FARGANSTOWN SOCIAL HOUSING

Site Specific Flood Risk Assessment

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Site Specific FRA
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1 INTRODUCTION

1.1 Background

RPS has been appointed by Meath County Council to carry out the preliminary design of the proposed development of Farganstown Social Housing Development. This development forms part of the overall Meath County Council masterplan for the residential development of the Farganstown lands. The development site is located north of Old Road, Farganstown, Navan, Co. Meath, and measures approximately 1.7 ha. The proposed development is bounded by agricultural land and small watercourses to the south and east, and a new road development (LDR6) to the north and east. The proposed development comprises 84 social housing units, the provision of associated car park spaces, new entrance onto a consented, but yet to be constructed, Local Distributor Road (LDR), landscaping, lighting, and all associated development works. The proposed development is dependent on the construction of the abovementioned Local Infrastructure Housing Activation Fund (LIHAF) LDR6, linking the R153 with the Boyne Road. This new road is known as LDR6 and has been designed by a separate set of consultants acting for Meath County Council.

A Site Specific Flood Risk Assessment (SSFRA) for the development is required to support the design report. The SSFRA report has been prepared in accordance with the requirements of The Planning System and Flood Risk Assessment Guidelines for the Planning Authorities (2009) and Circular PL02/2014 (August 2014) referred to hereafter as the “Guidelines”. As per The Guidelines, a SSFRA has been carried out using the recommended staged approach by considering all types of flood risk associated with the site.

1.2 Report Objectives

The objective of this report is to prepare a SSFRA for the Farganstown Housing Development to identify potential sources of flood risk, identify flood zones and investigate flood risk to the site and adjacent area. The report also specifies the nature and potential design of appropriate flood risk mitigation and management measures.

1.3 Report Structure

The extent of the site and its location are detailed in **Section 2**. **Section 3** details the Flood Risk Identification. A summary of the proposed surface water management for the site is presented in **Section 4**. Discussion of the compliance of the development with the policy objectives of the Meath County Development Plan are shown in **Section 5** and lastly **Section 6** provides a summary.

2 STUDY AREA

2.1 Location

The Farganstown housing development site is located in Farganstown, Navan, Co. Meath as shown in **Figure** 2-1 below. The site has an extent of approximately 1.7ha. The site is approximately 2.2km east of Navan town, with the River Boyne approximately 1.15km to the north-west and the R153 Regional Road 600m to the south.

