Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 and 0.5% or 1 in 200 for coastal flooding)
- Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding)

The OPW Guidelines clarify that Flood Zones are to be derived from 'present day' hydrological estimates without the inclusion of climate change allowances. However, they also clarify that, in addition to flood zoning, proposed developments should be designed to be resilient to the effects of climate change.

2 SITE AND PROPOSED DEVELOPMENT DETAILS

2.1 Site Location

The site is located at The Common, Lifford, Co. Donegal (ITM grid reference: 633060, 899175), as shown in Figure 2.1.

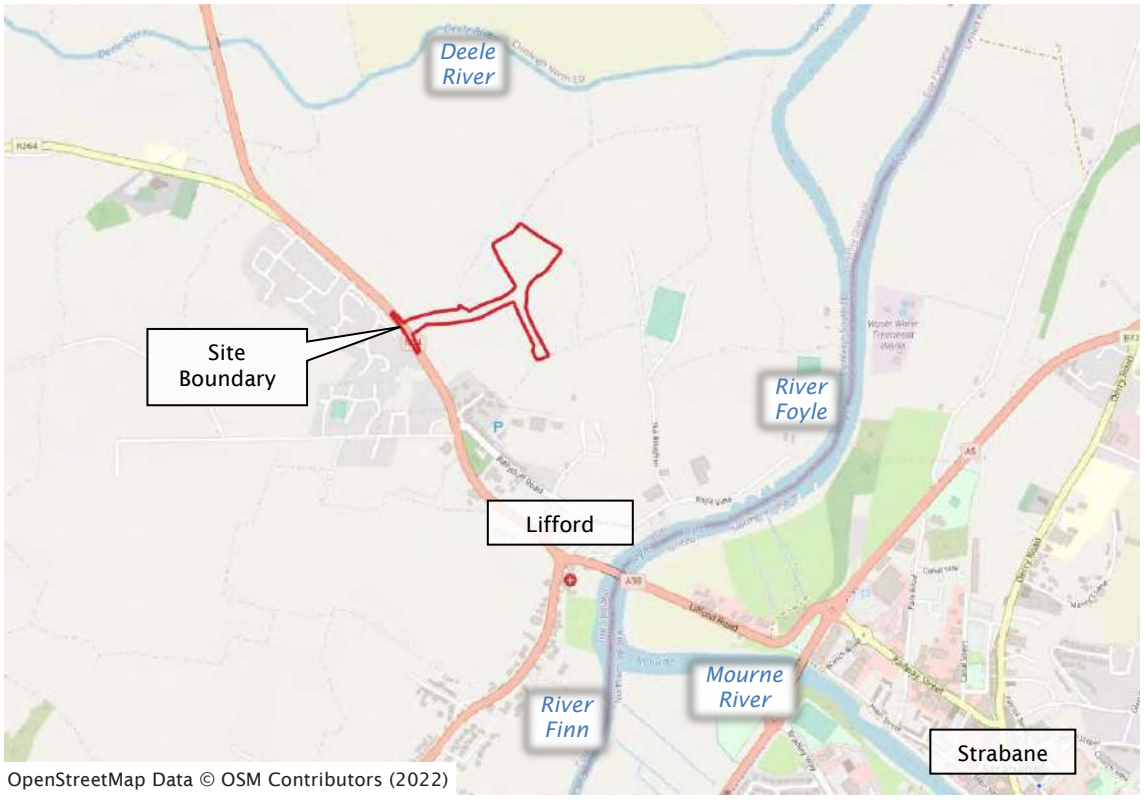


Figure 2.1: Site Location

2.2 Hydrological Context

The site lies approximately 430 m south of the Deele River and 745 m west of the River Foyle at its closest points. The Deele flows in an eastward direction and joins the Foyle approximately 1.3 km north-east of the site. From this confluence, the Foyle flows in a generally northward direction.

2.3 Site Description

The existing site is described as follows:

- The site currently comprises undeveloped / greenfield land currently used for agriculture.
- Site access from the N14 / Letterkenny Road to the south-west.
- Site levels generally fall from south-west to north / north-east.

Existing site levels, which have been used to form the basis of this FRA, are based on a ground-based topographical survey of the site carried out by a third party in August 2021. The survey drawing is included in Appendix A.

2.4 Development Proposal

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

The proposed Multi-Use Park 10-acre greenfield site at The Common, Lifford, Co. Donegal in the Stranorlar Municipal District includes proposals for the construction of approximately 720m of access road (6.0m wide road (3.0m lanes)) and shared footways/cycleways throughout (3.0m wide) to facilitate access to future developments within adjoining lands.

It is proposed that an access will be constructed onto the existing N14 National Primary Road to accommodate the proposed development. The scheme includes a proposed right-hand turn lane (RHTL) which can be accommodated within the existing N14 road widths / existing central hatched area.

The development will further consist of:

- *Wastewater pumping station and associated pipe networks to service proposed developments.*
- *Stormwater drainage facilitating potential future connections.*
- *Services and utilities to service proposed developments.*
- *Future linkages that will facilitate access to adjoining lands to enable potential future development proposals and facilitate future road layout proposals that will increase the overall connectivity to the town centre for both pedestrians and road users.*

The site is located adjacent to the National Primary Road (N14) and is within the defined settlement framework boundary of Lifford. Lifford is identified as a Layer 2B: Strategic Town due to its special economic function and its proximity to the border with Northern Ireland and the associated cross border context. The wider area is identified as an 'Opportunity Site' as set out in the County Development Plan 2018- 2024 and the proposed site area as identified is contained within this zone. The proposed road network will facilitate the future development of the opportunity site, an indicative layout of the opportunity site is contained within the proposed Masterplan, which accompanies the planning application.

Relevant proposal drawings are included in Appendix A.

2.5 Vulnerability Classification

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

Table 2.1: Vulnerability Classification of the Proposed Development

Proposed Development	Development Type	Vulnerability Classification
Playing field and associated car parking	Outdoor sports and recreation	Water Compatible
Access roads and footpaths	Local transport infrastructure	Less Vulnerable
Wastewater pumping station	Essential infrastructure	Highly Vulnerable

3 BACKGROUND INFORMATION REVIEW

Several available sources of flood risk information, generally as listed the OPW Guidelines, were reviewed to build an understanding of all potential sources of flooding at the site. This section highlights the key findings of the background information review.

