

**Proposed Draft  
Tallaght Town Centre  
Local Area Plan  
2020-2026**

Appendix 4  
Strategic Flood  
Risk Assessment  
Environmental  
Report

## SFRA for Tallaght Town Centre Local Area Plan

Technical Report

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# JBA Project Manager

David Casey  
Unit 3, Block 660  
Greenogue Business Plaza,  
Greenogue  
Rathcoole,  
Dublin.

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## Contract

This report describes work commissioned by Brian Keaney, on behalf of South Dublin City Council. David Casey of JBA Consulting carried out this work.

Prepared by ..... David Casey BSc MSc MCIWEM  
Senior Engineer

Reviewed by ..... Ross Bryant BSc MSc CEnv MCIWEM C.WEM  
Principal Analyst

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## Abbreviations

1D	One Dimensional (modelling)
2D	Two Dimensional (modelling)
AEP	Annual Exceedance Probability
AFa	Area for Further Assessment
CFRAM	Catchment Flood Risk Assessment and Management
DoEHLG	Department of the Environment, Heritage and Local Government
DTM	Digital Terrain Model
EC	European Community
EPA	Environmental Protection Agency
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
FRR	Flood Risk Review
GDSDS	Greater Dublin Strategic Drainage Strategy
HEFS	High End Future Scenario
HPW	High Priority Watercourse
LA	Local Authority
LAP	Local Area Plan
MRFS	Medium Range Future Scenario
OPW	Office of Public Works
OS	Ordnance Survey
PFRA	Preliminary Flood Risk Assessment
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
Tp	Time to Peak

# 1 Study Background

JBA Consulting was appointed by South Dublin County Council to carry out the Strategic Flood Risk Assessment for the Tallaght Local Area Plan.

This report details the SFRA for the area and has been prepared in accordance with the requirements of the DoEHLG and OPW planning guidelines. The Planning System and Flood Risk Management; these guidelines were issued under the Planning and Development Act 2000, and recognise the significance of proper planning to manage flood risk.

## 1.1 Scope of the study

Under the "Planning System and Flood Risk Management" guidelines, the purpose for the FRA is detailed as being "to provide a broad (wide area) assessment of all types of flood risk to inform strategic land-use planning decisions. SFRAAs enable a sequential approach, including the Justification Test, allocate appropriate sites for development and identify how flood risk can be reduced as part of the development plan process".

It is important that the LAP fulfils the requirements of the document "The Planning System and Flood Risk Management Guidelines for Planning Authorities" (OPW/DoEHLG, 2009) which states that flood risk management should be integrated into spatial planning policies at all levels to enhance certainty and clarity in the overall planning process.

The South Dublin Development Plan 2016 - 2022 will be the key document for setting out a vision for the development of Tallaght during the plan period.

The main objectives for this report are to:

- Develop a suite of flood zone maps for the Tallaght Area using readily derivable information
- Prepare a Stage 2 - Flood Risk Assessment of Tallaght in relation to the location, the type of zoning and land use proposals.
- To provide recommendations for development management for highly and less vulnerable development in Flood Zones A and B at both a settlement and site specific level through the application of the sequential approach and justification test.
- To develop policy and objectives to manage flood risk within the LAP.

## 1.2 Report Structure

This study considers the development strategy that will form part of the Local Area Plan (LAP) for Tallaght. The context of flood risk in Tallaght is considered with specific reference to the flood sources such as; fluvial, pluvial and groundwater flooding.

A two stage assessment of flood risk was undertaken, as recommended in 'The Planning System and Flood Risk Management' guidelines. The first stage is to identify flood risk and is based primarily on the findings of the Eastern Catchment Flood Risk Assessment and Management Study (ECFRAM). Historical records show that Tallaght has a limited history of flooding within the LAP boundary. The second stage of the SFRA report is to appraise the adequacy of existing information, to prepare a flood zone map based on available data and to highlight potential development areas that require more detailed assessment on a site specific level.

Section 2 provides an introduction to the Tallaght Study Area, the watercourses and planning policies in place.

Section 3 discusses flooding concepts, flood zones and flood risk as they are incorporated into the planning system and flood risk management.

Section 4 summarizes the available data in relation to flooding and outlines the main sources of flooding to be considered for the Tallaght area.

Section 5 provides guidance and approaches for managing flood risk to a development which will be useful for informing the policies and objectives within the Local Area Plan.

Section 6 reviews the land use zonings, which specific response to flood risk.

And finally, Section 7 outlines ongoing monitoring and future review of the SFRA.

## 2 Tallaght study Area

### 2.1 Introduction

The previous LAP for Tallaght was developed in 2006 and extended in 2011 for another 5 years. A new LAP was prepared for the town centre in 2018. The land area plan divides the area up into 15 precincts due to the range of characteristics within the overall area. Figure 2-1 outlines the Tallaght town centre LAP.

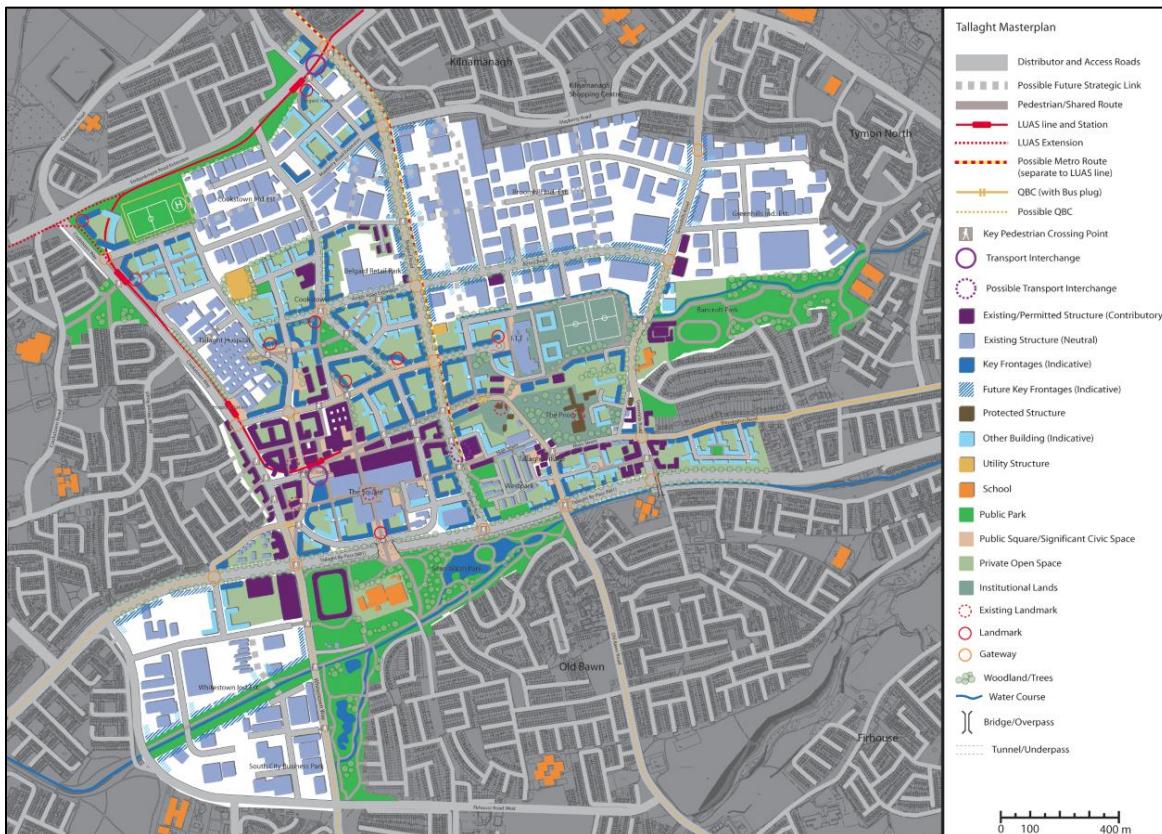


Figure 2-1: Tallaght LAP Area (SDCC Development Plan)

### 2.2 Watercourses

There are two local watercourses within the LAP. The Tymon River and the Tallaght Stream.