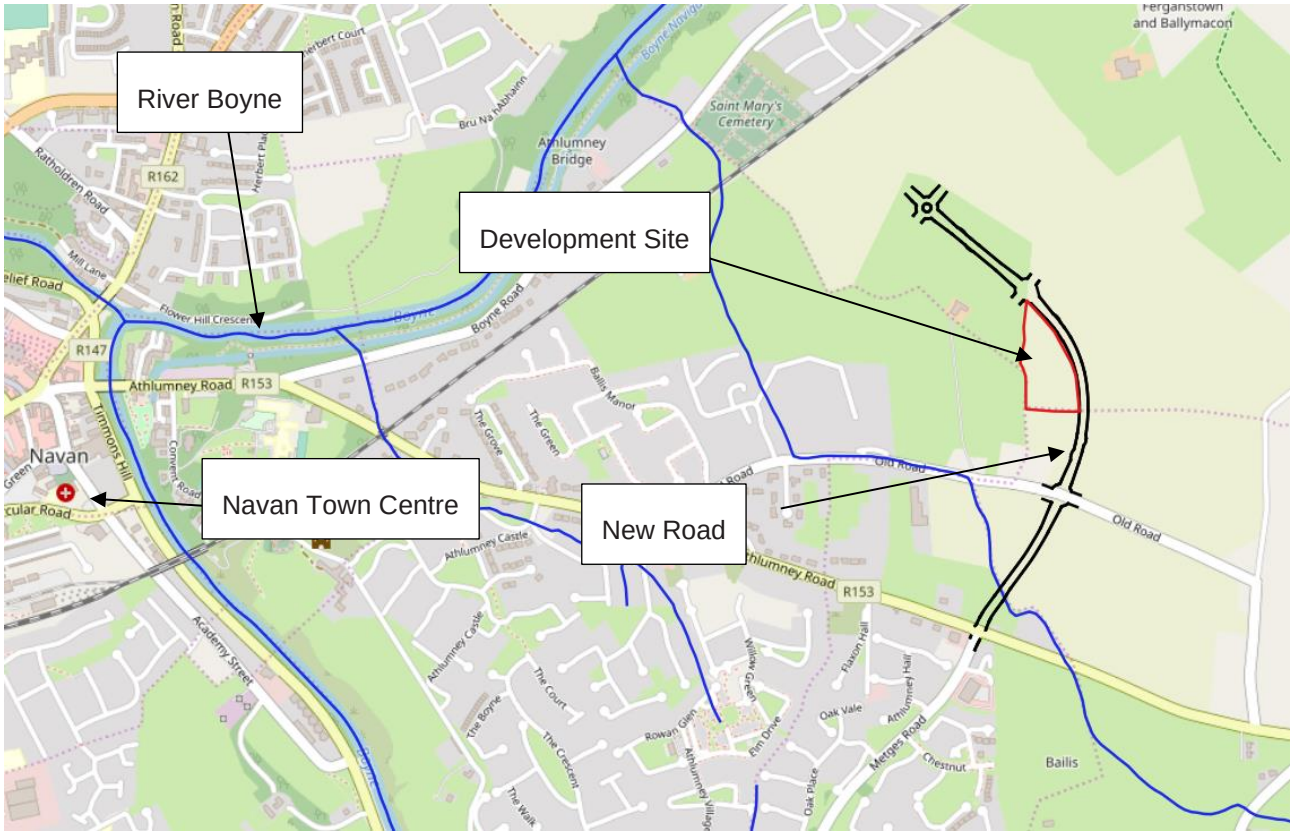

Figure 2-1 Site Location

2.2 Catchment Area

The Farganstown housing development lies within the River Boyne Catchment which flows through the townlands of Slane and Drogheda before discharging into the Irish Sea between the Haven and Mornington Point (Catchment Area 2,694km^2). This catchment lies within the Boyne Hydrometric Area (HA07).

2.3 Existing Drainage System

The land is not currently developed and is comprised of agricultural land with drainage being provided through percolation through the ground and also via ditches along the boundary of the site. The catchment for the site identified from the Office of Public Works (OPW) Flood Studies Update (FSU) website indicates that the natural drainage for the site would flow north-west towards the River Boyne as shown in **Figure** 2-2. A review of historical Ordnance Survey Ireland (OSI) mapping does not indicate any other significant watercourses adjacent to the site.

Figure 2-2 Site Location within the Boyne River Catchment (Source: OPW FSU website)

3 FLOOD RISK IDENTIFICATION

3.1 Introduction

This section identifies any flooding issues related to the development by assessing any available flood risk information.

3.2 Historical Flooding

Figure 3-1 below shows historical flooding locations from floodinfo.ie in the vicinity of the Farganstown housing development site. The data does not show any historical flooding within the planning application boundary. There is a single location of historical flooding in the surrounding area of the development site, approximately 225m outside of the development boundary. The main source of this flooding at this location is pluvial flooding. The flood events identified in the catchment are also listed in **Table 3-1**.

Figure 3-1 Historical flooding in the surrounding area

Table 3-1 Flood events identified on floodinfo.ie

Date	Location	Source	NOTES
Feb '05	Old Road, Athlumney, Navan	Fluvial	Rainfall causing the watercourse on the Old Road, Athlumney, to overflow and flood the surrounding lands
March '05	Old Road, Athlumney, Navan	Fluvial	An open drain overflows after heavy rain

3.3 Flood Studies Information

3.3.1 Boyne Catchment Flood Risk Assessment and Management Study

In 2012, the OPW carried out a national screen exercise called the Preliminary Flood Risk Assessment (PFRA) which identified areas where there may be a significant risk associated with flooding. Areas where the risks associated with flooding might be significant were identified as Areas for Further Assessment, or "AFA's". a More detailed assessment of the AFA's identified in the PFRA Study were undertaken through the Catchment Flood Risk Assessment and Management (CFRAM) Studies to more accurately assess the extent and degree of flood risk, and, where the risk is significant, to develop where possible measures to manage and reduce the risk. The flood hazard areas had been identified as being potentially at risk from significant flooding, including areas that have experienced significant flooding in the past. They also take into account issues such as climate change, land use practices and future development. These studies were developed to meet the requirements of the EU directive on the assessment and management of flood risks (The Flood Directive). The Flood Directive was transposed into Irish Law by SI 112 of 2010 "European Communities (Assessment and Management of Flood Risks) Regulations 2010". The Farganstown lands and surrounding area fall within the Boyne CFRAM Study.