3.1 Donegal County Council

3.1.1 County Donegal Development Plan 2018-2024

Section 5.4 of the 'County Donegal Development Plan 2018-2024' sets out the following relevant flood risk management policies:

- **F-P-1:** All development proposals shall comply with the OPW Guidelines. In doing so, the planning authority shall assess developments in accordance with the sequential approach and precautionary principle and use Draft Flood Risk Management Plans (and any associated flood risk mapping) prepared as part of the CFRAM programme, or any other flood risk datasets or mapping it considers appropriate, for the assessment of flood risk.
- **F-P-2:** Applicants / developers are required to submit, where appropriate, an independent Flood Risk Assessment in accordance with the OPW Guidelines or any subsequent related publication and / or surface water drainage calculations carried out by suitably qualified persons.
- **F-P-3:** Applicants / developers are required to submit, where appropriate, evidence of compliance with the Justification Test set out in Section 5.15 of the OPW Guidelines or any subsequent related publication.
- **F-P-4:** Development shall not be permitted where flood or surface water management issues have not been, or cannot be, addressed successfully and / or where the presence of unacceptable residual flood risks remain for the development, its occupants, and / or property or public infrastructure elsewhere.
- **F-P-5:** The council shall promote the use of Sustainable Drainage Systems (SuDS), flood attenuation areas, controlled release of surface water, and use of open spaces and semi-permeable hard surfaces for appropriate development proposals.
- **F-P-6:** The council shall consider development of long- and short-term flood remediation works, including embankments, sea defences, drainage channels, and attenuation ponds, to alleviate flood risk and damage to livelihood, property, and business in accordance with appropriate environmental best practice and policies.
- **F-P-7:** The council shall not to permit developments that would hinder the maintenance of rivers or drainage channels.

While a Stage 1 SFRA was undertaken to inform the development plan, no SFRA flood mapping is available for the site or surrounding area.

3.2 Office of Public Works

3.2.1 CFRAM Flood Maps

CFRAM flood maps were developed during the second stage of the CFRAM programme and are more detailed than the PFRA (first stage) indicative flood maps. The site and surrounding area are included in the 'Lifford Fluvial Flood Extents' maps published in August 2016.

CFRAM flood mapping shows that the north / north-east extent of the site is affected by 1% AEP and 0.1% AEP fluvial flooding from the Deele River and River Foyle.

An extract from one of the relevant CFRAM flood maps is shown in Figure 3.1; copies of the full flood maps are included in Appendix B.

The CFRAM flood maps also show that the section of the Deele that flows to the north of the site is protected on both sides by flood walls / embankments with a standard of protection of less than the 10% AEP flood event.

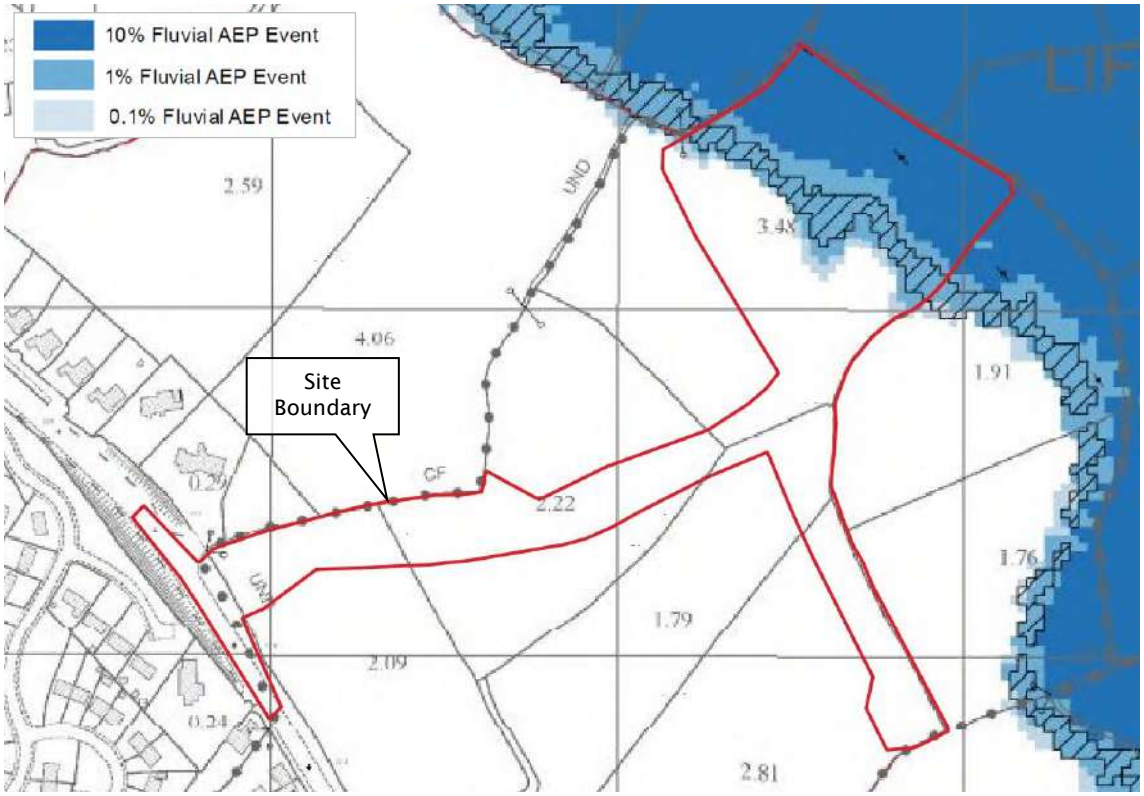


Figure 3.1: OPW CFRAM Flood Map

3.2.1.1 Updated CFRAM Flood Modelling

In a meeting with the OPW on 3rd November 2021, it was confirmed that the CFRAM flood modelling is in the process of being updated. Although the results of this flood modelling have not yet been published in the form of new CFRAM flood maps, the updated flood mapping for Lifford was made available, at request of Donegal CC, for the purposes of this FRA.

A comparison of the updated CFRAM flood mapping and the CFRAM flood maps produced in 2016 confirms that there has been no significant change in the 1% AEP and 0.1% AEP flood extents at the site.

3.2.2 OPW Past Flood Events

OPW 'Past Flood Event' mapping shows a recurring flood event (ID: 4052) in Lifford. Records indicate that the River Foyle has overflowed its banks occasionally due to a combination of heavy rain and high tides in the Lifford area. There is no evidence of flooding at the site.

3.3 Internet / Media Search

A brief internet / media search returned evidence of recurring flooding in Lifford in December 2015[1] and December 2021[2]. There is no evidence of flooding at the site.

3.4 Walkover Survey

A walkover survey of the site was conducted by McCloy Consulting Ltd on 26th October 2021 to investigate all potential sources of flooding. Photographs of the site and surrounding lands taken during the walkover survey are included in Appendix D.

