



STRATEGIC FLOOD RISK ASSESSMENT STAGE 1 & STAGE 2



October
2017

Edenderry Local Area Plan 2017-2023



This Strategic Flood Risk Assessment (Stage 1 and Stage 2) report forms part of the Edenderry Local Area Plan 2017-2023 and provides a comprehensive consideration of flood risk in Edenderry for inclusion in the preparation of the plan.

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EXECUTIVE SUMMARY

Offaly County Council has prepared the Edenderry Local Area Plan. The Local Area Plan sets out the landuse framework for the development of Edenderry over the period 2017-2023. In accordance with “*The Planning System and Flood Risk Management - Guidelines for Planning Authorities*”¹ as amended by Circular PL2/2014, a Strategic Flood Risk Assessment (SFRA) is required to be undertaken during the development of the Plan.

The SFRA is an assessment of flood risk within Edenderry and includes an indicative Flood Risk map, taking into account various factors including local knowledge, photography, site walkovers and published data sources indicative of flood risk.

The recommendations proposed in this SFRA for dealing with flood risk in Edenderry are based on the general policy approach to flood risk in County Offaly (SFRA for County Offaly) as well as national guidance based on best planning principles for managing flood risk.

- Identify Flood Risk at an early stage in the planning process.
- AVOID or minimise development in areas at risk of flooding.
- Permit development in areas at risk of flooding ONLY where there is no alternative or reasonable site available in areas at lower risk.
- Select an appropriate landuse where development is NECESSARY in areas at risk of flooding.
- A precautionary approach to be taken to reflect uncertainties in flood datasets, to provide for climate change and performance of flood defenses. Development should be designed with consideration of possible future changes in flood risk including the effect of climate change.
- Land required for current and future flood management eg. Conveyance and storage of flood water and flood protection schemes should be identified and safeguarded from development.
- Flood risk to, and arising from new development should be managed through location, layout and design incorporating Sustainable Drainage Systems and compensation for any loss of floodplain should be compensated for elsewhere.

Approach to managing Flood Risk in Edenderry

A number of approaches to managing flood risk in Edenderry have and will be employed during the making of the local plan and also in dealing with planning applications for particular developments. These include:

1. Areas at risk of flooding have been identified and there is a greater understanding of why flooding occurs in the general area.
2. A precautionary approach has largely been employed to landuse zoning to avoid directing development towards areas at risk of flooding.
3. Areas at risk of flooding as identified which are being put forward for landuse zoning have been subject to assessment through the justification test.
4. Where particular areas were examined as being strategically important for the consolidated and coherent growth of the town and zoned accordingly, an area specific flood risk assessment will be required and mitigation measures for site and building works will be required to be integrated.

¹ Department of the Environment, Heritage and Local Government and Office of Public Works, 2009

1.0 INTRODUCTION

Offaly County Council has prepared the Edenderry Local Area Plan in accordance with the requirements and provisions of the Planning and Development Act 2000 (as amended). The Local Area Plan sets out the landuse framework for the development of Edenderry over the period 2017-2023.

In accordance with “*The Planning System and Flood Risk Management - Guidelines for Planning Authorities*” as amended by Circular PL2/2014, a Strategic Flood Risk Assessment (SFRA) is required to be undertaken during the development of the Plan.

The SFRA is an assessment of flood risk within Edenderry and includes mapped boundaries for indicative Flood Risk Zones, taking into account various factors including local knowledge, photography, site walkovers and published data sources indicative of flood risk. The preparation of this SFRA is being undertaken alongside the preparation of the Plan from draft stage through to material alteration stage and adoption stage. The SFRA has informed the Plan and enables compliance with the Flood Risk Management Guidelines.

Flooding is a natural process that can happen at any time in a wide variety of locations. Flooding has significant impacts on human activities; it can threaten people’s lives, their property and the environment. Assets at risk can include housing, transport and public service infrastructure, commercial, industrial and agricultural enterprises. The health, social, economic and environmental impacts of flooding can be significant and have a wide community impact.

1.1 Purpose of Strategic flood risk assessment

The primary purpose of the SFRA is to determine flood risk within a particular geographical area, in this instance, Edenderry town and to support spatial planning decisions in relation to the zoning of particular areas or lands for development. Under the Guidelines the objectives of an SFRA is to:

- Provide for an improved understanding of flood risk.
- Provide an identification of areas of natural floodplain to be safeguarded.
- Produce a suitably detailed flood risk assessment drawing on existing data and apply the sequential approach to development in areas identified at risk of flooding.
- Inform the application of the Justification Test.
- Define measures required to deal with flood risks to reduce the risks to an acceptable level while not increasing flood risk elsewhere, and
- Produce guidance on mitigation measures on how surface water should be managed and appropriate criteria to be used in the review of site specific flood risk assessments.

It should be noted the SFRA is an ever evolving document, which is to be reviewed and updated on a regular basis in light of emerging information, flood data and an improved understanding of flood risk. This SFRA takes into account the latest flood risk information/data available from the OPW and national guidance available.

1.2 Disclaimer

The appraisal of flood risk is an evolving process as it is based on emerging data on flood events. The assessment and mapping of areas at risk of flooding awaits the publication both of Preliminary Flood Risk Assessments [PFRAs] and Catchment-based Flood Risk Assessment and Management Plans [CFRAMs]. As a consequence, the SFRA for Edenderry is based on the most current available information from the OPW who are charged with responsibility in this area.

Accordingly, all information in relation to flood risk is provided for general policy guidance and may be updated in respect of emerging new data and analysis. Owners/occupiers, developers and any other interested body are advised to take all reasonable measures to assess the flooding vulnerability or risk of lands in which they have or may have an interest prior to making planning or development decisions.

The aim of this SFRA is to provide an appraisal of all sources of flooding within the Edenderry area and to set out a number of approaches in the plan making process to avoid, reduce and manage flood risk as part of a wider objective to ensure the protection of property, people and infrastructure. The SFRA does not contain advice for existing occupiers who currently live in areas at risk of flooding or those that may experience flooding.

2.0 LEGISLATIVE AND PLANNING CONTEXT

2.1 European Policy

Water Framework Directive

The EU Water Framework Directive (WFD) aims at improving our water environment. It applies to rivers, lakes, groundwater, estuaries and coastal waters. Member States must aim to achieve good status in all waters by 2015 and must ensure that status does not deteriorate in any waters. In addition, the WFD defines a planning, management and reporting system based upon River Basin Districts and International River Basin Districts.

EU Floods Directive

The EU Directive on the assessment and management of flood risks [2007/60/EC], often referred to as the 'Floods' Directive, is a framework directive that requires Member States to follow a certain process, namely:

- Undertake a Preliminary Flood Risk Assessment (PFRA), to identify areas of existing or foreseeable future potentially significant flood risk (referred to as 'Areas for Further Assessment, or 'AFA's).
- Prepare flood hazard and risk maps for the AFAs by December 2013, and,
- Prepare flood risk management plans by December 2015, setting objectives for managing the flood risk within the AFAs and setting out a prioritised set of measures for achieving those objectives.