#### 2.2.1 The Tymon River

The Tymon River is a tributary of the Poddle River. The River flows through the grounds of I.T Tallaght before travelling through Bancroft Park and Tymon Park before it meets the Poddle River. The river flows in a westerly direction to the east of the land area boundary. The majority of the River runs in an open channel through the LAP. Several pedestrian bridges cross the channel in Bancroft Park with culverted sections where the river passes through major roadways.

#### 2.2.2 The Tallaght Stream

The Tallaght stream is a tributary of the Dodder River. It is also referred to as the Jobstown Stream and Whitetown Stream. It runs along the south boundary of the land area plan in a north easterly direction. The River travels through Tallaght business Park at the south east corner of the LAP and continues through Sean Walsh Park before it meets the Dodder in Dodder Valley Park. The stream is approximately 8.2km long. The Tallaght Stream flows in an open channel through the LAP with intermittent bridges/culverts in place for roadways crossing over the channel.

Figure 2-2 outlines these watercourse locations.

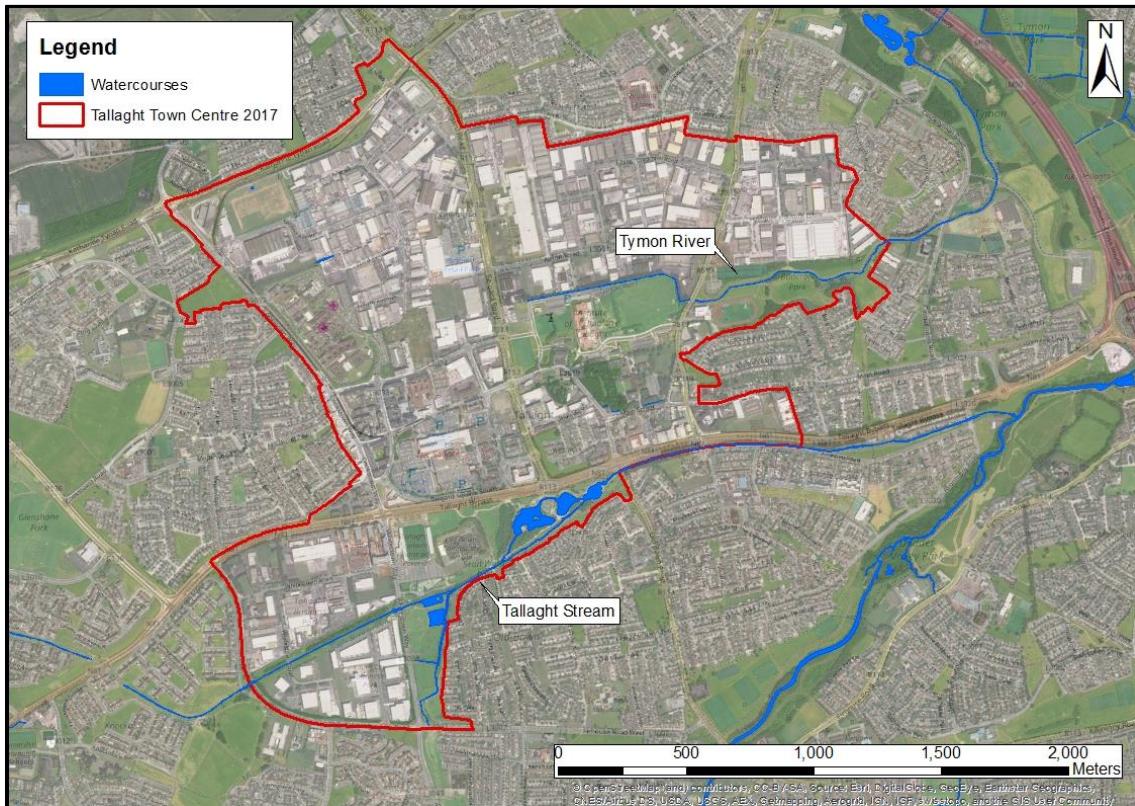


Figure 2-2: Local Watercourses flowing through Tallaght

## 2.3 Environment

Under Article 6(3) of the EU Habitats Directive, an “appropriate assessment” (AA) is required where any plan or project, either alone or ‘in combination’ with other plans or projects, could have an adverse effect on the integrity of a Natura 2000 site. Further information is provided in the full Strategic Environmental Assessment (SEA) and AA for the Local Area Plan (LAP).

## 2.4 Planning Policy

### 2.4.1 South Dublin County Council Development Plan

The current plan covers the period from 2016 to 2022. The plan sets out compliance with national spatial strategy and the Greater Dublin Area Regional Planning Guidelines, including "policies for the protection of areas at risk from flooding".

The flood management policies of the South Dublin County Council, as laid out in the development plan are as follows:

- To support and co-operate with the Office of Public Works in delivering the Catchment-Based Flood Risk Assessment and Management Programme and in particular the Eastern District CFRAMS and associated Flood Risk Management Plan (FRMP), the River Dodder CFRAMS and associated Flood Risk Management Plan (FRMP). The recommendations and outputs arising from the CFRAM study for the Eastern District shall be considered in preparing plans and assessing development proposals;
- To support the implementation of the EU Flood Risk Directive (2007/60/EC) on the assessment and management of flood risks and the Flood Risk Regulations (SI No 122 of 2010);
- To manage flood risk in the County in accordance with the requirements of The Planning System and Flood Risk Management Guidelines for Planning Authorities, DECLG and OPW (2009) and Circular PL02/2014 (August 2014), in particular when preparing plans and programmes and assessing development proposals. For lands identified as being at risk of flooding in (but not limited to) the Strategic Flood Risk Assessment, a site-specific Flood Risk Assessment to an appropriate level of detail, addressing all potential sources of flood risk, is required, demonstrating compliance with the aforementioned Guidelines or any

updated version of these Guidelines, paying particular attention to residual flood risks and any proposed site specific flood management measures;

- To support and facilitate the delivery of flood alleviation schemes including;
  - Poddle Flood Alleviation Scheme,
  - Ballycullen Flood Alleviation Scheme,
  - Whitechurch River Flood Alleviation Scheme (at Rathfarnham);
- Local area plans or other land use plans or policies shall be subject to a flood risk assessment as appropriate in accordance with the Flood Risk Guidelines (2009).

## 3 The Planning System and Flood Risk Management

### 3.1 Introduction

Prior to discussing the management of flood risk, it is helpful to understand what is meant by the term. It is also important to define the components of flood risk in order to apply the principles of the Planning System and Flood Risk Management in a consistent manner.

The Planning System and Flood Risk Management: Guidelines for Planning Authorities, published in November 2009, describe flooding as a natural process that can occur at any time and in a wide variety of locations. Flooding can often be beneficial, and many habitats rely on periodic inundation. However, when flooding interacts with human development, it can threaten people, their property and the environment.

This Section will firstly outline the definitions of flood risk and the Flood Zones used as a planning tool; a discussion of the principles of the planning guidelines and the management of flood risk in the planning system will follow.