[1] https://www.independent.ie/irish-news/news/storm-desmond-clean-up-begins-as-pictures-show-extent-of-flooding-around-the-country-34262163.html

[2] https://www.donegaldaily.com/2021/12/08/travel-alert-flooding-strikes-in-parts-of-donegal/

4 ASSESSMENT OF FLOOD MECHANISMS

The development management process aims to avoid 'inappropriate' development that would increase flood risk elsewhere, in accordance with the OPW Guidelines. This section assesses all potential sources of flooding at the site, as well as their associated risk to life and property, to determine the suitability of the site for the proposed development.

4.1 Initial Assessment

Table 4.1 presents a screening assessment of all potential flood mechanisms at the site based on the background information review and stakeholder consultation. Flood mechanisms screened as being potentially significant are assessed in detail in subsequent sections.

Table 4.1: Initial Assessment of Potential Flood Mechanisms at the Site

Source / Pathway	Significant?	Reason
Fluvial Flooding	Yes	OPW CFRAM flood mapping shows that part of the site is affected by fluvial flooding.
Coastal Flooding	No	The site is not in an area impacted by coastal flooding.
Pluvial Flooding / Surface Water	Possible	The site is at lower elevations than developed areas in the vicinity of the site.
Urban Drainage	No	There is no evidence of flooding from urban drainage systems / sewer incapacity, and limited existing development is present in the vicinity of the site.
Groundwater	No	Based on the site topography, there are no areas on the site that would cause impoundment of groundwater.
Reservoirs / Impoundments	No	Based on Ordnance Survey Ireland (OSI) mapping, there are no reservoirs or other artificial impoundments in close proximity to or that drain towards the site.

Flooding mechanisms screened as being significant or possibly significant and requiring further assessment have been assessed further in the following sections.

Mitigation of flood hazards, where required, is detailed in Section 5.2.

4.2 Fluvial Flooding

4.2.1 Existing Scenario Present Day Flood Risk

Both the publicly available OPW CFRAM flood maps from 2016 and the updated modelling results from 2021 show that the north / north-east extent of the site is affected by 1% AEP and 0.1% AEP fluvial flooding from the Deele River and River Foyle.

The site and surrounding area are included in the 'Lifford Fluvial Flood Extents' maps published in August 2016; copies of the relevant flood maps are included in Appendix B. One of the flood maps contains a model node (ID: 40!) with 1% AEP and 0.1% AEP present day flood levels at a point along the Deele River north of the site. Table 4.2 shows the present day flood levels at this model node.

As stated in Section 3.2.1.1, a comparison of the updated CFRAM flood mapping and the CFRAM flood maps produced in 2016 confirms that there has been no significant change in the 1% AEP and 0.1% AEP flood extents at the site. These flood extents were compared with OSI height data to confirm the predicted flood levels reported along the river centreline are applicable to the site.

Table 4.2: Site-Specific Fluvial Flood Levels (Present Day)

CFRAM Node ID	Flood Zone A / 1% AEP Water Level (mOD)	Flood Zone B / 0.1% AEP Water Level (mOD)
40!	4.18	4.54

To produce a site-specific Flood Zone map, the 1% AEP and 0.1% AEP present day flood levels have been adopted as the Flood Zone A and Flood Zone B levels at the site, respectively, and plotted on ground-based site topographical data from a third party survey carried out in August 2021. Consistent with the CFRAM flood mapping, the site-specific Flood Zone map shows that the north / north-east extent of the site is affected by Flood Zone A and Flood Zone B.

An excerpt of the site-specific Flood Zone map is shown in Figure 4.1; the full flood map is included in Appendix C.

Figure 4.1: Flood Zone Map

4.2.2 Proposed Scenario Present Day Flood Risk (Effect of the Development)

The proposal comprises development of open amenity space in the fluvial floodplain and, as such, consideration of the potential effect of the development on flooding elsewhere is required.

A volumetric cut / fill analysis carried out by McAdam Design Ltd indicates that the proposed development will lead to a net cut of approximately 399 m^3, representing an increase in floodplain storage at the site. It is therefore anticipated that the proposal will have a beneficial / neutral impact on flooding elsewhere.

The 1% AEP and 0.1% AEP present day flood extents for the proposed scenario (based on the respective CFRAM flood levels of 4.18 mOD and 4.54 mOD) are shown in Figure 4.2; the full flood map is included in Appendix C. As shown, the floodplain at the site is increased as a result of the proposed development.