The OPW is the national authority for the implementation of the EU Directive on the Assessment and Management of Flood Risks [2007/60/EC].

2.2 National Flood Policy²

The National Flood Policy provides for the following recommendations:

- A focus on managing flood risk, rather than relying only flood protection measures aimed at reducing flooding.
- Taking a catchment-based approach to assess and manage risks within the whole-catchment context.
- Being proactive in assessing and managing flood risks, including the preparation of flood maps and flood risk management plans.

These recommendations lead to the development and implementation of the National CFRAM Programme.

CFRAM Programme³

CFRAM is Catchment Flood Risk Assessment and Management. The national CFRAM programme commenced in Ireland in 2011. The CFRAM Programme is central to the medium to long-term strategy for the reduction and management of flood risk in Ireland. The Programme delivers on core components of the National Flood Policy, adopted in 2004, and on the requirements of the EU Floods Directive. The CFRAM Programme comprises three phases:

- The Preliminary Flood Risk Assessment (PFRA): 2011,
- The CFRAM Studies and parallel activities: 2011-2015,
- Implementation and Review: 2016 onwards.

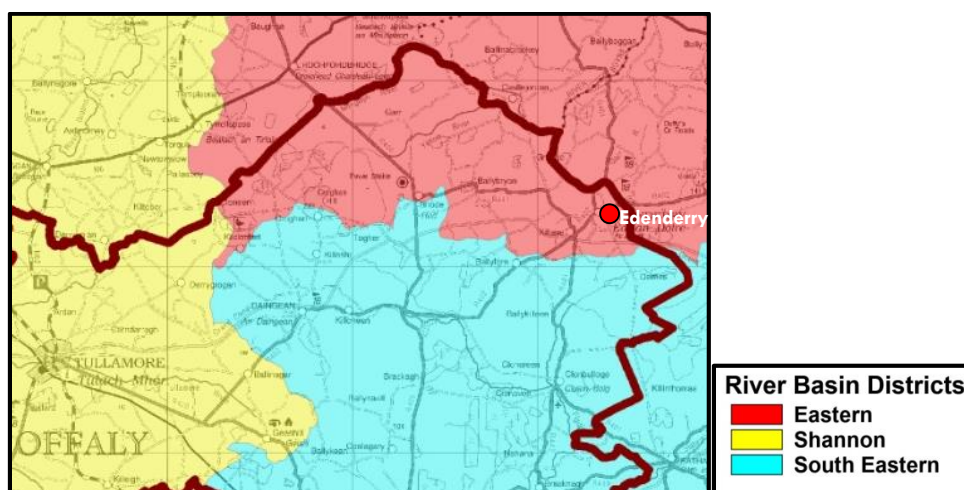
² www.opw.ie

³ www.opw.ie

The Programme provides for three main consultative stages:

- 2011 Preliminary Flood Risk Assessments
- 2013 Flood Hazard Mapping
- 2015 Flood Risk Management Plans.

Currently, in line with the EU Floods Directive, the National CFRAM Programme is underway, with CFRAM studies being carried out across seven river basin districts in Ireland. Edenderry lies within the Eastern River Basin District and is identified and assessed in the Boyne Catchment draft Flood Risk Management Plan (FRMP), Unit of Management (UoM-07).



The draft Flood Risk Management Plan for the Boyne Catchment (Uom07) was published for public display and commentary at the end of 2016. The draft FRMP, is supported by a number of technical reports and sets out the proposed strategy, actions and measures that are considered to be most appropriate given the level of assessment, modelling and appraisal undertaken.

This FRMP will be finalized on assessment and evaluation of the final consultation process.

More information on the CFRAM programme is available on www.cfram.ie.

Preliminary Flood Risk Assessment

The National Preliminary Flood Risk Assessment (PFRA) is a requirement of the EU 'Floods' Directive. The PFRA identified areas at risk of significant flooding and includes maps showing areas deemed to be at risk. Built-up areas deemed to be at significant risk, where the flood risk that is of particular concern nationally, are identified

as Areas for Further Assessment (AFAs) and more detailed assessment of the extent and degree of flood risk is currently being undertaken in these areas with the objective of producing Flood Hazard Mapping. Edenderry was designated as an AFA. The outcomes of the PFRA inform the need for more detailed assessment, flood mapping and the review of the Flood Risk Management Plans.

The Planning System and Flood Risk Management, Guidelines for Planning Authorities.

The DoEHLG in conjunction with the OPW published guidelines for Planning Authorities in November 2009 entitled 'The Planning System and Flood Risk Management'. The guidelines introduce comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Planning Authorities (both elected members and officials) must implement these guidelines in ensuring that, where relevant, flood risk is a key consideration in preparing development plans and in the assessment of planning applications.

Planning Authorities are required under section 28 of the Planning and Development Act 2000 (as amended) 'to have regard to' the guidelines in carrying out their planning function.

The core objectives of the guidelines 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 water 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 EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

The guidelines contain a lot of information relevant to the how the SFRA will be an informative policy framing document, the premise of which will be taken from the guidelines, transposed into the SFRA and enable it to act as a guidance document to inform decision making on land use zoning and general flood risk issues where required and relevant. In this regard, the provisions of the guidelines will be examined in further detail in section 3 of this SFRA.

Circular PL2/2014

Circular PL2/2014 was published by the Department of Environment, Community and Local Government in August 2014. This circular clarified and amended certain aspects of the Guidelines which are relevance to Local Authorities in the preparation of development plans: The clarifications provide for the following:

Justification Test:

- Clarification given to the principle of balancing flood risk management with the development and regeneration of existing areas at risk of flooding within established urban centres, even residential development.

- Planning Authority required to specify, in development plans, the requirements for flood risk management standards and measures in areas where vulnerable development is considered appropriate in flood zones A or B.

Regeneration Areas: Elaboration in guidance for flood risk management in areas that have been designed for urban regeneration by the Planning Authority.

Small scale infill/Rebuilding of houses: Not required to pass the justification test for development management.

3.0 FLOOD ASSESSMENT AND MANAGEMENT

3.1 Flood risk

Flooding is a natural process that can happen at any time in a wide variety of locations, in different forms and thus presenting varying degrees of difficulty to people, property and the environment. Climate change and its impact in relation to frequency, pattern and severity of flooding is recognised as becoming more uncertain and more damaging. Understanding flood risk is a key step in managing the impacts of flooding. Flood Risk is a combination of the **likelihood** of flooding and the potential **consequences** of flooding.