### 3.2 Definition of Flood Risk

Flood risk is generally accepted to be a combination of the likelihood (or probability) of flooding and the potential consequences arising. Flood risk can be expressed in terms of the following relationship:

$$\text{Flood Risk} = \text{Probability of Flooding} \times \text{Consequences of Flooding}$$

The assessment of flood risk requires an understanding of the sources, the flow path of floodwater and the people and property that can be affected. The source - pathway - receptor model, shown below in Figure 3-1, illustrates this and is a widely used environmental model to assess and inform the management of risk.

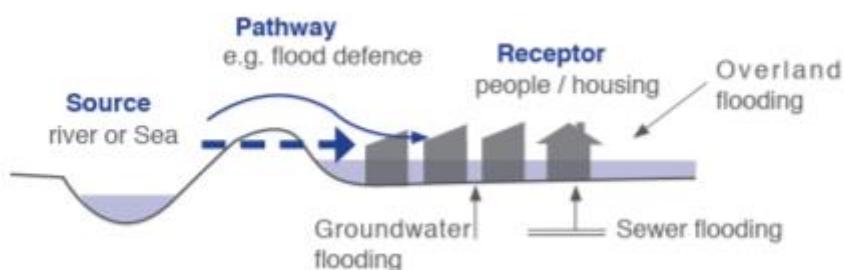


Fig. A1: Sources, pathways and receptors of flooding

Figure 3-1: Source Pathway Receptor Model

Source: Figure A1 The Planning System and Flood Risk Management Guidelines Technical Appendices

Principal sources of flooding are rainfall or higher than normal sea levels while the most common pathways are rivers, drains, sewers, overland flow and river and coastal floodplains and their defence assets. Receptors can include people, their property and the environment. All three elements must be present for flood risk to arise. Mitigation measures, such as defences or flood resilient construction, have little or no effect on sources of flooding but they can block or impede pathways or remove receptors. The planning process is primarily concerned with the location of receptors, taking appropriate account of potential sources and pathways that might put those receptors at risk.

#### 3.2.1 Likelihood of Flooding

Likelihood or probability of flooding or a particular flood event is classified by its annual exceedance probability (AEP) or return period (in years). A 1% AEP flood indicates the flood event that will occur or be exceeded on average once every 100 years and has a 1 in 100 chance of occurring in any given year.

Return period is often misunderstood to be the period between large flood events rather than an average recurrence interval. Annual exceedance probability is the inverse of return period as shown in Table 3-1.

Table 3-1: Probability of flooding

Return Period (Years)	Annual Exceedance Probability (%)
2	50
100	1
200	0.5
1000	0.1

Considered over the lifetime of development, an apparently low-frequency or rare flood has a significant probability of occurring. For example:

- A 1% flood has a 22% (1 in 5) chance of occurring at least once in a 25-year period - the period of a typical residential mortgage;
- And a 53% (1 in 2) chance of occurring in a 75-year period - a typical human lifetime.

### 3.2.2 Consequences of Flooding

Consequences of flooding depend on the hazards caused by flooding (depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality) and the vulnerability of receptors (type of development, nature, e.g. age-structure, of the population, presence and reliability of mitigation measures etc.).

The 'Planning System and Flood Risk Management' provides three vulnerability categories, based on the type of development, which are detailed in Table 3.1 of the Guidelines, and are summarised as:

- **Highly vulnerable**, including residential properties, essential infrastructure and emergency service facilities;
- **Less vulnerable**, such as retail and commercial and local transport infrastructure;
- **Water compatible**, including open space, outdoor recreation and associated essential infrastructure, such as changing rooms.

### 3.3 Definition of Flood Zones

In the 'Planning System and Flood Risk Management', Flood Zones are used to indicate the likelihood of a flood occurring. These Zones indicate a high, moderate or low risk of flooding from fluvial or tidal sources and are defined below in Table 3-2.

It is important to note that the definition of the Flood Zones is based on an **undefended scenario** and does not take into account the presence of flood protection structures such as flood walls or embankments. This is to allow for the fact that there is a residual risk of flooding behind the defences due to overtopping or breach and that there may be no guarantee that the defences will be maintained in perpetuity.

It is also important to note that the Flood Zones indicate flooding from fluvial and tidal sources and do not take other sources, such as groundwater or pluvial, into account, so an assessment of risk arising from such sources should also be made.

Table 3-2: Definition of Flood Zones

Zone	Description
<b>Zone A</b> High probability of flooding.	This zone defines areas with the highest risk of flooding from rivers (i.e. more than 1% probability or more than 1 in 100) and the coast (i.e. more than 0.5% probability or more than 1 in 200).
<b>Zone B</b> Moderate probability of flooding.	This zone defines areas with a moderate risk of flooding from rivers (i.e. 0.1% to 1% probability or between 1 in 100 and 1 in 1000) and the coast (i.e. 0.1% to 0.5% probability or between 1 in 200 and 1 in 1000).
<b>Zone C</b> Low probability of flooding.	This zone defines areas with a low risk of flooding from rivers and the coast (i.e. less than 0.1% probability or less than 1 in 1000).

### 3.4 Objectives and principles of the Planning Guidelines

The 'Planning System and Flood Risk Management' describes good flood risk practice in planning and development management. Planning authorities are directed to have regard to the guidelines in the preparation of Development Plans and Local Area Plans, and for development control purposes.

The objective of the 'Planning System and Flood Risk Management' is to integrate flood risk management into the planning process, thereby assisting in the delivery of sustainable development. For this to be achieved, flood risk must be assessed as early as possible in the planning process. Paragraph 1.6 of the Guidelines states that the core objectives are to:

- *"avoid inappropriate development in areas at risk of flooding;*
- *avoid new developments increasing flood risk elsewhere, including that which may arise from surface run-off;*
- *ensure effective management of residual risks for development permitted in floodplains;*
- *avoid unnecessary restriction of national, regional or local economic and social growth;*
- *improve the understanding of flood risk among relevant stakeholders; and*
- *ensure that the requirements of 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 aim to facilitate '*the transparent consideration of flood risk at all levels of the planning process, ensuring a consistency of approach throughout the country.*' SFRAAs therefore become a key evidence base in meeting these objectives.

The 'Planning System and Flood Risk Management' works on several key principles, including:

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

### 3.5 The Sequential Approach and Justification Test

Each stage of the FRA process aims to adopt a sequential approach to management of flood risk in the planning process.

Where possible, development in areas identified as being at flood risk should be avoided; this may necessitate de-zoning lands within the plan boundary. If de-zoning is not possible, then rezoning from a higher vulnerability land use, such as residential, to a less vulnerable use, such as open space may be required.



Figure 3-2: Sequential Approach Principles in Flood Risk Management

(Source: The Planning system and flood risk management (Figure:3.1)

Where re-zoning is not possible, exceptions to the development restrictions are provided for through the Justification Test. Many towns and cities have central areas that are affected by flood risk and have been targeted for growth. To allow the sustainable and compact development of these urban centres, development in areas of flood risk may be considered necessary. For development in such areas to be allowed, the Justification Test must be passed.

The Justification Test has been designed to rigorously assess the appropriateness, or otherwise, of such developments. The test is comprised of two processes; the Plan Making Justification Test, and the Development Management Justification Test. The latter is used at the planning application stage where it is intended to develop land that is at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be considered inappropriate for that land.

Table 3-3 shows which types of development, based on vulnerability to flood risk, are appropriate land uses for each of the Flood Zones. The aim of the SFRA is to guide development zonings to those which are 'appropriate' and thereby avoid the need to apply the Justification Test.