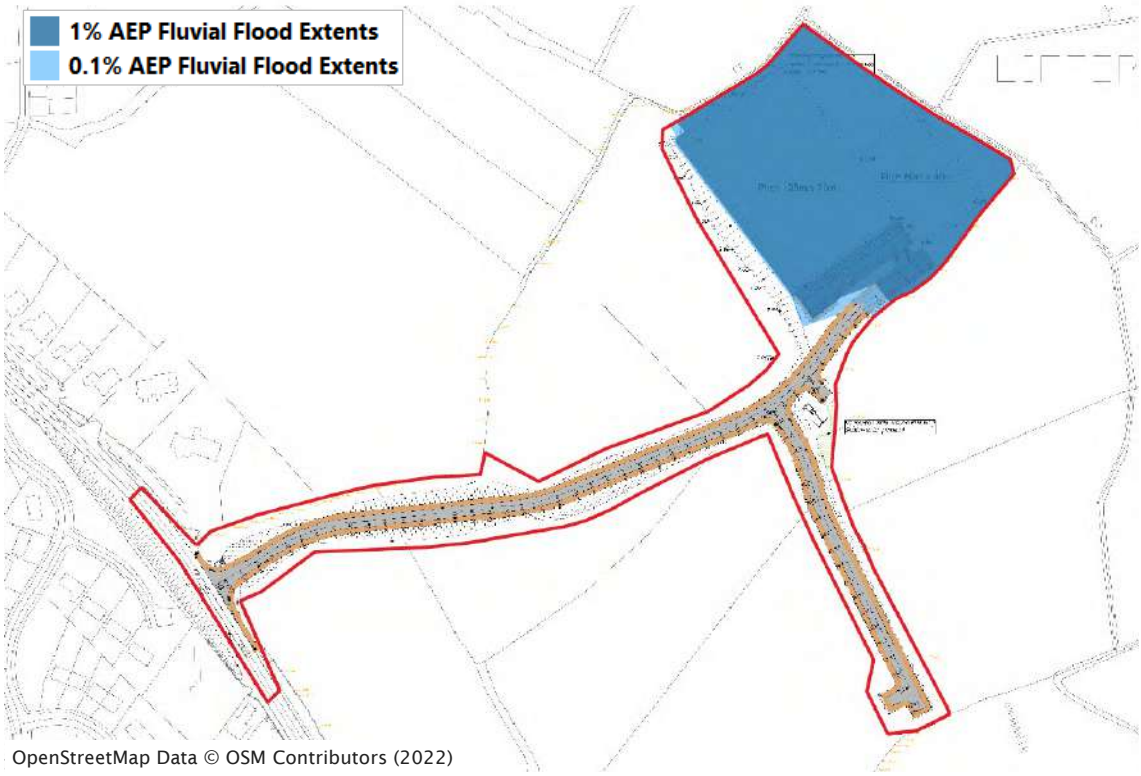


Figure 4.2: Proposed Scenario Flood Extents Map

4.2.3 Existing Scenario Climate Change Flood Risk (Effect of Climate Change)

The OPW Guidelines require FRAs to consider increased flood risk to the proposed development under climate change scenarios. OPW guidance suggests using a Mid-Range Future Scenario (MRFS) to account for climate change; this represents a 20% increase in flood flows.

In the absence of the CFRAM model to licence, the OPW Guidelines suggest that a conservative approach would be to take 0.1% AEP flood levels to represent the 1% AEP event plus climate change (1% AEP + CC) flood levels. This approach provides an approximation of the predicted effect of climate change on the 1% AEP flood event, resulting in a of 0.36 m increase in flood level.

Adopting a 0.36 m increase in flood level due to climate change for both the 1% AEP and 0.1% AEP flood events results in the 1% AEP + CC and 0.1% AEP + CC flood levels shown in Table 4.2.

Table 4.3: Site-Specific Fluvial Flood Levels (Mid-Range Future Scenario)

CFRAM Node ID	1% AEP + CC Water Level (mOD)	0.1% AEP + CC Water Level (mOD)
40!	4.54	4.90

The above flood levels are based on the difference between the modelled 0.1% AEP and 1% AEP fluvial flood levels rather than modelled flood levels resulting from increasing the design flows by 20% to represent the MRFS. Given the absence of the CFRAM model to licence, this method is considered to provide a reasonable estimation of the effect of climate change on fluvial flood levels.

4.3 Pluvial Flooding

4.3.1 Surface Water Runoff onto the Site

The site is at higher or similar elevations compared to lands to the north, east, and west. Surface water runoff from these areas therefore would not present a risk of pluvial flooding to the site.

The site is at a lower elevation than lands to the south. Surface water runoff from these areas would tend to be intercepted by the preferential flow path provided by the N14 / Letterkenny Road and be directed away from the site.

Mitigation of risk of surface water runoff onto and within the site is discussed in 5.2.4.

4.3.2 Surface Water Runoff from Site

Surface water runoff originating from the site would tend to flow across the undeveloped lands to the north / north-east and, ultimately, towards the Deele River. There would therefore be no risk of flooding to adjacent development.

The proposed development will lead to an increase in impermeable area on the site. Therefore, surface water runoff from the site will be mitigated by means of an effective surface water drainage network, as discussed in 5.2.4.

5 SUMMARY OF FINDINGS AND RECOMMENDATIONS

5.1 Summary of Findings

This Stage 3 FRA has determined that the proposed development is at risk of fluvial flooding from the Deele River and River Foyle. There are no other significant flood mechanisms at the site.

5.2 Design Requirements

This section details measures that have been incorporated into the proposals submitted in support of the planning application and to be further developed in any detailed design or variation post-determination of the planning application.

5.2.1 Land / Development Use

The proposed development complies with the development management / land use requirements of the OPW Guidelines as follows:

- Highly vulnerable development (pumping station) is located in Flood Zone C.
- Less vulnerable development (access roads) is located in Flood Zone B and Flood Zone C.
- Water compatible development (sports pitches and associated car parking) are located in Flood Zone A and Flood Zone B.

It is noted that the Donegal County Development Plan 2018-2024 states that water compatible development includes "*amenity open space, outdoor sports and recreation and essential facilities such as changing rooms*" Whilst there is no building proposed, it is considered that the development of a car park is an essential facility associated with the proposed recreational pitches. However, where a Justification Test is still required by the Planning Authority, relevant information relating to the proposal is included in Appendix E.

In addition to the above, detailed analysis has shown that the proposals will lead to a net gain in floodplain storage at the site which will reduce overall flood risk to adjacent lands.

5.2.2 Design Levels

The OPW Guidelines and SFRA require freeboard to be applied to relevant design flood levels when setting Finished Floor Levels (FFLs) and Finished Ground Levels (FGLs). Generally, the industry standard / best practice freeboard of 500 mm is applied as a minimum requirement. Freeboard is applied to Flood Zone A for less vulnerable development (access roads) and to Flood Zone B for highly vulnerable development (essential infrastructure). Freeboard is generally not required to be applied to water-compatible development.

FFLs and FGLs for the proposed development are summarised as follows:

- FFLs of highly vulnerable development (pumping station) provides more than 1000 mm freeboard to the 0.1% AEP flood level.
- FGLs of less vulnerable development (access roads) provide in excess of 500 mm freeboard to the 1% AEP flood level with the exception of a section of road providing access to the car park, as well as the car park itself (which is constrained due to the need for it to be adjacent to / provide access to the sports pitches).
- FGLs for water-compatible development (sports pitches) are not required to be set above flood levels.

5.2.3 Access / Egress Levels

In accordance with the OPW Guidelines, site access roads should be within Flood Zone C (i.e., outside the 0.1% AEP fluvial flood extents). The majority of the site and access roads are situated in Flood Zone C. Safe access to and egress from the site will therefore be possible during an extreme flood event.

5.2.4 Drainage Design

Surface water drainage design should generally comply with the requirements of the 'County Donegal Development Plan 2018-2024' and standards of Donegal CC's Water Services Department. For example, one of the policies of the Development Plan is to "*promote the use of Sustainable Drainage Systems (SuDS), flood attenuation areas, controlled release of surface water, and use of open spaces and semi-permeable hard surfaces for appropriate development proposals*".

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

Surface water drainage systems should be maintained in line with best practice, manufacturer specification(s), and requirements outlined in Section 5.4.1. In the event of blockage or exceedance (in excess of the 1% AEP + CC design event), surface water will have an available overland flow path away from built development.

Calculations undertaken as part of the FRA indicate that to avoid increasing flood risk off-site, runoff rates should be limited to the pre-development (greenfield) Qbar rate of 3.5 l/s/ha. Drainage design is to be carried out by others and submitted separately.