This study produced fluvial mapping for the area near the site location is shown in **Figure** 3-2 below. The mapping shows flood extents for a range of annual exceedance probabilities (AEP). It indicates that the Farganstown site boundary is outside of the zone of fluvial influence.

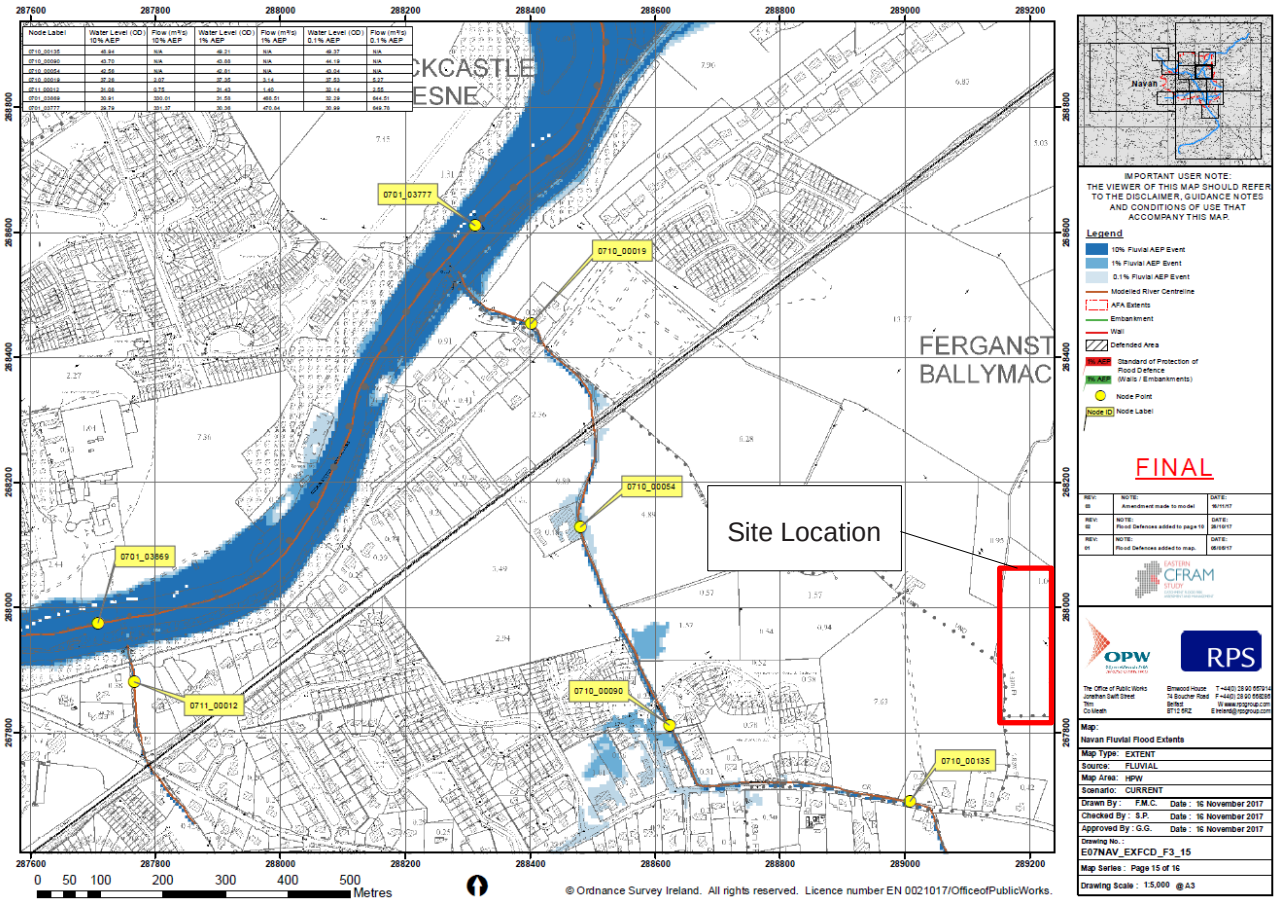

Figure 3-2 Fluvial Flood Extents for the Farganstown Site

No further investigation is required with respect to coastal flooding as the extent of the Farganstown housing development is outside of the tidal influence of the River Boyne which is more localised to Drogheda and as such no coastal mapping was required at this location.