Table 3-3: Matrix of Vulnerability versus Flood Zone

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

Source: Table 3.2 of The Planning System and Flood Risk Management

### 3.6 Scales and Stages of Flood Risk Assessment

Within the hierarchy of regional, strategic and site-specific flood-risk assessments, a tiered 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. The stages and scales of flood risk assessment comprise:

- **Regional Flood Risk Appraisal (RFRA)** – a broad overview of flood risk issues across a region to influence spatial allocations for growth in housing and employment as well as to identify where flood risk management measures may be required at a regional level to support the proposed growth. This should be based on readily derivable information and undertaken to inform the Regional Planning Guidelines.
- **Strategic Flood Risk Assessment (SFRA)** – an assessment of all types of flood risk informing land use planning decisions. This will enable the Planning Authority to allocate appropriate sites for development, whilst identifying opportunities for reducing flood risk. This SFRA will revisit and develop the flood risk identification undertaken in the RFRA, and give consideration to a range of potential sources of flooding. An initial flood risk assessment, based on the identification of Flood Zones, will also be carried out for those areas which will be zoned for development. Where the initial flood risk assessment highlights the potential for a significant level of flood risk, or there is conflict with the proposed vulnerability of development, then a site specific FRA will be recommended, which will necessitate a detailed flood risk assessment.
- **Site Specific Flood Risk Assessment (FRA)** – site or project specific flood risk assessment to consider all types of flood risk associated with the site and propose appropriate site management and mitigation measures to reduce flood risk to and from the site to an acceptable level. If the previous tiers of study have been undertaken to appropriate levels of detail, it is highly likely that the site specific FRA will require detailed channel and site survey, and hydraulic modelling.

## 4 Data Collection

### 4.1 Overview

There are several sources of flood data available for the Tallaght Area. Table 4-1 lists the core datasets used to compile the flood maps for the Tallaght LAP and gives an assessment of the data quality and the confidence in this accuracy.

Table 4-1: Data Collection Overview

Description	Coverage	Robustness	Comment on usefulness
Eastern CFRAM Flood Mapping	Covers the lower Liffey catchment, Poddle and Dodder rivers.	Moderate/High - High priority watercourse status	Detailed CFRAM model. Site verified by walkover and consultation with Local Authority.
OPW PFRA flood extent maps, as verified by CFRAM FRR	Covers all watercourses	Moderate	CFRAM Mapping supersedes all of the PFRA mapping. Used for sensibility check only.
Historical Flood Records	Spot coverage of whole LAP	Moderate	Highly useful oversight of historic flooding issues provided by local authority.
Walkover Survey	Covers all significant watercourses.	Moderate	Walkover used to validate outlines, estimate new outlines and flow paths at key locations. Essential process in the Flood Zone process.

The flood zone mapping represents a combination of the above flood sources. The Eastern CFRAM mapping, has formed the core sources of the final Flood Zones for River Poddle and the Dodder. There has been a thorough review of historic flood records. The result is Flood Zone Mapping that presents the best available data for the study area.

Figure 4-1, over page, represents an overview of the flood zones within the LAP.



Figure 4-1: Flood Zone Mapping (Eastern CFRAM)

## 4.2 National PFRA Study

The preliminary flood risk assessment (PFRA) is a national screening exercise that was undertaken by the OPW to identify areas at potential flood risk. The PFRA was a requirement of the EU Floods Directive and the publication of this work informed the more detailed assessment that is being undertaken as part of the Catchment Flood Risk Assessment and Management (CFRAM) studies. The PFRA study considered flooding from several sources: fluvial, tidal, pluvial and groundwater and resulted in production of a suite of broad scale flood maps.

For the preparation of the PFRA fluvial flood maps, flood flow estimates were calculated at nodes every 500m along the entire river network. (The river network is the EPA 'blue-line' network, which, for the most part, matches the rivers mapped at the 1:50,000 scale Discovery Series OS mapping). This flow estimation was based on the OPW Flood Studies Update research programme. An assumption was made that the in-channel flow equates to the mean annual flood and so the out of bank flow for a particular AEP event was determined by deducting the mean annual flood from the flood flow estimate for that probability event.

Using a 5m national digital terrain model (DTM) a cross section was determined at 100m spacings. The Manning's equation, a hydraulic equation for normal flow, was used to calculate a flood level which was then extrapolated across the DTM to determine the flood extent. This exercise was completed by the OPW for all river catchments greater than 1km<sup>2</sup>.

This methodology did not take into account defences, channel structures or channel works. Potential sources of error in the mapping include local errors in the DTM or changes to the watercourse flow route due to an error in mapping or new development.

The PFRA pluvial mapping showed high levels of pluvial risk within the town boundary.

## 4.3 National CFRAM Programme

Following from the PFRA study, the OPW commenced appointment of consultants to carry out a more detailed flood risk assessment for key flood risk areas. This work is being undertaken under the national CFRAM programme across seven river basin districts (RBDs) in Ireland.

Tallaght falls within the Eastern CFRAM Mapping. The Tallaght Stream was modelled as part of the Dodder pilot study and the Tymon River was modelled as part of the Poddle study as part of the

Eastern CFRAM HA09 hydraulics report. This included a detailed hydraulic model of the Tymon River and Tallaght Stream Tributaries for both catchment areas. The CFRAM mapping represents a significant improvement compared to the accuracy provided by the PFRA mapping

In the Poddle preliminary options report did not identify the Tymon stream as an area of significant risk. There were 9 areas identified for screen upgrades, increased maintenance and monitoring, remove rubbish/debris and reduce blockages. The FRMPs showed that there were no defence or structural measures recommended in the Tymon River for flood alleviation.

The Tallaght stream model outcomes did not show flooding to properties during a 1% AEP event. However, it was noted that some areas in Tallaght had flooding in October 2011 due to heavy rainfall. Local works were proposed by SDCC to replace three significant screens along the Tallaght stream in Jobstown. The main area of flooding occurred outside the Tallaght LAP boundary. Details of this flood event is out outlined in Table 4-2.

## 4.4 [Historic flooding](#)

Records of past flooding are useful for looking at the sources, seasonality, frequency and intensity of flooding. Historical records are mostly anecdotal and incomplete, but are useful for providing background information.

### 4.4.1 [OPW Floodmaps.ie](#)

The OPW hosts a National Flood Hazard Mapping website that makes available information on areas potentially at risk from flooding. This website provides information on historical flood events across the country and form the basis of the Regional Flood Risk Appraisal.

Information is provided in the form of reports and newspaper articles which generally relate to rare and extreme events. Since the establishment of the hazard mapping website, more records are available which identify more frequent and often reoccurring events. These tend to include memos and meeting records from local authority area engineers, often relating to road flooding.

### 4.4.2 [Site walkover](#)

A site walkover was undertaken to appraise and validate the identified flood risks and flow pathways. The aim is to confirm the outlines provided in the CFRAM flood maps. Information collected during the site walkover was used to inform the settlement review process in Section 6.

### 4.4.3 [Summary of historical flood risk](#)

The flood risk history sourced from OPW floodmaps.ie are summarised in Figure 4-2 and Table 4-2 over page.