3.2 Planning Principles of flood risk management

The key principles of flood risk management are to:

- Avoid development that will be at risk of flooding or that will increase the risk of flooding elsewhere, where possible,
- Substitute less vulnerable uses where avoidance is not possible, and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

The fundamental principle set out in the guidelines is that development should not be permitted in flood risk areas except where there are **no alternative** and appropriate sites available in lower risk areas that are **consistent** with the objectives of proper planning and sustainable development.

3.3 Flood Zones and Vulnerability Classes

In the guidelines, the probability of flooding is established through the identification of Flood zones which describe a High, Moderate or Low risk of flooding from fluvial or tidal sources. These are defined geographical areas defined and used as a key tool in flood management. This is described in further detail in the Table below:

Table 3.1 Description of Flood Zones

Zone	Risk	Description
Flood Zone A	High probability of flooding	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	Moderate probability of flooding	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);
Flood Zone C	Low probability of flooding	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.

It is important to note that the flood zones as defined do not take into consideration other sources of flooding such as groundwater or pluvial. This requires an assessment of risk arising from such sources.

The consequences of flooding depend on the hazards caused by flooding and the vulnerability of receptors i.e. nature of development, age structure of population integral to the development, mitigation measures etc.

On helping to define flood risk further, taking into account matters of probability and consequence, the guidelines have identified the planning implications for each of the Flood Zones A,B & C.

Table 3.2: Flood Zones and implications for planning

Zone	Inappropriate development	Appropriate development
Zone A – High probability of flooding	Most types of development would be considered <u>inappropriate</u> in this zone. Development in this zone should be <u>avoided</u> and/or only considered in <u>exceptional circumstances</u> such as in City/Town Centres or in the case of essential infrastructure that cannot be provided elsewhere. Justification Test must be applied in such cases.	Water compatible development such as docks, marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation.
Zone B Moderate probability of 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 be generally considered <u>inappropriate</u> at this location unless the justification test can be met.	Less vulnerable development such as retail, commercial and industrial uses, sites used for short term caravan and camping and secondary strategic transport and utilities, infrastructure and water compatible development might be considered appropriate in this zone. Less vulnerable development should only be considered if adequate lands/sites <u>are not available</u> in Zone C and subject to a <u>flood risk assessment</u> to the appropriate level of detail to demonstrate that flood risk to/from the development can or will be managed adequately.
Zone C – Low Probability of flooding		Development in this zone is <u>appropriate</u> from a flood risk perspective subject to assessment of <u>flood hazard</u> from sources other than rivers or tidal and would need to meet the normal range of other proper planning and sustainable development considerations.

3.4 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 the area of the regional planning guidelines, development plans or local area plans (LAPs) or

a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application level. 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.

Stage 3: Detailed flood risk assessment: To assess flood risk issues in sufficient detail and to provide 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 staged approach is recommended for flood risk assessments at Regional, County and site-specific levels. Within this hierarchy of Regional, County and site-specific flood-risk assessments, a staged approach ensures that the level of information is appropriate to the scale and nature of the flood-risk issues and the location and type of development proposed, avoiding expensive flood modelling and development of mitigation measures where it is not necessary.

4.0 STAGE 1 - FLOOD RISK IDENTIFICATION

4.1 Introduction

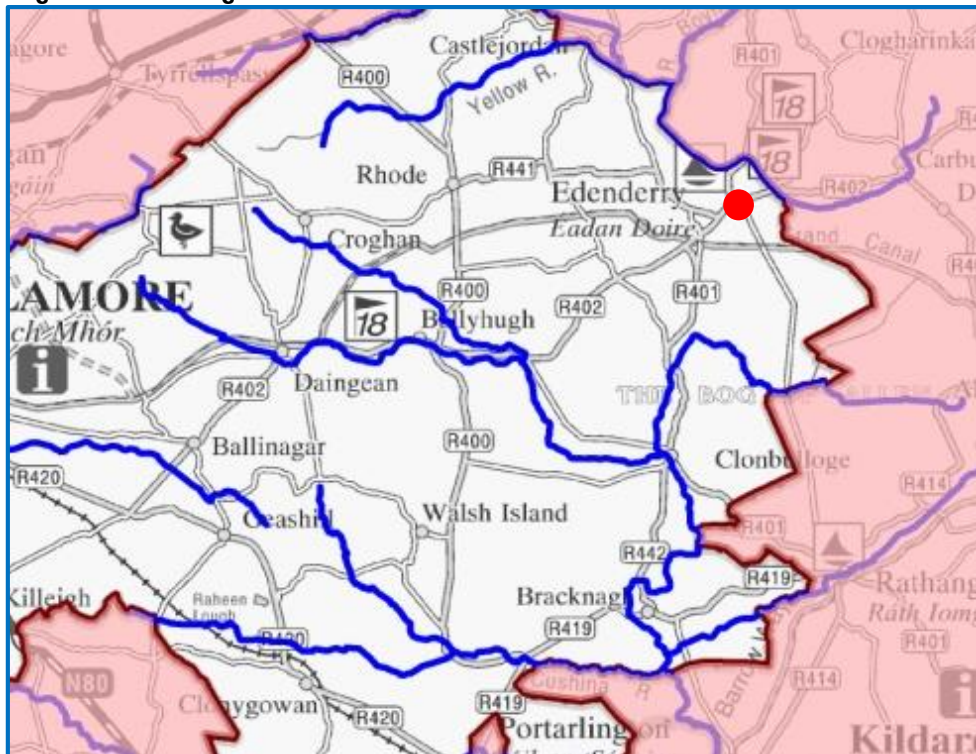
Stage 1 of the Strategic Flood Risk Assessment was undertaken in order to identify whether there may be any flooding or surface water management issues within the town. This informs whether a Stage 2 SFRA, Initial Flood Risk Assessment, should be undertaken. The Stage 1 examines existing flooding information to identify flood risk within the plan area.

4.2 Edenderry in Context

Edenderry town is located to the east of County Offaly. The River Boyne Runs along the northeast boundary of Edenderry Town. Edenderry lies upstream of the River Boyne and is affected by the main channel of the River Boyne and a smaller watercourse that emanates from within the town itself called Weavers Drain. This drain flows northwards from the town passing through a number of culverts along the way before discharging to the Boyne to the north. To the north of the town centre lies low-lying peat covered land, much of these lands have been mapped as benefiting lands by the Office of Public Works.

Both the River Boyne and Weavers Drain are included in the Arterial Drainage Scheme (ADS) and are subject to periodic dredging.

Figure 4.1: Existing Watercourse network.



4.3 Data Collection and Review

The SFRA provides an appraisal and assessment of available flood risk data. These are itemized below. Table 4.1 sets out the historical flood events while Table 4.2 sets out the indicators of flood risk based on predictive mapping or Hydraulic Modelling.