3.3.2 Climate Change Sensitivity

A review of the CFRAM fluvial flood extents maps was carried out for the mid-range future scenarios as shown on floodinfo.ie. **Figure** 3-3 shows that the Farganstown development site remains outside of the zone of fluvial influence in the event of predicted future flooding.

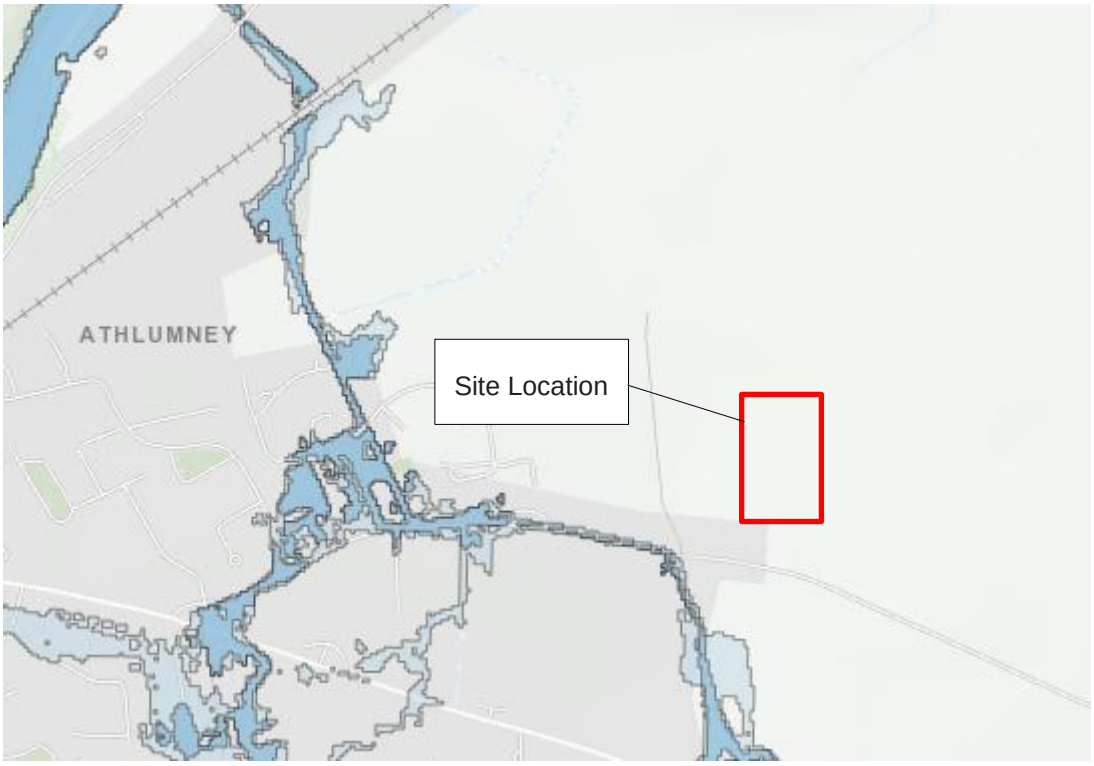

Figure 3-3 CFRAM Mid-Range Future Scenario fluvial flooding for the Farganstown Area

3.4 Pluvial Flooding

The pluvial flood mapping taken from myplan.ie shown in **Figure** 3-4 is taken from the Preliminary Flood Risk Assessment (PRFA) national screening exercise completed by the OPW in 2012 and does not indicate any pluvial flooding on the site. The site slopes from north-westerly and may be subject to overland flow paths. The proposed road layout for the site also slopes in this direction. As shown in **Figure** 3-5, while there is potential for overland flow paths, the catchment for this site is relatively small so this presents a low risk potential.