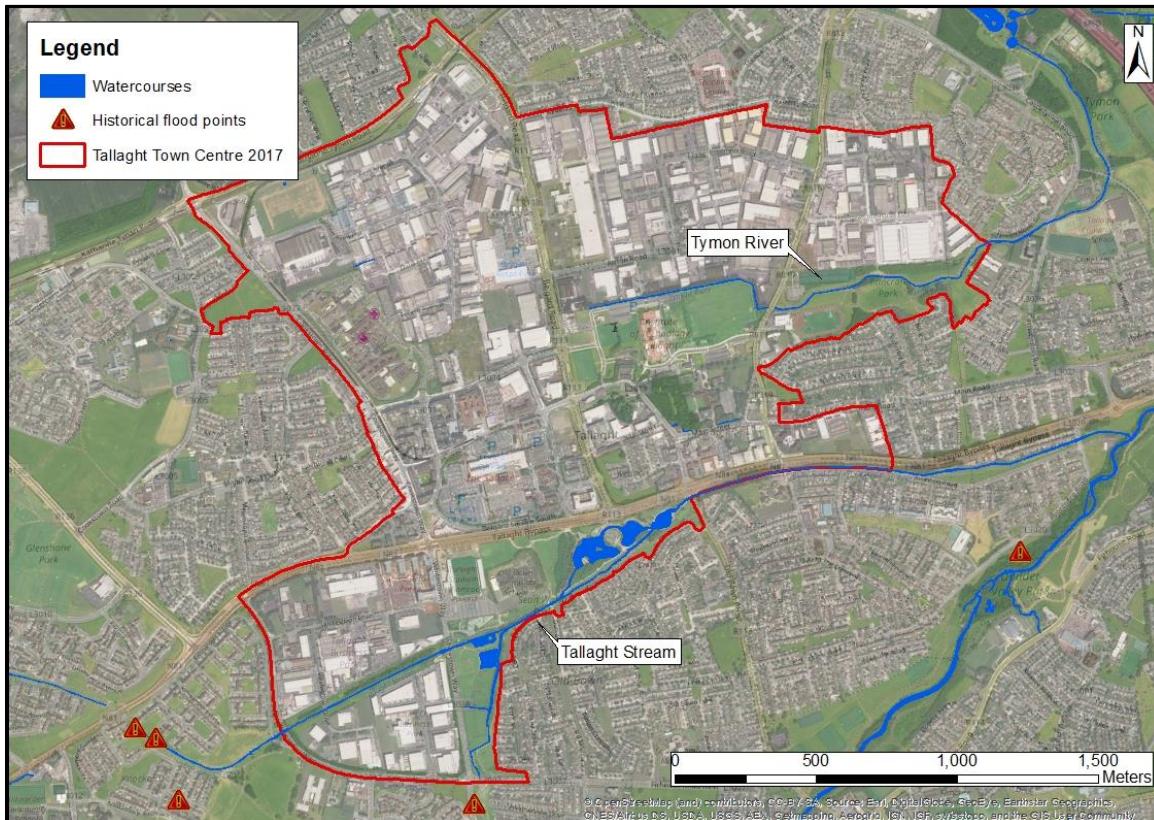


Figure 4-2: Historical Flooding, Spatial Representation

Table 4-2: Historic Flooding Summary

Date of Flood	Description
24/25 October 2011	Up to 90mm of rain was reported to have fallen within a 6 hour period on 24th October 2011. This resulted in major flooding along the Poddle watercourse at Whitestown Way, Knockmore and at the Tallaght Pass (N81).
November 2000	Flooding occurred when the Dodder overflowed its banks at Avonmore Park and Kiltipper Road in Tallaght Dublin 24.
Re-Occurring	Re-Occurring flooding from the Killinarden Stream in Jobstown

## 4.5 Sources of flooding

A review of the historical event data and predictive flood information has highlighted a number of sources of potential flood risk to the town. These are discussed in the following sections.

### 4.5.1 Fluvial Flooding

The main source of historical flooding is caused by fluvial flooding. None of these events caused flooding in the areas within the LAP boundary. The main flood risks for the area are the Tallaght Stream a tributary for the Dodder and the Tymon River, a tributary for the Poddle. Both areas are modelled as part of the CFRAM studies. The Dodder was part of the pilot study prior to the Eastern CFRAM. These tributaries were not found to pose a significant risk to the area and therefore pose a low risk for the Tallaght LAP area. After the October 2011 flood event occurred, Unexpected flooding caused damage to several properties. Additional maintenance was proposed for several culverts on the Tallaght stream to reduce risk of flooding to nearby residential and commercial properties in future flooding events. There were no defensive structures recommended for the rivers within the CFRAM studies.

### 4.5.2 Pluvial Flooding

Flooding of land from surface water runoff is caused by intense rainfall events lasting several hours. Areas at risk from pluvial flooding are likely to be at risk from surface water flooding. The indicative pluvial map provided on myplan.ie shows the OPW PFRA study. An excerpt from the Tallaght area

is shown in Figure 4-3. The map has been used to identify development areas at particular risk of pluvial flooding.

The OPW historical records for the area show that previous flooding events were mainly caused by fluvial flooding although surface water could have been a contributing factor in these events. Poorly planned developments or inadequately designed surface water drainage systems can increase the risk of surface water flooding and exacerbate the extent of fluvial flooding. New developments or redevelopment of existing sites adhering to the policies on the management of surface water will ensure the risk of pluvial flooding is managed.

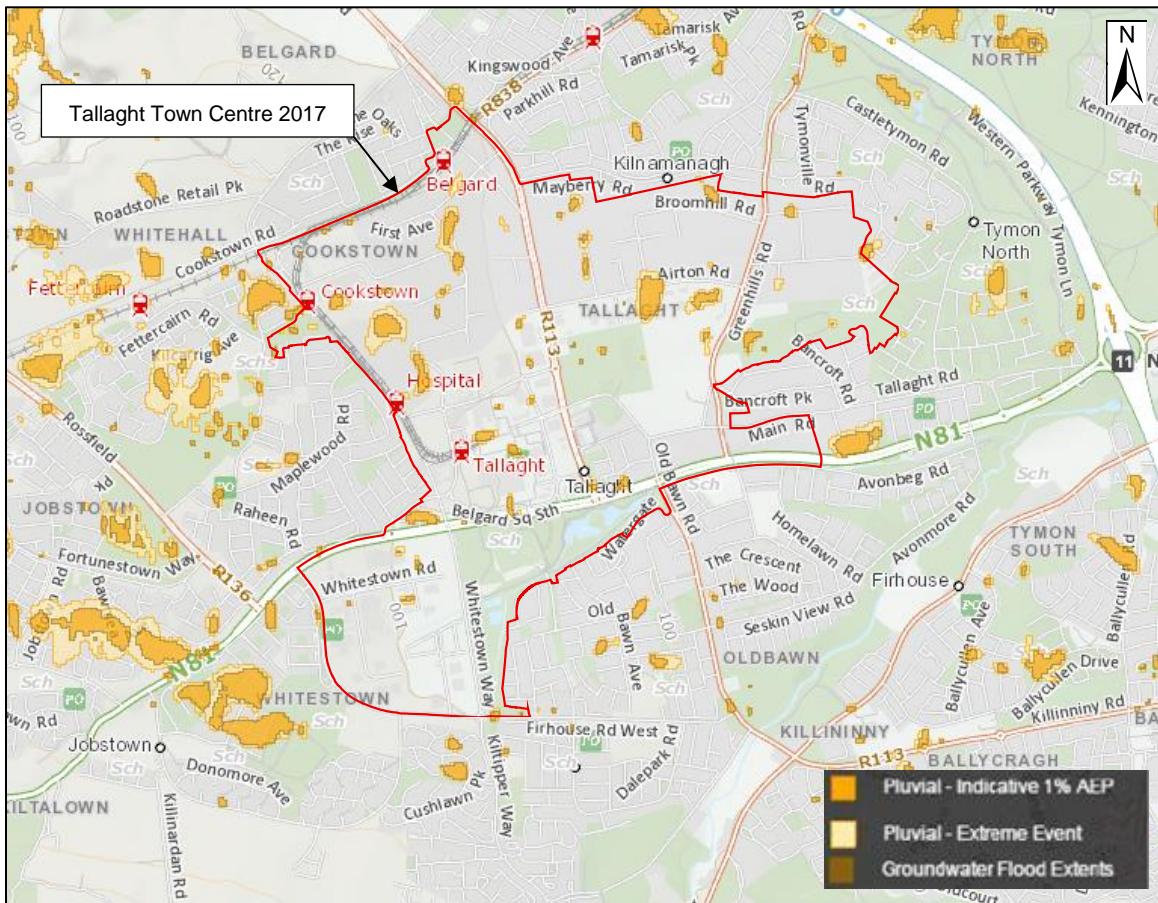


Figure 4-3: OPW PFRA Flood mapping (myplan.ie)