The following relevant reports and documents were collated and reviewed:

- Edenderry Local Area Plan 2011-2017 including accompanying reports.
- Edenderry Justification Test report 2011.
- Public Consultation and Pre-draft submissions on Edenderry Local Area Plan 2017-2023.
- Offaly County Development Plan 2014-2020 and Strategic Flood Risk Assessment.
- Draft Flood Risk Management Plan UoM07 – Boyne (2016-2017).
- National Preliminary Flood Risk Assessment Study (PFRA).
- Historical Flood records including photographs and reports – floodmaps.ie
- Benefitting land maps and drainage districts.
- Eastern CFRAM Study and HA07 Hydraulics report - Edenderry Model (August 2015)

Table 4.1: Historical Flood Events

Historical Flood Events:	
August 2008	The River Boyne overflowed in the Edenderry area during this flood event and flooded low lying land near the river. The flooding appeared to mostly affect agricultural land, although parts of Edenderry Golf Club were flooded also. Aerial photographs taken during the flood do not indicate flooding in the town itself or flooding of roads or houses.
November 2002	Flooding at Kishawanny Bridge. Low lying lands adjacent to the River Boyne were flooded. No properties were affected.
February 2002	This event was caused by heavy rainfall causing the River Boyne to overtop its banks. In Edenderry, the available photos indicate that flooding of Edenderry Golf Club and other low lying lands adjacent to the river occurred. No information is available to indicate flooding of roads or properties.
November 2000	Flood event at Edenderry caused by heavy rain and storm force winds. In Edenderry, flooding of low lying lands near the river occurred. However, at the time of the flooding the road near Kishawanny Bridge was being realigned and it is possible that these works may have had an effect on the river flow.

1989	Wall structure of Grand Canal was undermined and canal burst its banks affecting a significant are of mainly agricultural land north of the Canal.
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Table 4.2: Predictive Hydraulic Modelling

Predictive/Hydraulic Modelling:	
OPW Preliminary Flood Risk Assessment (PFRA)	PFRA Fluvial flood extents includes land adjacent to the River Boyne (flood plain) and low lying lands around Kishawanny Bridge to the south east of the town. Area of land to the northern extremity of the town and the River Boyne are included taking in lands affected by flooding from Weavers Drain.
Emerging data – Eastern CFRAM	Edenderry and its environs were identified as an ‘Area for Further Assessment’ through the Catchment Flood Risk Assessment and Management Studies (CFRAMs). A Hydraulics Report for Edenderry was carried in support of the Eastern CFRAM Flood Risk Review for UoM-07, Boyne Catchment and informed the Fluvial Flood Extents Mapping and specific and general risk to habitants and the environment.

4.4 Findings from Data Collection and Review

Despite recurring flood events evidenced at the Kishawanny Bridge, much of the developed areas of Edenderry are not within the flood plain of the River Boyne and are not affected or impacted by flooding. Flooding in Edenderry primarily occurs on undeveloped lands on the periphery of the town mainly as a result of flow restrictions and in an area closer to the town centre as a result of structural capacity constraints at Weavers Drain.

The draft Flood Risk Management Plan identified that while fluvial flooding does occur, there are no properties at risk and as such Edenderry and its Environs are considered as very low risk. This would correspond with the precautionary approach taken to the zoning and development of lands identified as being at risk of flooding in landuse plans for the area.

5.0 STAGE 2 – INITIAL FLOOD RISK ASSESSMENT

5.1 Introduction

Stage 1 (Flood Risk Identification) has identified potential flood risk issues stemming from the River Boyne and Weavers Drain in particular. Stage 2 examines initial flood risk to ensure that all relevant flood risk issues are assessed in relation to the decisions to be made and that the potential conflicts between flood risk and development are addressed to the appropriate level of detail.

A Stage 2 SFRA (initial flood risk assessment) is undertaken to:

- Confirm the sources of flooding that may affect areas within the Plan boundary;
- Appraise the adequacy of existing information as identified in the Stage 1 SFRA;
- Scope the extent of the risk of flooding through the preparation of indicative flood zone maps specifically to inform landuse zoning in the plan.

5.2 Hydraulics Report

The Hydraulics Report (HA07) completed as part of the CFRAM study for UoM-07 for the Boyne Catchment and particularly for the Edenderry Area of Further Assessment (AFA) provides the complete assessment of flood risk in the town. This technical report supports and informs the CFRAM.

The report details:

- General Hydraulic Model Information.
- Hydraulic Model Construction including critical structures.
- Historical Flooding.
- Hydraulic Assumptions.
- Parameters of flood risk.

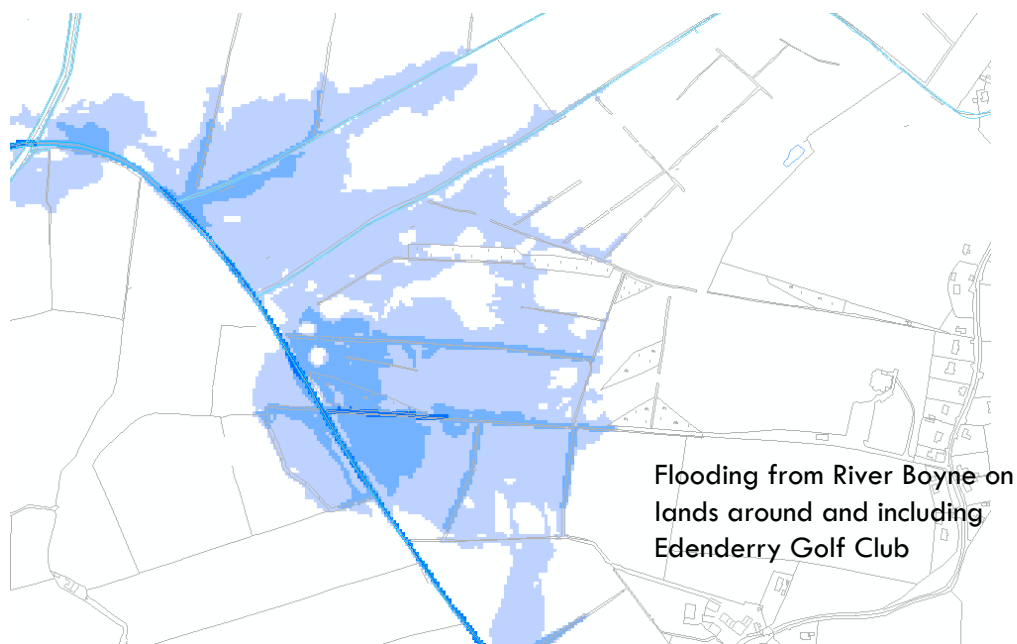
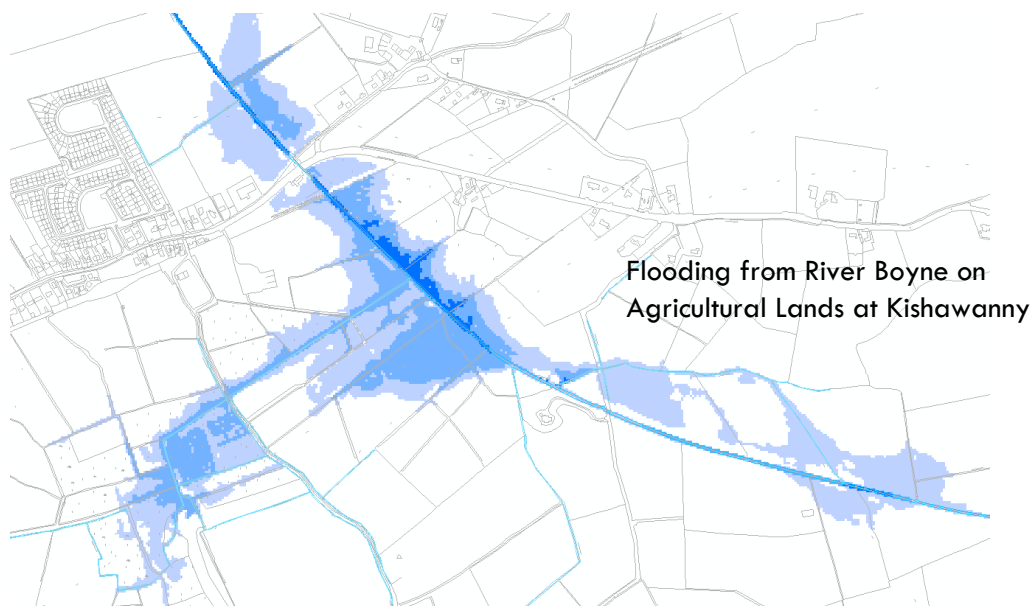
The findings on flood events and risk in the Hydraulic Report and those of the Eastern CFRAM Study UoM-07 are representative of historical flood extents as reported and documented for Edenderry.