5.3 Flood Management Plan

This detailed assessment has shown that the proposed development will be at risk of flooding during an extreme flood event. To inform actions to be taken during a flood event, the applicant shall undertake to implement a Flood Management Plan (FMP). The FMP and shall incorporate as a minimum:

- Identification of sources of flood warnings.
- Identification of person(s) responsible for activating the emergency plan.
- Identification of levels of alert (Alert / Warning / Severe) and specific actions to be taken (including warning signals, if applicable).
- Identification of 'safe / flood free zones' and muster points.
- Identification of contact groups and individuals to be notified in the event of or prior to a flood.
- Identification of Emergency Contacts.

It is anticipated that flood risk at the site can be adequately managed by addressing the following:

- The FMP shall as a minimum seek to ensure all users / occupants move to areas in the vicinity of the site outside the predicted floodplain and prevent further access / re-access to areas to by affected by flooding.
- There should be an appropriate level of preparedness to suit Local Authority / Met Eireann severe weather warnings or other multi-agency warning. Any FMP must be updated on an ongoing basis to reflect sources of flood warning information as they may become available (e.g., full rollout of a national flood forecasting system). Where forecasting is available, vulnerable users / occupants should be evacuated from the site, if feasible.
- Access to affected areas should be restricted during periods when flooding is predicted.

5.4 Maintenance Requirements

5.4.1 Drainage System Maintenance

The owner(s) shall be responsible for maintenance of drainage networks at the site and ensure that maintenance of the drainage system is provided for. The detailed drainage layout for the site shall ensure that key SuDS features requiring maintenance are situated in accessible public locations.

Maintenance plans for drainage assets should include (where applicable):

- Cyclical (minimum annually) check of all surface water drainage features – in particular, clearing of debris.

- Cyclical (minimum annually) visual inspection of any surface or underground features – blockages and obstructions to be removed by jetting, as required.

5.5 Summary of Flood Risk and Mitigation

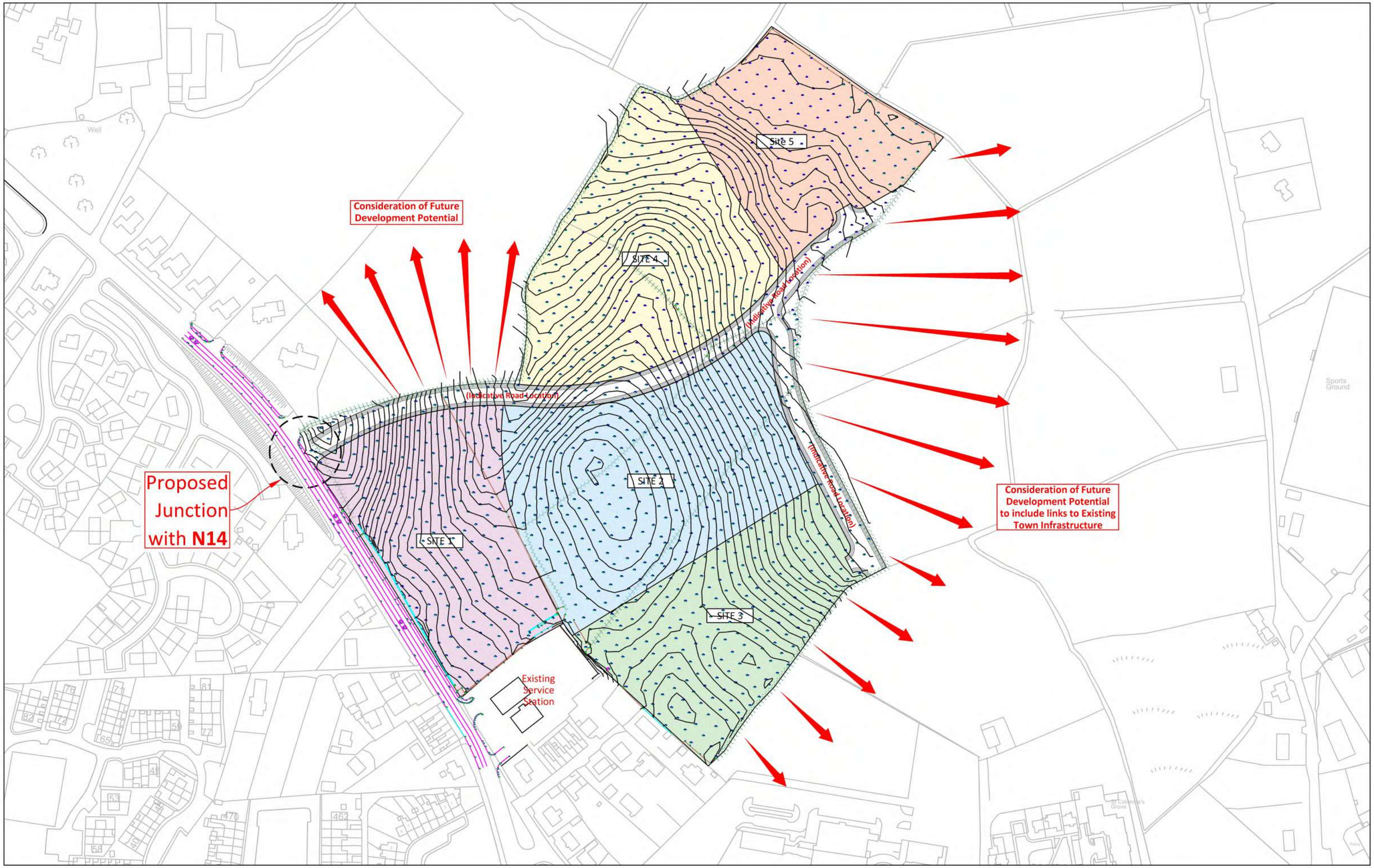
Table 5.1 summarises the mechanisms of flooding identified by this study and their associated hazards / consequence, per the OPW Guidelines, as well as proposed measures to mitigate the predicted risk.

Table 5.1: Summary of Flood Risks and Mitigation Measures

Identified Flood Mechanism	Consequence	Summary / Mitigation Measures
Fluvial flooding	Risk to life and property	Development proposals are in line with the OPW Guidelines development management and freeboard requirements. Less vulnerable development (car parking) in Flood Zone A is addressed by the application pf a Justification Test.
Effect of climate change	Risk to life and property	Freeboard to FFLs and FGLs will provide protection against CC flood risk.
Effect of the development	Increased risk to adjacent lands and development	The proposed development has been shown to lead to a net gain in floodplain storage at the site and, as such, will not increase flood risk elsewhere.
Pluvial / surface water flooding	Risk to property / site and risk to adjacent lands and property	On-site surface water flooding shall be mitigated by a site drainage system to comply with Local Authority drainage standards. Off-site surface water effects shall be mitigated by provision of SuDS components and no increase in rate and volume of runoff of surface water from the site as a result of the development.