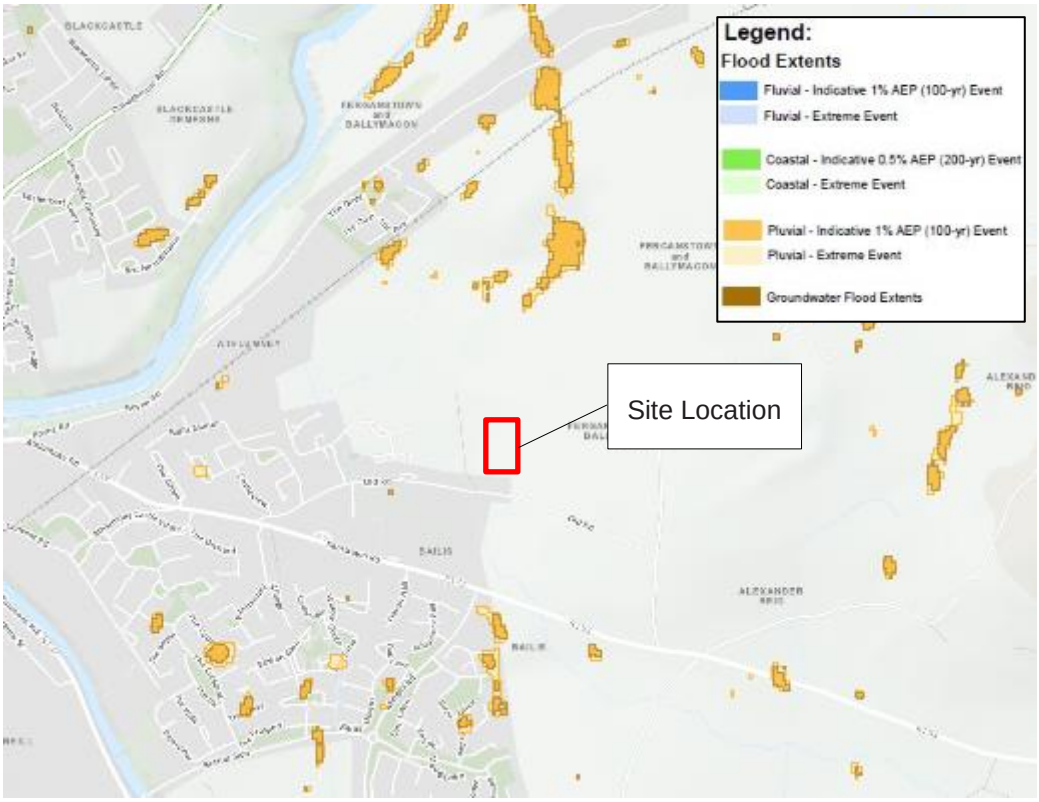

Figure 3-4 Pluvial flood map from myplan.ie

Figure 3-5 Site Catchment

3.5 Groundwater Flooding

As part of the PFRA, the OPW carried out a national scale assessment and produced a Groundwater Flooding Report which concluded that groundwater flooding is largely confined to the West Coast of Ireland due to the hydrogeology of the area. The PFRA mapping from myplan.ie as shown in **Figure 3-4** does not indicate any groundwater flooding for the site.

Lastly, the Geological Survey of Ireland (GSI) Spatial Resources online geological mapping system does not identify any karst features within the site itself. Karst is a general indicator that groundwater flooding is possible in an area.

All of the above factors would indicate that the risk of groundwater flooding is low to the development site.

3.6 Sources of Flooding Review

Table 3-2 presents a summary of the initial flood risk assessment. The Flood Risk Identification found that the site is at low risk from all types of flooding and lies within Flood Zone C. Therefore, a more detailed assessment of flooding is not required of this development. However, Meath County Council (MCC) requires that all developments undertake a surface water drainage assessment for the site to ensure that greenfield runoff rates are maintained at predevelopment rate to minimise the risk of flooding elsewhere. This is discussed in more details under **Section 5**.

Table 3-2 Summary of flood risk identification

Flooding Source	Comments	Risk (low/medium/high)
Fluvial	No further investigation required. The CFRAM fluvial flood extents maps for Farganstown shows that the development site lies in Flood Zone C. A review of the climate change extents available for the area also shows that the site lies in Flood Zone C. As per the Guidelines as shown in **Table 3-3SURFACE WATER AND DRAINAGE** ASSESSMENT , a Justification Test is not required.	Low
Pluvial	The risk of pluvial flooding is low. There is a limited risk from overland flow paths. Improved surface water drainage for the site as part of the redevelopment will help manage the site drainage.	Low
Groundwater	No further investigation required as groundwater flooding is not identified as a significant risk. Groundwater flooding is largely confined to the West Coast of Ireland and the PFRA mapping does not indicate any groundwater flooding for the site.	Low
Coastal	No further investigation required. The Farganstown development site lies in Flood Zone C as tidal flooding for the River Boyne is confined to Drogheda and does not extend to Farganstown. A review of the climate change extents available for the area also shows that the site lies in Flood Zone C.	Low

Table 3-3 Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test

	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

4 SURFACE WATER AND DRAINAGE ASSESSMENT

4.1 Introduction

We have determined in Section 3 that the proposed development is appropriate. However, the MCC Development Plan 2013-2019 requires that all “developments have regard to the surface water management policies in the Greater Dublin Strategic Drainage Study (GDSD). Compliance with the recommendations contained in the Technical Guidance Document, Volume 2, Chapter 4 of the Greater Dublin Strategic Drainage Study shall be required in all instances.” This means all development must ensure that surface water runoff is managed to ensure that greenfield runoff rates are maintained and that there are no downstream impacts. This Chapter reviews the surface water management proposals for the proposed drainage of the redevelopment site to satisfy this requirement.