Flood risk Findings:

The historical flooding records, the model outputs report and the FRMP Mapping all identified the same areas as being particularly susceptible to flood risk and these include:

1. Agricultural land around Kishawanny Bridge (River Boyne).
2. Agricultural land around and inclusive of parts of the Edenderry Golf Club (River Boyne).
3. Weavers Drain Tributary.

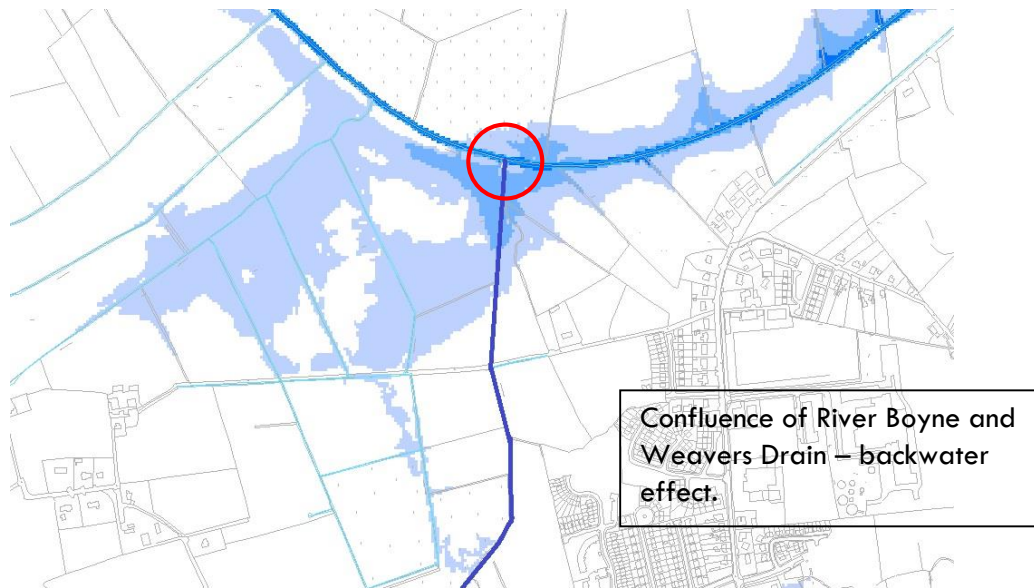
Flooding from the River Boyne: The Kishawanny bridge and weir are significant hydraulic control structures. In times of increased rainfall the backfall effect impacts on agricultural lands around the Kishawanny bridge and further upstream to impact on the area of land around and including the Edenderry Golf Course.



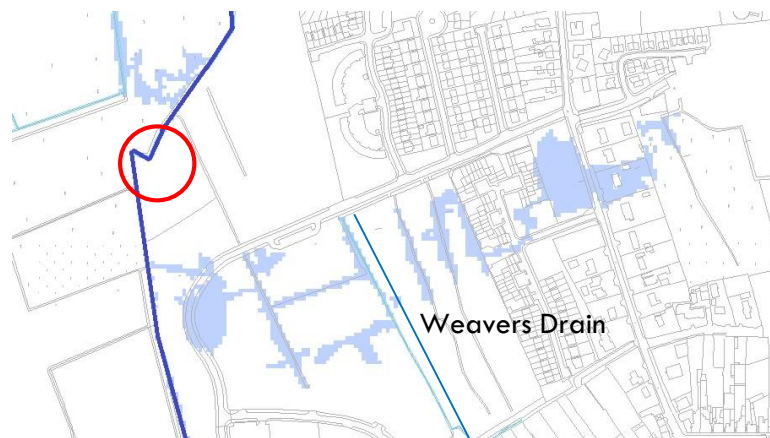
Weavers Drain: a significant area of flooding occurs at the River Boyne/Weavers Drain confluence and both watercourses contribute to flooding at this point. The backwater effect of Weavers Drain consequent to a high water level in the River Boyne plays a significant role.

In addition, the hydraulic modelling demonstrates that bank flooding will occur upstream from a culvert restricting flow and causing a backwater effect. The flood route currently does not affect any properties.

The biggest flood risk comes from Weaver's Drain Tributary where the watercourse meets and passes through a narrow critical structure, turns 90 degrees and enters a long culvert. All of these combined causes out of bank flooding resulting in ponding.



Watercourse changes direction before entering long culvert – causes out of bank flooding to south, ponding results and enters Weavers Drain



5.3 Flood Defence Assets and Structures

There are none in Edenderry. Edenderry has benefitted from an Arterial Drainage Scheme.

5.4 Indicative Flood Risk Zone Mapping

Taking into account the stage 1 SFRA and the Stage 2 SFRA an indicative flood risk zone map has been produced.

- Indicative Flood Zone A – where the probability of flooding is highest (greater than 1 in 10), and
- Indicative Flood Zone B – where the probability of flooding is moderate (greater than 1 in 100).

All other areas are considered to be Indicative Flood Zone C – where the probability of flooding is less than 1 in 1000.

The flood zone areas have been developed by using the extents of coverage by:

- Draft Flood Maps for Edenderry (FRMP - UoM-07).
- Hydraulic Report mapping.
- PFRA mapping.
- Historical 6" maps.