Appendix A

Site Drawings



Rev	By	Date	Description

Purpose of Dwg: ☑ Information ☐ Construction ☐ Part 8 ☐ Safety File ☐ Tender ☐ Other

Prepared:	AMN	Date:	Aug 2021
Checked:		Date:	
Approved:		Date:	

Horizontal Scale: *Not to Scale*

Vertical Scale: *N/A*

File no.:

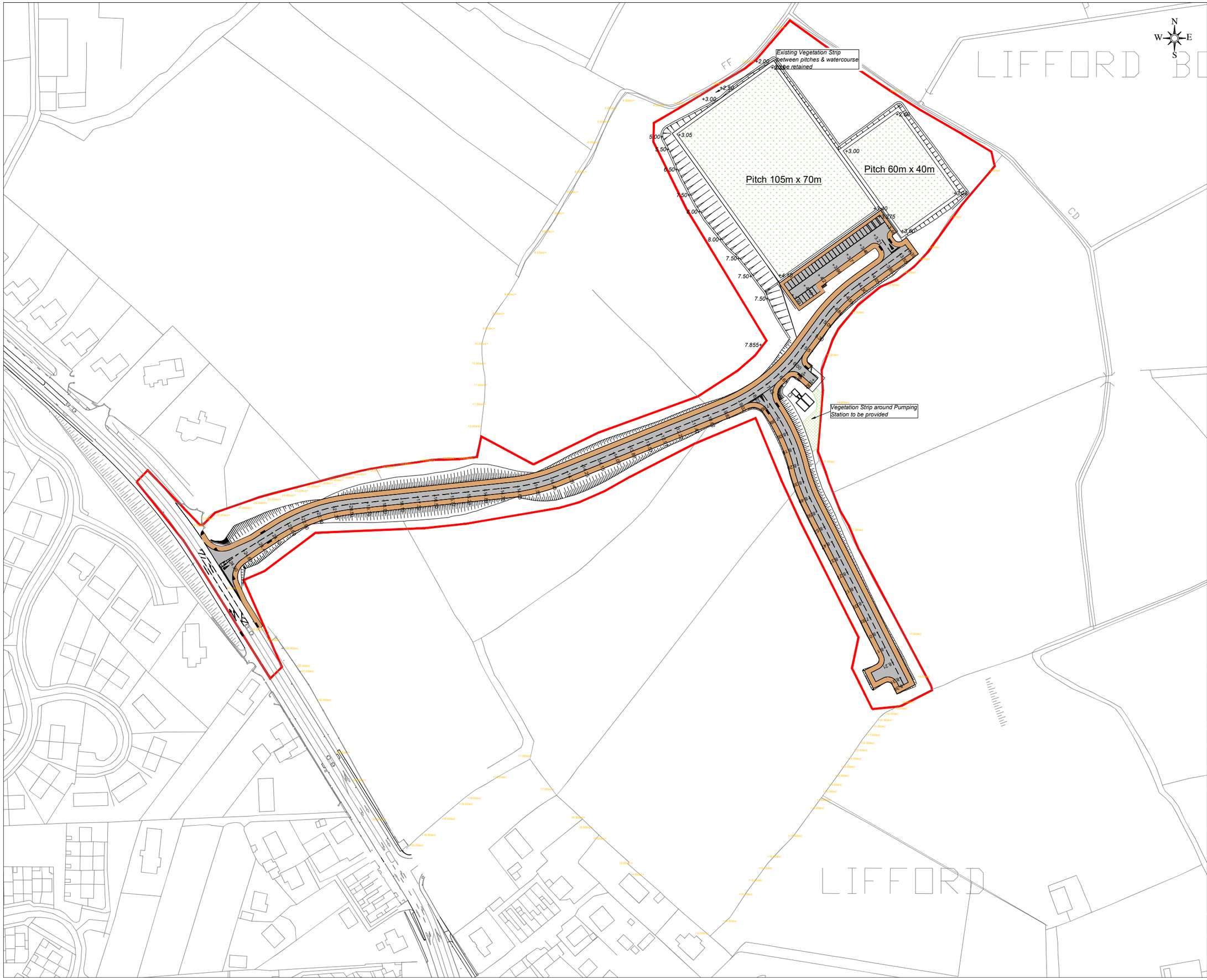
Project:

Location: *Lifford Common, Lifford, Co Donegal*

Dwg Title:

Rev.:

Drawing no.:



NOTES:

1. *All levels and dimensions are in meters unless stated otherwise.*
2. *The mapping illustrated on this drawing is the proposed site layout which will be subject to change following design development.*
3. *This drawing should be read in conjunction with all relevant drawings (Architectural and Engineering).*
4. *The landscaping proposals illustrated on this drawing are indicative only.*
5. *All levels shown are for illustration purposes only and will require refinement at detailed design.*

LEGEND

+4.10 *Proposed Level*

Existing Level / Contour

Proposed Vehicular Pavements

Proposed Footpaths

Proposed Grass Soccer Pitches

Site Boundary

Site Plan Notes.

1. Right hand turn lane
   Design traffic to be determined.
   Assumed lane widths as existing with central hatched area used for right turn pocket.

2. Roads within development - Design speed 50 kph
   Widths indicated at 6.0m wide (3.0m lanes).
   Footway/verge indicated at 3.0m.
   Junction radii with N14 10m.
   Junction within development 6.0m.
   Horizontal radii 105m.
   Vertical 'K' factor 5 used.
   Embankments to access roads 1 in 3.