#### 4.5.3 Groundwater

Groundwater flooding is caused by the emergence of water originating from the subsurface and is particularly common in Karst landscapes. This source of flooding can persist over a number of weeks. Groundwater flooding is not easily managed or has lasting solutions engineered. Based on the PFRA study, there was no evidence of groundwater flooding in the Tallaght LAP area. Therefore, groundwater flooding does not warrant further investigation for this SFRA.

The Geological Survey Ireland (GSI) actively maintain and develop national and project based spatial datasets derived from internal programmes relating to Land Mapping, Groundwater, Geotechnical, Landslides, Quaternary, Geological Heritage, Minerals, INFOMAR and Tellus.

An extract from the GSI website relating to groundwater vulnerability is shown in Figure 4-4. The Tallaght LAP site is within a catchment where groundwater vulnerability is considered to be 'Low to Moderate' for the majority of the LAP area with the northern boundary considered 'High to Extreme'.

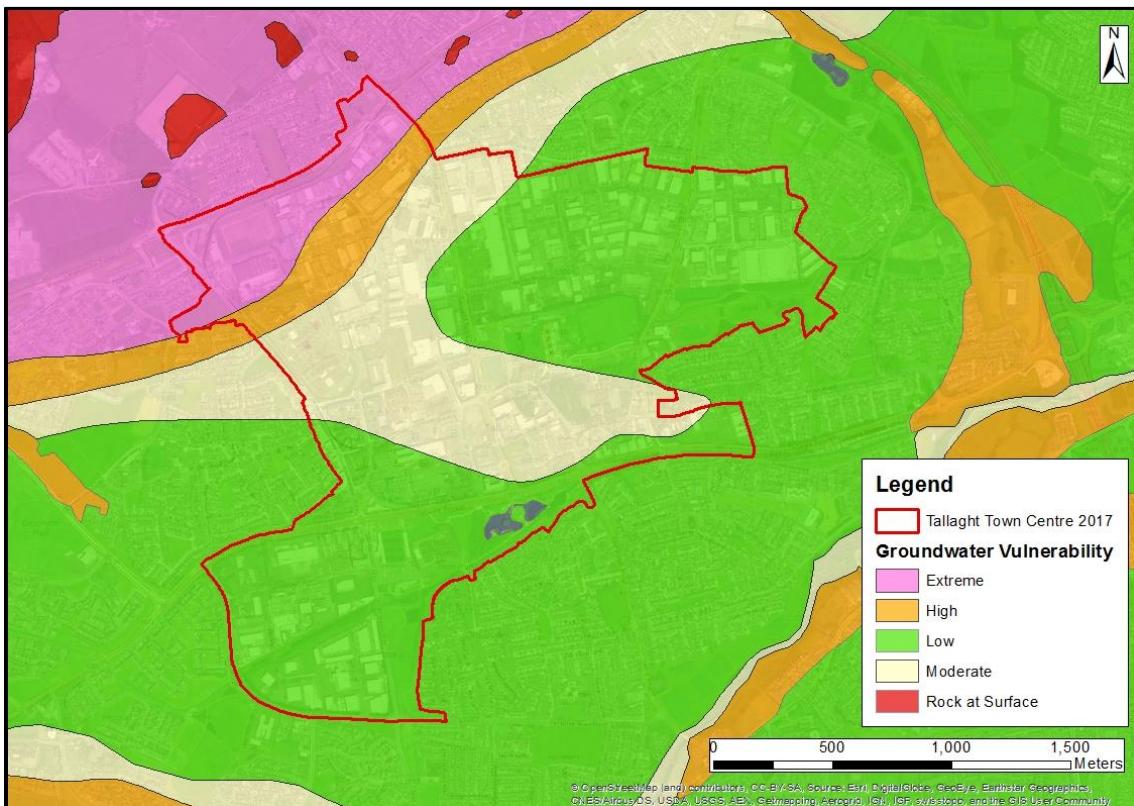


Figure 4-4: Geological Survey Ireland (GSI) Groundwater Vulnerability

#### 4.6 Climate Change

The Planning System and Flood Risk Management guidelines recommends that a precautionary approach to climate change is adopted due to the level of uncertainty involved in the potential effects.

Specific advice on the expected impacts of climate change and the allowances to be provided for future flood risk management in Ireland is given in the OPW draft guidance. Two climate change scenarios are considered. These are the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS). The MRFS is intended to represent a "likely" future scenario based on the wide range of future predictions available. The HEFS represents a more "extreme" future scenario at the upper boundaries of future projections. Based on these two scenarios the OPW recommended allowances for climate change are given in Table 4-3.

Table 4-3: Climate Change Criteria

Criteria	MRFS	HEFS
Extreme Rainfall Depths	+20%	+30%
Flood Flows	+20%	+30%
Mean Sea Level Rise	+500mm	+1000mm
Land Movement	-0.5mm / year*	-0.5mm / year*
Urbanisation	No General Allowance - Review on Case by Case Basis	No General Allowance - Review on Case by Case Basis
Forestation	-1/6 Tp**	-1/3 Tp** +10% SPR***

Notes:

\* Applicable to the southern part of the country only (Dublin - Galway and south of this)

\*\* Reduce the time to peak (Tp) accordingly; this allows for potential accelerated runoff that may arise as a result of drainage of afforested land

\*\*\* Add 10% to the Standard Percentage Runoff (SPR) rate; this allows for increased runoff rates that may arise following felling of forestry

#### 4.6.1 Climate change and flood risk assessment

The Flood Zones are determined based on readily available information and their purpose is to be used as a tool to avoid inappropriate development in areas of flood risk. Where development is proposed within an area of potential flood risk (Flood Zone A or B), a flood risk assessment of appropriate scale will be required and this assessment must take into account climate change and associated impacts. Under the National CFRAM programme, the detailed modelling and assessment stage of each study will include for climate change effects, but has not yet been delivered.

Climate change may result in increased flood extents and therefore caution should be taken when zoning lands in transitional areas. **As recommended in the Planning System and Flood Risk Management Guidelines; Flood Zone B, which represents the 0.1% AEP extent, can be taken as an indication of the extent of the 1% AEP flood event with climate change.** In steep valleys an increase in water level will relate to a very small increase in extent, however in flatter low-lying basins a small increase in water level can result in a significant increase in flood extent.

In the design of flood alleviation measures, climate change should be taken into account and design levels of structures, such as flood walls or embankments, must be sufficient to cope with the effects of climate change over the lifetime of the structure or where circumstances permit, be capable of adaptation. Further consideration to the potential future impacts of climate change will be given for specific areas of the LAP.