Please refer to Appendix A1 for Indicative Flood Risk Zone Map.

5.5 Flood Risk and Justification Test

The Landuse zoning map for Edenderry Town has been developed taking into consideration the areas identified as being at risk of flooding as per the indicative flood risk map (**please refer to Appendix A2 for Landuse Zoning and Indicative flood Zone map merged**). Largely a precautionary approach has been taken to landuse zoning and this provides for the avoidance or minimization of development in areas at risk of flooding.

Although not considered extreme, there is a specific area of the town at risk of localized flooding as identified in stage 1 and explored further in stage 2. Flooding occurs in this area as a consequence of backwater from Weavers Drain (refer to section 5.2). This area of land also attenuates to Weavers Drain and so experiences long periods of ponding. The development of this land will impact on the capacity of Weavers Drain and may give rise to flood issues elsewhere in the area.

The area, identified as being at risk of flooding is identified as FR1 on the Zoning map and sits inside, to the south and east of the Ring Road. Much of this land remains undeveloped and is bound to the east by an existing established residential area. FR1 also includes a hotel site (abandoned - partially constructed). By virtue of its location and the nature of the moderate risk of flooding identified it is considered that the assessment of the suitability of this area for development in the future requires the application of the Justification test for development plans. The area subject to the Justification Test is delineated below in red for the purposes of identification. This area is identified on the indicative flood risk map also.



Justification Test

Land Zoning	Business/Employment Open Space Public/Community/Educational
Flood Zone	Flood Zone B
Requirement for Justification Test	Yes

Justification Test		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, as amended.	In the Core Strategy of the Offaly County Development Plan 2014-2020 Edenderry is identified as Key Service Town and is recognized as an important driver for the local economy on account of the economic, administrative and social functions provided. Edenderry is targeted for further for population growth having recorded a population explosion of 66% in the 20 years since 1996.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	This area lies north west and adjoining the centre most part of the town. A key objective delineated on the landuse zoning map seeks to provide a road connecting between the town centre land uses to the south east and the business/employment landuses. This will provide for greater accessibility while bringing the town centre ever closer to this area. In sequential terms the subject area provides for the logical extension of the town.
	(ii) Comprises significant previously developed and/or under-utilised lands	The area of land zoned for business/employment is largely undeveloped. The derelict unfinished hotel structure is located on lands zoned Public/community/educational.
	(iii) Is within or adjoining the core of an established or designated urban settlement;	This area adjoins town centre landuses with a key road infrastructure objective that seeks to inextricably link in particular the undeveloped Business/employment, open space and Public/community/educational lands to the town centre.
	(iv) Will be essential in achieving compact or sustainable urban growth;	The mission of the Edenderry LAP is to work towards the consolidation and coherent economic growth of the town. The subject lands will contribute towards this overarching objective thus providing for a sustainable urban growth pattern.

		The undeveloped Business/employment land is bound by the existing ring road to the west and north.
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	<p>The unfinished hotel site zoned Public/community/educational is an opportunity site that is capable of transforming from its derelict condition to an end use/development that will contribute positively to the town.</p> <p>Working towards delivering the access road between the derelict hotel site and the town centre will strengthen the contribution that the derelict hotel site and the area of business/employment lands will bring to the centre of the town particularly as this area adjoins the town centre.</p> <p>Mitigation measures set out in the local area plan (guided by this SFRA) will be required to be incorporated/employed for proposed future development particularly for uses considered vulnerable.</p>
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	<p>Flooding and Flood risk have been considered as part of the SEA. The SEA has informed the policies of the local area plan.</p> <p>Flood Risk Assessments will be required to be carried out for specific new development in the area to ensure that the development can be adequately managed.</p>
Conclusion		
	<p>It is considered appropriate to retain the Business/employment zoning, the open space zoning and Public/community/educational zoning.</p> <p>The subject area of land, particularly the undeveloped land, is strategic in location. Its development offers a number of opportunities including:</p> <ul style="list-style-type: none">• Use of existing and established road infrastructure.• Make good the derelict and unfinished hotel site.• Drive the provision of the link road between subject lands and town centre.• Capitalize on proximity of subject lands to town centre• Represent a consolidated, coherent and sustainable approach to future development of the town. <p>An area Specific Flood Risk Assessment will be required for development on undeveloped lands and flood mitigation measures will be required to be incorporated into any future development/scheme. Any development of these lands would be subject to the mitigation measures contained in the area specific flood risk assessment and the LAP where appropriate.</p>	
Recommendation		

A detailed Flood Risk Assessment is required for the entire area delineated as FR1 to:

- assess flood risk issues in sufficient detail against the specific type(s) of development proposed
- examine the potential impact on flood risk elsewhere (particularly displacement impacting on capacity issues at Weavers Drain)
- examine the effectiveness of any proposed mitigation measures.

Mitigation objectives shall apply (refer Section 5.6 below). Specific mitigation objectives must be incorporated into proposals for new development. These should be informed by the area specific flood risk assessment.

5.6 Mitigation Measures

In order to manage flood risk the following action and mitigation objectives are recommended for inclusion in the Edenderry LAP.

Action for landuse zoning plan:

1. Areas at risk of flooding and to which a detailed Flood Risk Assessment will be required for development proposals must be clearly delineated on the landuse Zoning Map of the LAP in accordance with the boundaries of the map in Appendix A3.

Action(s) for objectives in LAP:

Insert the following Flood Risk Objectives in Edenderry LAP:

1. To have regard to The Planning System and Flood Risk Management – Guidelines for Planning Authorities, November 2009 (as amended), and any future reports in relation to flood risk for Edenderry.
2. To undertake a flood study to examine in detail the causes and extent of flooding from Weavers Drain, the impacts of the potential development of land naturally attenuating to this water course and measures that can be employed to lessen or reduce the impacts of flooding on established developments in the town.
3. A detailed Flood Risk Assessment is required for the entire area delineated as FR1 in the plan to:
 - assess flood risk issues in sufficient detail against the specific type(s) of development proposed
 - examine the potential impact on flood risk elsewhere.
 - examine the effectiveness of any proposed mitigation measures.

Any proposals for development in this area shall be accompanied by a site specific flood risk assessment appropriate to the nature and scale of the development being proposed. Mitigation measures for site development and building design in this area shall incorporate:

- (I) Permeability measures such as permeable paving to break up expanses of hard surfacing in area such as car parks.
- (II) Appropriate Finished Floor Levels.
- (III) Proposals to deal with rain and surface water employing Sustainable drainage techniques including rainwater harvesting, attenuation and Sustainable Urban Drainage Systems (SuDS).