3. Development sites
   Embankments indicated at 1 in 3.

4. Site 5
   Site 5 is extensively within the flood plain as illustrated within the Flood Risk Assessment.

Rev	Issue Date	Description	App
P9	13/04/2022	Amendments Following Stage 1 RSA	PA
P8	30/03/2022	Background Mapping Amended	PMcM
P7	28/02/2022	Site Layout Amendments	PA
P6	20/02/2022	Building Amendment	PA
P5	09/02/2022	Red Line Boundary Amended	PA
P4	01/02/2022	Minor Layout Amendments	PA
P3	06/12/2021	Levels Building Amended	PA
P2	23/11/2021	Road Dimensions Altered	PA

Status: PRELIMINARY

Client: Donegal County Council

Project: The Common, Lifford
Multi-Use Development

Drawing: Proposed Site Layout

Scale: 1:1000 @ A1

McAdam

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www.mcadamdesign.co.uk

Drawn	Checked	Approved
DWW	PA	PA
2021-09-21	2021-09-21	2021-09-21

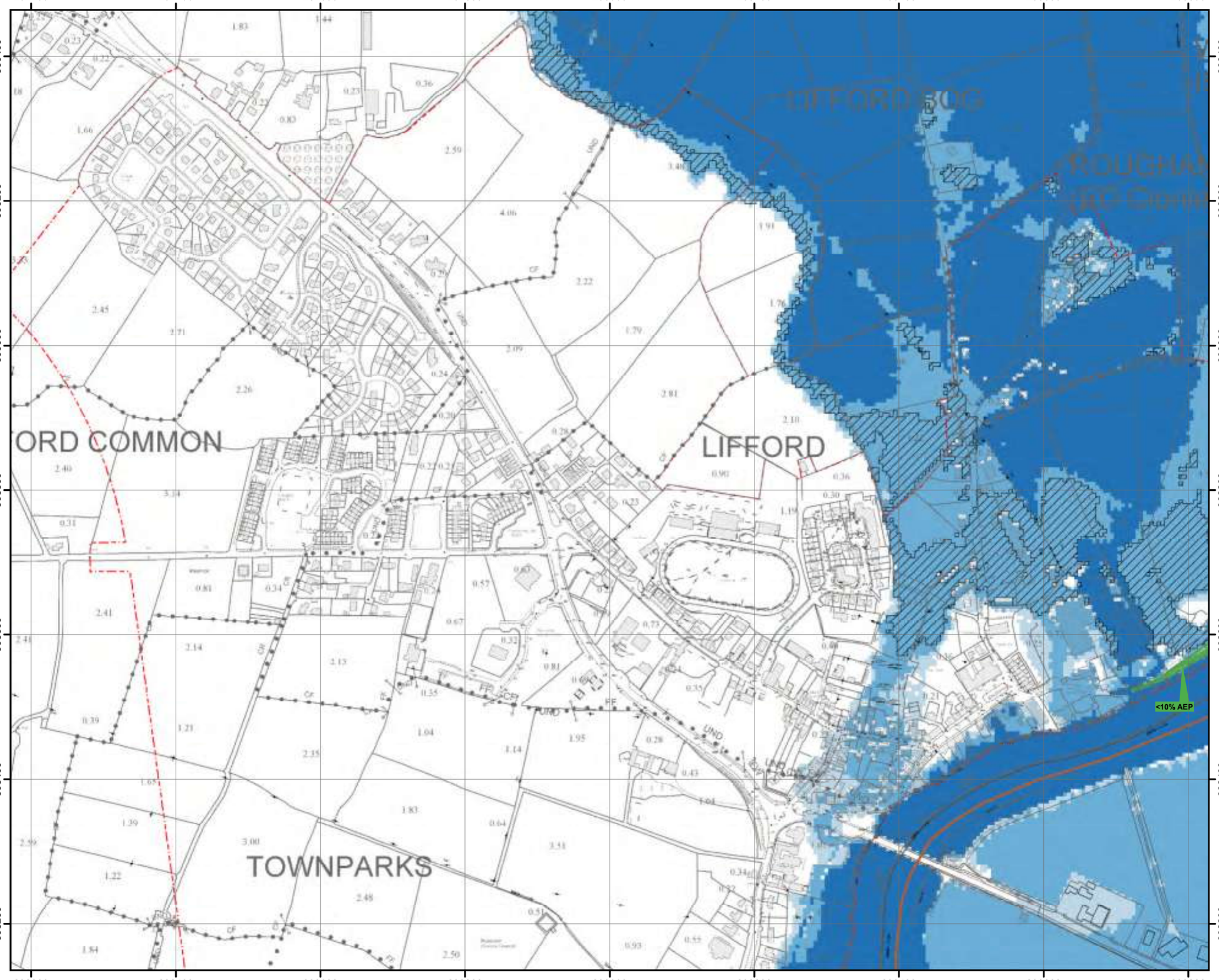
Project	Organisation	Zone	Level	Type	Role	Number	Revision
LIF	MCA	ST1	00	DR	C	1003	P9

Project Number: E2324

Status code & Description: S2 - For Information

Appendix B

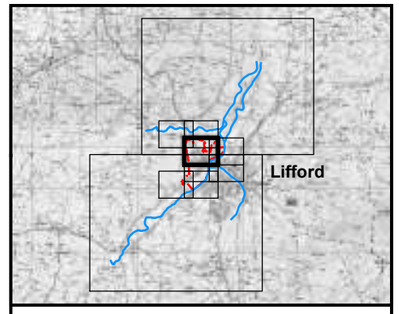
OPW Flood Data



232200 232400 232600 232800 233000 233200 233400 233600 233800

399400 399200 399000 398800 398600 398400 398200

0 50 100 200 300 400 500 Metres



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

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Embankment
- Wall
- Defended Area
- 1% AEP / 1% AEP — Standard of Protection of Flood Defence (Walls / Embankments)
- Node Point
- Node ID — Node Label

FINAL

REV:	NOTE:	DATE:

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E ireland@rpsgroup.com

Map:
Lifford Fluvial Flood Extents

Map Type:	EXTENT	
Source:	FLUVIAL	
Map Area:	HPW	
Scenario:	CURRENT	
Drawn By :	C.C.	Date : 2 August 2016
Checked By :	B.Q.	Date : 2 August 2016
Approved By :	S.P.	Date : 2 August 2016

Drawing No. :
N01LFD_EXFCD_F0_06

Map Series : Page 6 of 10

Drawing Scale : 1:5,000 @ A3

232200 232400 232600 232800 233000 233200 233400 233600 233800

400200 400000 399800 399600 399400 399200 399000

40!