## 5 Approach to Flood Risk Management

The Planning Guidelines recommend a sequential approach to spatial planning, promoting avoidance rather than justification and subsequent mitigation of risk. The implementation of the Planning Guidelines on a settlement basis is achieved through the application of the policies and objectives contained within Section 7.3.0 'Flood Risk Management' of the South Dublin County Council Development Plan 2016-2022. These have been outlined in Section 2.4.

The use and application of the policies and guidelines at the LAP level constitutes the formal plan for flood risk management for Tallaght.

### 5.1 The Strategic Approach

A strategic approach to the management of flood risk is important in urban areas. Review of the available flood risk information confirms limited risk of flooding to existing developments within the Tallaght LAP boundary.

A summary of flood risks associated with each of the zoning objectives has been provided in Table 5-1, below. It should be noted that this table is intended as a guide only and should be read in conjunction with the detailed assessment of risks provided in Section Table 5-1.

Table 5-1: Zoning Objectives

Zoning Objective	Indicative Primary Vulnerability	Flood Risk Commentary
TC-To protect, improve and provide for the future development of Town Centres	High or less vulnerable	Justification Test needs to be passed to allow highly vulnerable development in Flood Zone A and B and for less vulnerable development in Flood Zone B. For alterations to existing development see Section 5.2
REGEN-To facilitate enterprise and/or residential-led regeneration	High or less vulnerable	Justification Test needs to be passed to allow highly vulnerable development in Flood Zone A and B and for less vulnerable development in Flood Zone B.
VC-To protect, improve and provide for the future development of Village Centres	High or less vulnerable	Justification Test needs to be passed to allow highly vulnerable development Flood Zone A and B and for less vulnerable development in Flood Zone B.
RES-To protect and/or improve residential amenity	High and less vulnerable	Justification Test needs to be passed to allow highly vulnerable development Flood Zone A and B and for less vulnerable development in Flood Zone B.
OS-To preserve and provide for open space and recreational amenities	Water compatible	Water compatible uses are appropriate, this can include sports pitches with changing rooms and playing areas.
EE -To provide for enterprise and employment related uses	Less vulnerable	Justification Test needs to be passed to allow zoning in Flood Zone B.
Sports Grounds	Water compatible or less vulnerable	Justification Test needs to be passed to allow zoning in Flood Zone B.
Public Open Space	Water compatible or less vulnerable	Water compatible uses are appropriate. Justification needs to be passed to allow less vulnerable development in Flood Zone B.

## 5.2 Application of the Plan Making Justification Test

Having reviewed the zoning objectives within the settlement, it is clear that there is relatively little overlap between zoned undeveloped lands and potential conflict with flood risk. Where there are overlaps then specific measures can be put in place to define and avoid risk and the Justification Test has not been applied, this is discussed in Section 5.2.1.

Appropriate measures for assessing and managing risks to existing high and low vulnerability development in Flood Zones A, B and C at Development Management (Planning Application) stage is discussed in Section 5.4 onwards.

### 5.2.1 Development on Greenfield Land

Very limited undeveloped lands are within Flood Zone A or B and zoned for development. The majority of lands within Flood Zone A and B are classified as Open Space, which is an appropriate zoning and should continue.

Specific areas with greenfield sites or existing developed areas, which are currently zoned for development within Flood Zone A/B will require a detailed FRA. These areas are outlined and discussed in Section 6. Measures focus on the more detailed assessment of risk from the contributing watercourses and the avoidance of highly vulnerable development within the redefined Flood Zone A. Relevant greenspace/SUDS measures are recommended for development on greenfield lands at risk from Flood Zone A & B.

### 5.2.2 Existing, Developed, Zoned Areas at Risk of Flooding

Some lands are zoned for development that lie within Flood Zone A and B. Section 5.4 onwards provides general guidance on how to manage development and Section 6 provides a detailed review of risk to specific areas of the settlement.

## 5.3 Flood Management Action Plans

It is recommended that the Local Authority draft an Emergency Plan that deals with severe weather scenarios, including flooding, and the document should incorporate a 'Flood Plan'. The Flood Plan will need to outline the operation and evacuation procedures, along with the specific roles and responsibilities of those issuing alerts and implementing the relevant operational procedures.

## 5.4 Development Management and Flood Risk

In order to guide both applicants and relevant council staff through the process of planning for and mitigating flood risk, the key features of a range of development scenarios have been identified (relating the flood zone and development vulnerability). For each scenario, a number of considerations relating to the suitability of the development are summarised below.

It should be noted that this section of the SFRA begins from the point that all land zoned for development has passed the Justification Test for Development Plans, and therefore passes Part 1 of the Justification Test for Development Management. In addition to the general recommendations in the following sections, Section 6 should be reviewed for specific recommendations for individual areas of the LAP.

As stated in Section 6, in order to determine the appropriate design standards for a development it may be necessary to undertake a site specific flood risk assessment. This may be a qualitative appraisal of risks, including drainage design. Further details of each of these scenarios, including considerations for the flood risk assessment are provided in the following sections.

## 5.5 Requirements for a Flood Risk Assessment

It is recommended that an assessment of flood risk is required in support of any planning application where flood risk may be an issue and this may include sites in Flood Zone C where a small watercourse or field drain exists nearby. The level of detail will vary depending on the risks identified and the proposed land use. As a minimum, all proposed development, including that in Flood Zone C, must consider the impact of surface water flood risks on drainage design. In addition, flood risk from sources other than fluvial and tidal should be reviewed.

For sites within Flood Zone A or B, a site specific "Stage 2 - Initial FRA" will be required, and may need to be developed into a "Stage 3 - Detailed FRA". The extents of Flood Zone A and B are delineated through this SFRA. However, future studies may refine the extents (either to reduce or

enlarge them) so a comprehensive review of available data should be undertaken once a FRA has been triggered.

Within the FRA the impacts of climate change and residual risk (including culvert/structure blockage) should be considered and remodelled where necessary, using an appropriate level of detail, in the design of finished floor levels. Further information on the required content of the FRA is provided in the Planning System and Flood Risk Management Guidelines.

Any proposal that is considered acceptable in principle shall demonstrate the use of the sequential approach in terms of the site layout and design and, in satisfying the Justification Test (where required), the proposal will demonstrate that appropriate mitigation and management measures are put in place.

### 5.5.1 Development Proposals in Flood Zone A or B

Development of highly or less vulnerable uses within Flood Zone A or B will be predominantly limited to existing sites, i.e. change of use, extensions and re-development works. Refer to Section 5.5.1.3, for policies governing the development of existing sites within Flood Zone A or B.

Generally, the approach to deal with flood protection would involve raising the ground floor levels above the level of extreme river levels. If this leads to floor levels being much higher than adjacent streets it could create a hostile streetscape for pedestrians. This would cause problems for infill development sites if floor levels were required to be significantly higher than those of neighbouring properties. In this regard, it has been recognised that some flexibility could be allowed for within defended areas, if future flood defences were developed or where the development is considered minor. In these cases, the detailed design of the development should reflect the vulnerability of the site in terms of internal layout, materials, fixtures and fittings and internal layout. For high risk areas, less vulnerable uses are encouraged at ground floor levels. The site specific FRA will inform appropriate uses and detailed design and layout.

It should be noted that for residential buildings within Flood Zone A or B, bedroom accommodation is more appropriate at upper floor levels.

For commercial operations, business continuity must be considered, and steps taken to ensure operability during and recovery after a flood event for both residential and commercial developments. Emergency access must be considered as in many cases flood resilience will not be easily achieved in the existing built environment.

#### 5.5.1.1 Undefended Areas

It is not appropriate for new, highly vulnerable development to be located in Flood Zones A or B, particularly where there are no flood defences, and such proposals will not pass the Justification Test. Instead, a less vulnerable use should be considered.