- (IV) Development proposals incorporating SuDS shall demonstrate how SuDS will benefit the overall scheme or contribute to the site/area by an end use that is (a) functional to the scheme, (b) has an amenity value, or (c) has a habitat creation value.
- 4. To co-operate with the OPW in relation to the development of the Catchment Flood Risk Assessment (CFRAM) Eastern River Basin and for the River Boyne in particular and to comply with any guidance and recommendations of this flood risk management plan.
- 5. All development on lands identified as being at risk of flooding must demonstrate, through the carrying out of a Site Specific Flood Risk Assessment flood impact assessment and the use of Sustainable Urban Drainage Systems, that any flood risk can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

6.0 RECOMMENDATIONS AND APPROACH TO FLOOD RISK MANAGEMENT

This section of the SFRA provides recommendations for the approach to flood risk management for the development and growth strategy that is the Edenderry Local Area Plan.

6.1 Recommendations:

The recommendations proposed in this SFRA for dealing with flood risk in Edenderry is based on the general policy approach to flood risk in County Offaly (SFRA for County Offaly) as well as national guidance based on best planning principles for managing flood risk.

- Identify Flood Risk at an early stage in the planning process.
- AVOID or minimise development in areas at risk of flooding.
- Permit development in areas at risk of flooding ONLY where there is no alternative or reasonable site available in areas at lower risk.
- Select an appropriate landuse where development is NECESSARY in areas at risk of flooding.
- A precautionary approach to be taken to reflect uncertainties in flood datasets, to provide for climate change and performance of flood defenses. Development should be designed with consideration of possible future changes in flood risk including the effect of climate change.
- Land required for current and future flood management eg. Conveyance and storage of flood water and flood protection schemes should be identified and safeguarded from development.
- Flood risk to, and arising from new development should be managed through location, layout and design incorporating Sustainable Drainage Systems and compensation for any loss of floodplain should be compensated for elsewhere.

6.2 Approach to managing Flood Risk in Edenderry

A number of approaches to managing flood risk in Edenderry have and will be employed during the making of the local plan and also in dealing with planning applications for particular developments. These include:

1. Areas at risk of flooding have been identified and there is a greater understanding of why flooding occurs in the general area.
2. A precautionary approach has largely been employed to landuse zoning to avoid directing development towards areas at risk of flooding.
3. Areas at risk of flooding as identified which are being put forward for landuse zoning have been subject to assessment through the justification test.
4. Where particular areas were examined as being strategically important for the consolidated and coherent growth of the town and zoned accordingly, area specific flood risk assessment will be required and mitigation measures for site and building works will be required to be integrated.