10% AEP

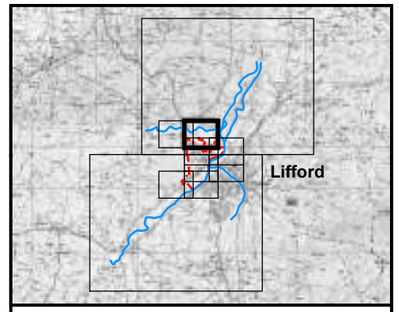
<10% AEP

DRUMBOY
(ED Clonleigh)

Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
40!	3.68	N/A	4.18	N/A	4.54	N/A

232200 232400 232600 232800 233000 233200 233400 233600 233800

0 50 100 200 300 400 500 Metres



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

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Embankment
- Wall
- Defended Area
- 1% AEP / 1% AEP — Standard of Protection of Flood Defence (Walls / Embankments)
- Node Point
- Node ID — Node Label

FINAL

REV:	NOTE:	DATE:

The Office of Public Works
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Map: Lifford Fluvial Flood Extents

Map Type:	EXTENT	
Source:	FLUVIAL	
Map Area:	HPW	
Scenario:	CURRENT	
Drawn By :	C.C.	**Date :** 2 August 2016
Checked By :	B.Q.	**Date :** 2 August 2016
Approved By :	S.P.	**Date :** 2 August 2016

Drawing No. : N01LFD_EXFCD_F0_09

Map Series : Page 9 of 10

Drawing Scale : 1:5,000 @ A3

N

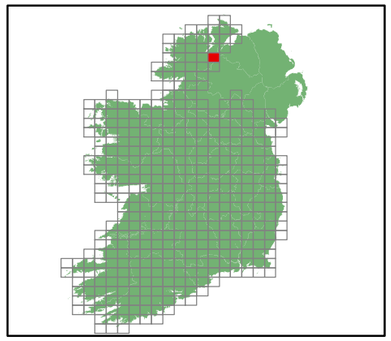
DRUMGOHILL

CARRIGANS

LIFFORD

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

Location Plan :



Legend:

Flood Extents

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

PFRA Outcomes

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

Important User Note:

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

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

Office of Public Works
Jonathon Swift Street
Trim
Co Meath
Ireland

Project :
PRELIMINARY FLOOD RISK ASSESMENT (PFRA)

Map :
PFRA Indicative extents and outcomes
- Draft for Consultation

Figure By :	PJW	Date :	July2011
Checked By :	MA	Date :	July 2011

Figure No. : 2019 / MAP / 400 / A

Revision 0

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

Appendix C

Flood Mapping

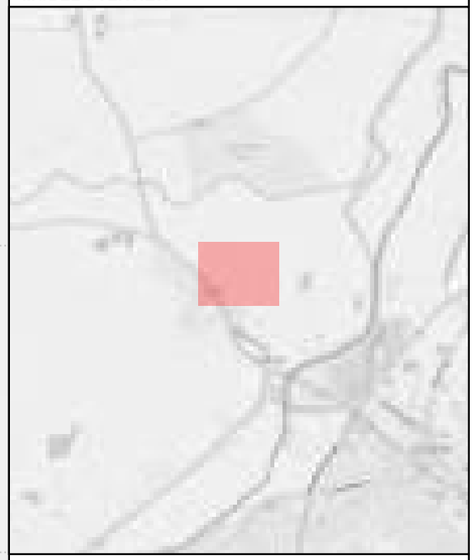
632700 632800 632900 633000 633100 633200

899300 899200 899100 899000 898900

N

0 100 200 m

MODEL OVERVIEW



LEGEND

- SITE BOUNDARY
- FLOOD ZONE A (Based on 1% AEP flood level of 4.18 mOD at CFRAM node 40!)
- FLOOD ZONE B (Based on 0.1% AEP flood level of 4.54 mOD at CFRAM node 40!)

NOTES
1. ALL LEVELS INDICATED ARE TO ORDNANCE DATUM MALIN.

2. FLOOD EXTENTS WITHIN THE APPLICATION BOUNDARY ARE PLOTTED ON GROUND BASED TOPOGRAPHIC SURVEY.

3. FLOOD EXTENTS SHOWN OUTWITH THE RED LINE BOUNDARY ARE PLOTTED ON A COMBINATION OF GROUND BASED TOPOGRAPHIC SURVEY AND LIDAR AND AS SUCH ARE NOT SUITABLE FOR PROPERTY LEVEL ASSESSMENT / HAVE BEEN OMITTED FOR CLARITY.

4. ALL GRID COORDINATE INFORMATION IS TO IRISH TRANSVERSE MERCATOR.

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PROJECT LIFFORD COMMON, CO. DONEGAL		**HYDROLOGY SCENARIO** PRESENT DAY	**SCALE** 1:2000	**ORIGINAL SIZE** A3
MAP TYPE FLOOD ZONE MAP		**GEOMETRY SCENARIO** EXISTING	**DRAWN BY** DH	**APPROVED** PS
SOURCE FLUVIAL	**FLOOD EVENT** 1% AEP & 0.1% AEP	**FIGURE NUMBER** M01959-05_FIG_FL01	**REVISION** 2	**DATE** 18/05/2022

Appendix D

Site Photographs

Photo Location 1:

Facing north from existing site access from the N14 / Letterkenny Road

Photo Location 2:

Facing north from centre of site

Photo Location 3:

Facing west from centre of site

Photo Location 4:

Facing north-west from centre of site

Photo Location 5:

Facing north-east across the lowest lying part of the site

Photo Location 6:

Facing north / north-east across the lowest lying part of the site

Appendix E

Justification Test

JUSTIFICATION TEST FOR DEVELOPMENT MANAGEMENT

This assessment shows that part of the development (sports pitches and associated car parking) is located in Flood Zone A and Flood Zone B. The Donegal County Development Plan 2018-2024 suggests that built development considered as 'essential infrastructure' associated with amenity facilities is considered appropriate within Flood Zones. However, where a Justification Test is still required by the Planning Authority, relevant information relating to the proposal is included below.

Part	Item	Response
1	The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative plan, which has been adopted or varied taking account of these Guidelines.	The subject lands have been zoned as a mixed-use opportunity site within the Donegal County Development Plan 2018-2024.
2	*The proposal has been subject to an FRA that demonstrates:*	The site has been subject to a site-specific FRA.
2 (i)	The development proposed will not increase flood risk elsewhere, and, if practicable will reduce overall flood risk	The proposed development has been shown to lead to a net gain in floodplain storage at the site which will reduce / not increase flood risk elsewhere. Proposed surface water drainage will ensure no increase in the rate and volume of runoff from the site.
2 (ii)	The development proposal includes measures to minimise flood risk to people, property, the economy, and the environment as far as reasonably possible.	The principal measure taken to minimise flood risk is ensuring development is kept to 'appropriate' Flood Zones where practicable. FFLs of the proposed pumping station provides sufficient freeboard above adjacent flood levels. FGLs of the proposed access roads are predominantly above relevant flood levels. The surface water runoff will be attenuated to pre-development rate, thereby not increasing flood risk elsewhere.
2 (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.	FFLs of the proposed pumping station provide more than required freeboard to adjacent flood levels. Access to and egress from the site is located in Flood Zone C, so emergency and public access will be possible during a flood event. A Flood Management Plan will ensure that residual risk of flooding / flood risk to lower lying development is managed effectively.
2 (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 active streetscapes.	The proposed recreation facilities are in compliance with the objectives and policies of Donegal County Development Plan 2018-2024.