4.2 Existing Site Drainage

The land is not currently developed and is comprised of agricultural land with drainage being provided through percolation through the ground and also via ditches along the boundary of the site. The catchment for the site identified from the Office of Public Works (OPW) Flood Studies Update (FSU) website indicates that the natural drainage for the site would flow north-west towards the River Boyne as shown in **Figure** 2-2. A review of historical Ordnance Survey Ireland (OSI) mapping does not indicate any other significant watercourses adjacent to the site.

4.3 Proposed Drainage Strategy

The development site is approximately 1.7 ha and in order to replicate the existing drainage and comply with the surface water guidance outlined in **Section 4.1,** the following surface water drainage solutions are proposed for the site:

- The surface water run off generated from the buildings and associated hardstanding areas are positively drained towards the storm water network. The storm sewer network will then discharge into the local drainage ditch in the north west of the site via an attenuation area
- The surface water generated from the site will be attenuated to the required greenfield runoff rate (Qbar) or 2l/s/ha, whichever is the greater. In this case the greenfield runoff rate for the site was calculated as 2.29 l/s/ha,
- It is proposed that modular attenuation systems (stormtech or equivalent) be included in the surface water drainage design to retain the 1 in 100 year peak run off, plus 20% climate change,
- The attenuation system will incorporate a class 1 hydrocarbon interceptor to treat all surface water prior to discharge to the local drainage ditch, and
- The proposed development will utilise where practicable green spaces and vegetated areas for natural drainage to reduce the surface water run-off.
- SuDs features will include Permeable Paving and Tree Pits.

5 COMPLIANCE WITH MCC DEVELOPMENT POLICY

5.1 Overview

Meath County Council have outlined a number of objectives in their County Development Plan to manage development in the county with respect to flooding and surface water management. **Table 4-1** below outlines these objectives and how the development is compliant with them.

Table 5-1 MCC Development Plan Compliance

MCC Development Policy	Description	Compliance
WS POL 32	To ensure that a flood risk assessment is carried out for any development proposal, where flood risk may be an issue in accordance with the "planning System and Flood Risk Management - Guidelines for Planning Authorities" (DoEHLG /OPW 2009). This assessment shall be appropriate to the scale and nature of risk to the potential development.	An FRA was carried out in accordance with the Guidelines. The FRA found that the site is at low risk from all types of flooding and it has been shown that the site is located in Flood Zone C.
WS POL 8	To generally require new developments to provide for the separation of foul and surface water drainage networks within the application site.	Separate systems will be provided for the development.
WS OBJ 16	To incorporate and promote the use of Sustainable Urban Drainage Systems within County Council Developments and other infrastructural projects as required in the Greater Dublin Regional Code of Practice for Drainage Works	Permeable Paving and Tree Pits are to be incorporated into the surface water drainage.
WS OBJ 18	To ensure that all new developments comply with Section 3.12 of the Greater Dublin Regional Code of Practice for Drainage Works V6 which sets out the requirements for new developments to allow for Climate Change.	Allowance of 20% have been made for climate change in all flow calculations.

6 SUMMARY AND CONCLUSIONS

RPS has carried out a Site Specific Flood Risk Assessment (SSFRA) in line with the “Planning System and Flood Risk Management Guidelines for Planning Authorities”. It was confirmed that the site is within Flood Zone C and hence at low risk from all types of sources of flooding. It was also determined that the site does not increase the risk of flooding elsewhere.

In accordance with the Guidelines, the development is considered a highly vulnerable development as it consists of dwelling houses. The SSFRA has demonstrated that the principal flood mitigation measure is avoidance due to the site’s location in Flood Zone C and as such a Justification Test is not required for this development. However, a drainage strategy to deal with surface water runoff is included to satisfy the requirements of MCC’s 2013-2019 Development Plan.