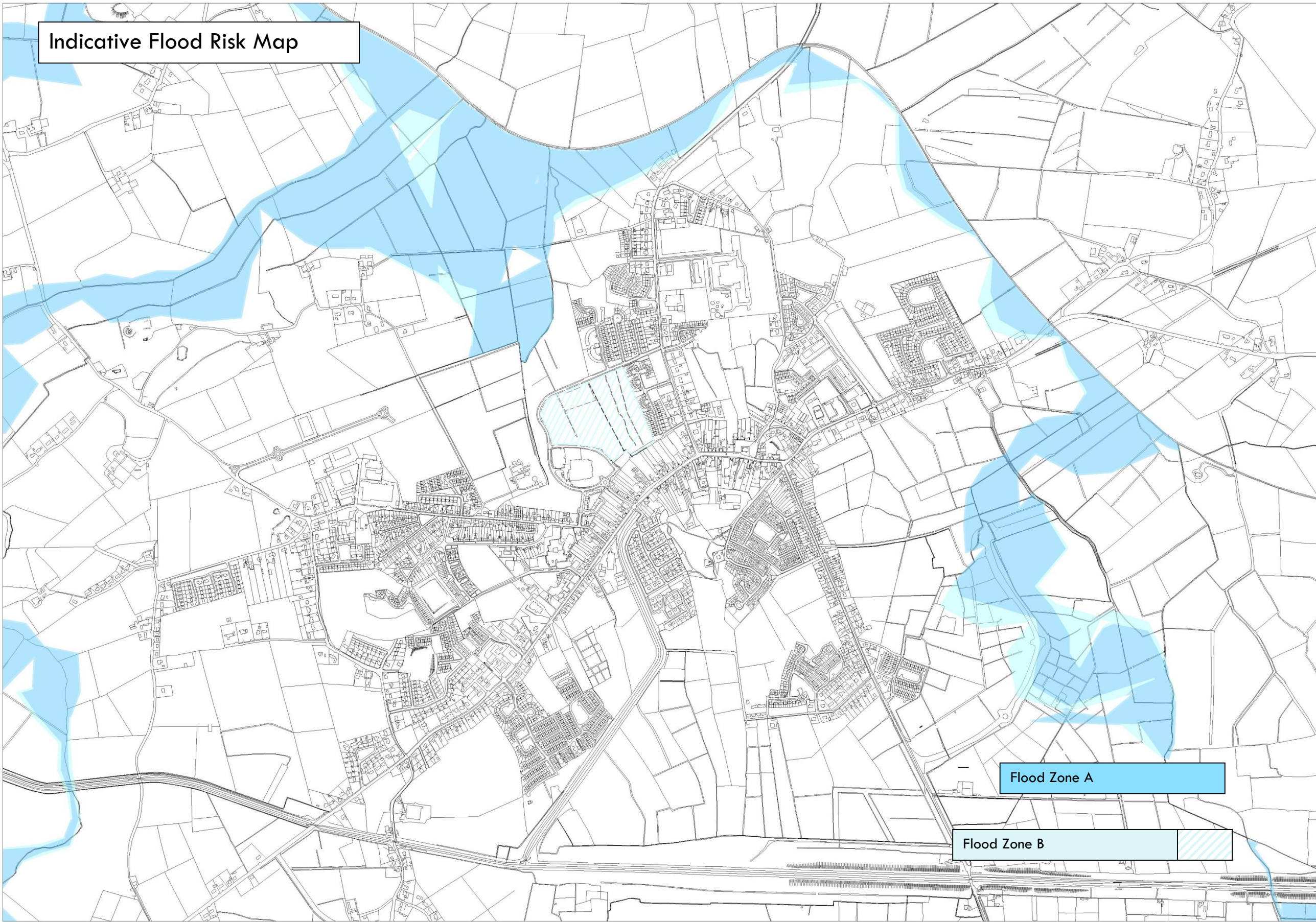
*** End***

Appendix 1

Indicative

Flood Risk Map

Indicative Flood Risk Map

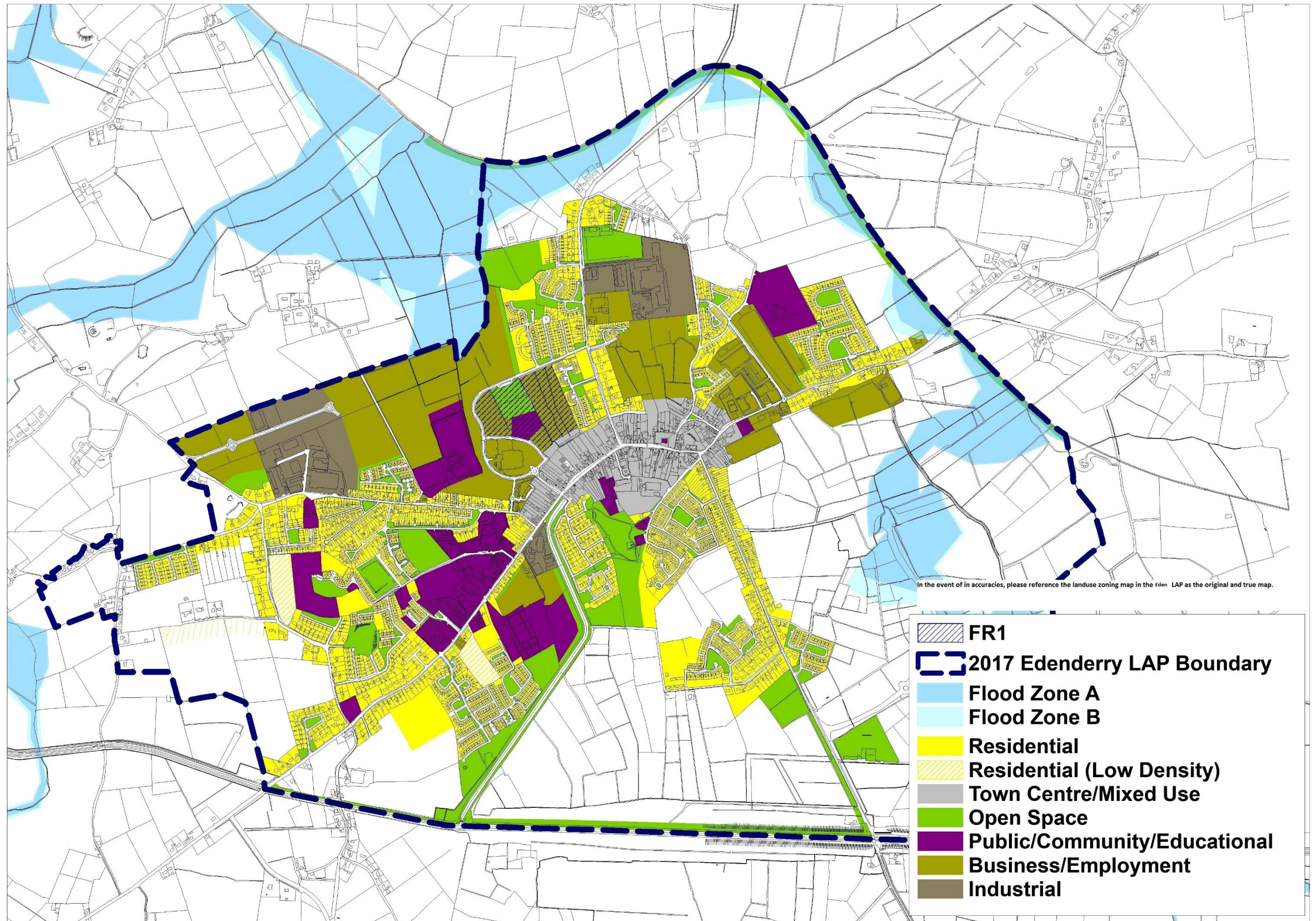


Flood Zone A

Flood Zone B

Appendix A2

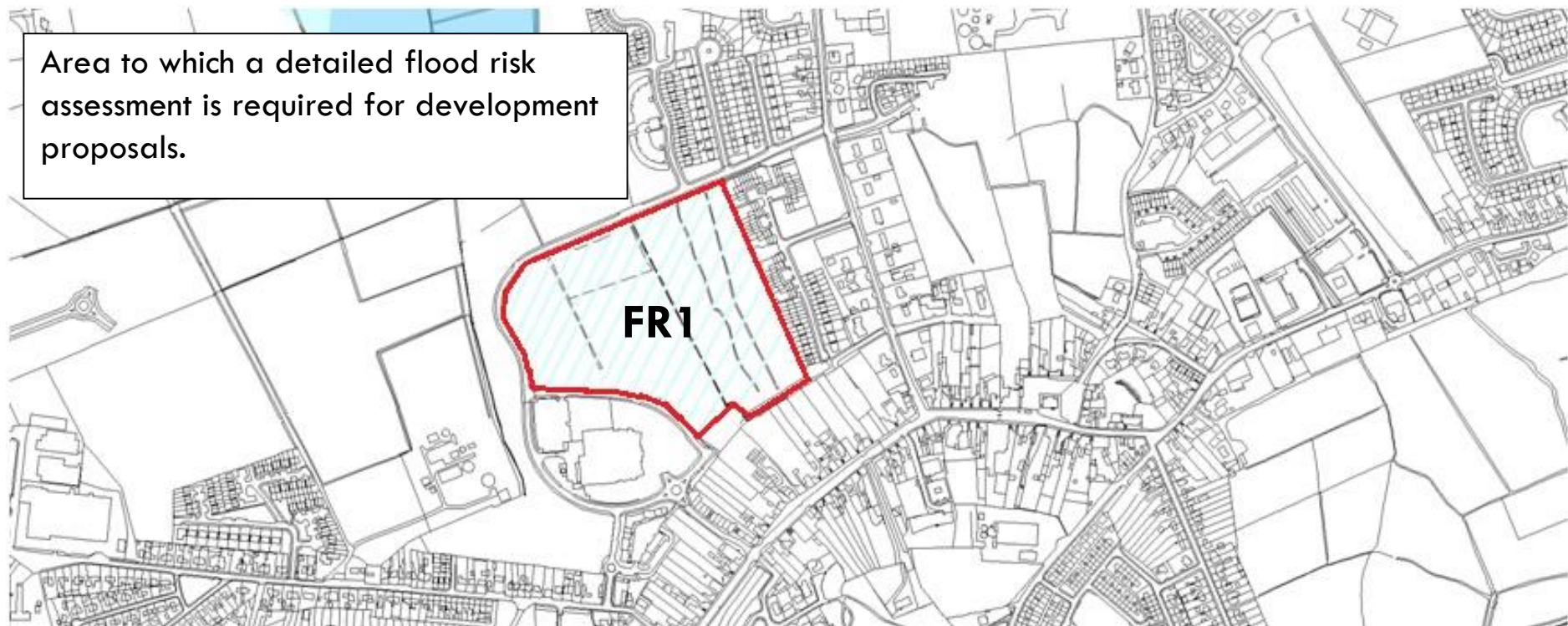
Indicative Flood Risk and Landuse Zoning Map Merged



Appendix A3

FR1 Area subject to a detailed Flood Risk Assessment for Development proposals

Area to which a detailed flood risk assessment is required for development proposals.



*****Report End*****