Review of the LAP land zonings indicates that only a small amount of lands zoned for commercial (less vulnerable) are within Flood Zone A/B. No highly vulnerable land uses are zoned with Flood Zone A/B. Further analysis and avoidance is undertaken in Section 6, ensuring the continued application of the sequential approach and appropriate site specific FRA's.

#### 5.5.1.2 Defended Areas

Currently there are no flood defences provided for in the Tallaght LAP boundary, nor is the development of any defences envisaged due to minor impact from Flood Zone A & B. However, if flood defences were developed in the Tallaght region, developments, by definition, can pass the Justification Test. Careful consideration must be given to the position and design of any development. Minor/small scale infill housing, extensions or changes of use is discussed in Section 5.5.1.3 and, subject to site specific flood risk assessment, can generally be considered appropriate and resilience/resistance will be employed.

In cases where larger scale new development is proposed within future defended areas, a "Stage 3 - Detailed FRA" and management plan is required to accompany the Planning Application. For this type of development, the FRA should improve on the detail provided by the CFRAM and investigate the impacts of defence failure/breach. It should therefore include an examination of hazard, velocity and time of inundation, and should propose suitable management and mitigation measures. Of prime importance is the requirement to manage risk to the development site and not to increase flood risk elsewhere. It may be necessary to raise the FFLs above significant flood levels and the design should give due consideration to safe evacuation routes and access for

emergency services during a flood event, further advice on design levels and assessment is provided in Section 5.6.2 below.

Within the FRA the impacts of climate change and residual risk (including culvert/structure blockage) should be modelled and used to inform the design and FFLs.

#### 5.5.1.3 Note on Minor Developments

Section 5.28 of the Planning Guidelines on Flood Risk Management identifies certain types of development as being 'minor works' and therefore exempt from the Justification Test. Such development relates to works associated with existing developments, such as extensions, renovations and rebuilding of the existing development, small scale infill and changes of use.

Despite the 'Sequential Approach' and 'Justification Test' not applying, as they relate to existing buildings, an assessment of the risks of flooding should accompany such applications. This must demonstrate that the development would not increase flood risks, by introducing significant numbers of additional people into the flood plain and/or putting additional pressure on emergency services or existing flood management infrastructure. The development must not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. Where possible, the design of built elements in these applications should demonstrate principles of flood resilient design (See 'The Planning System and Flood Risk Management Guidelines for Planning Authorities Technical Appendices, 2009', Section 4 - Designing for Residual Flood Risk).

The requirement for providing compensatory storage for minor developments has been reviewed and can generally be relaxed, even where finished floor levels have been raised. This is because the development concerns land which has previously been developed and would already have limited capacity to mitigate flooding. However, a commentary to this effect must be substantiated in the site specific FRA.

#### 5.5.2 Development proposals in Flood Zone C

Where a site is within Flood Zone C, but adjoining or in close proximity to Flood Zone A or B there could be a risk of flooding associated with factors such as future scenarios (climate change) or in the event of failure of a defence (if applicable), blocking of a bridge or culvert. Risk from sources other than fluvial and coastal must also be addressed for all development in Flood Zone C. As a minimum in such a scenario, a flood risk assessment should be undertaken which will screen out possible indirect sources of flood risk and where they cannot be screened out it should present mitigation measures. The most likely mitigation measure will involve setting finished floor levels to a height that is above the 1 in 100 year fluvial flood level, with an allowance for climate change and freeboard, or to ensure a step up from road level to prevent surface water ingress. Design elements such as channel maintenance or trash screens may also be required. Evacuation routes in the event of inundation of surrounding land should also be detailed.

The impacts of climate change should be considered for all proposed developments. Details of the approach to incorporating climate change impacts into the assessment and design are provided in Sections 4.6 and 5.8.

### 5.6 Flood Mitigation Measures at Site Design

For any development proposal within Flood Zone A or B that is considered acceptable in principle, it must be demonstrated that appropriate mitigation measures can be put in place and that residual risks can be managed to acceptable levels.

Various mitigation measures are outlined below and further detail on flood resilience and flood resistance are included in the Technical Appendices of the Planning Guidelines, The Planning System and Flood Risk Management.

#### 5.6.1 Site Layout and Design

To address flood risk in the design of new development, a risk based approach should be adopted to locate more vulnerable land use to higher ground while water compatible development i.e. car parking, recreational space can be located in higher flood risk areas. This should be the preferred approach for sites located in area at flood risk and subject to redevelopment.

The site layout should identify and protect land required for current and future flood risk management. Waterside areas or areas along known flow routes can be used for recreation, amenity and environmental purposes to allow preservation of flow routes and flood storage, while at the same time providing valuable social and environmental benefits.

### 5.6.2 Ground levels, floor levels and building use

Modifying ground levels to raise land above the design flood level is a very effective way of reducing flood risk to the particular site in question. However, in most areas of fluvial flood risk, conveyance or flood storage would be reduced having an adverse effect on flood risk elsewhere. Therefore, there is a general requirement that compensatory storage is provided on a level for level basis where raising ground levels is proposed in un-defended areas.

This requirement can be relaxed in areas behind defences, if applicable, where the flood storage has already been lost and assessed through the design of a flood relief scheme.

#### For undefended areas:

- The particular zoning must be appropriate for the proposed development category.
- The FRA should establish the function provided by the floodplain. Where conveyance is a prime function then a hydraulic model will be required to show the impact of its alteration.
- Compensatory storage should be provided on a level for level basis to balance the total area that will be lost through infilling where the floodplain provides static storage.
- The provision of the compensatory storage should be in close proximity to the area that storage is being lost from (i.e. within the same flood cell).
- The land proposed to provide the compensatory storage area must be within the ownership / control of the developer.
- The land being given over to storage must be land which does not flood in the 1% AEP event (i.e. Flood Zone B or C).
- The compensatory storage area should be constructed before land is raised to facilitate development.

In some sites it is possible that ground levels can be re-landscaped to provide a sufficiently large development footprint. However, it is likely that in other potential development locations there is insufficient land available to fully compensate for the loss of floodplain. In such cases it will be necessary to reconsider the layout or reduce the scale of development, or propose an alternative and less vulnerable type of development. In other cases, it is possible that the lack of availability of suitable areas of compensatory storage mean the target site cannot be developed and should remain open space.

#### For defended areas:

- Raising finished floor levels within a development is an effective way of avoiding damage to the interior of buildings (i.e. furniture and fittings) in times of flood. Raising of FFLs is recommended for consideration on new development of highly vulnerable uses. Appropriate FFL should be typically directed by at least 300mm freeboard above the breach level at the 1% AEP plus climate change and this level should be ascertained by detailed hydraulic modelling under a site specific FRA.
- The overall impact on the risk to surrounding property (if significant ground raising is employed) should still be defined by a detailed FRA that represents a breach scenario for the design event under pre and post-development scenarios. Any significant increase in residual risk to surrounding properties will not be appropriate and alternative mitigation solutions should be investigated.
- Alternatively, it may not be suitable to raise FFLs significantly and assigning a water compatible use (i.e. garage, car parking, landscaping) or less vulnerable use to the ground floor level, along with suitable flood resilient construction, is an effective way of raising vulnerable living space above design flood levels. It can however have an impact on the streetscape. Safe access and egress is a critical consideration in allocating ground floor uses.
- Depending on the scale of residual risk, resilience and resistance measures may be an appropriate response but this will mostly apply to less vulnerable development.

### 5.7 Drainage impact assessment

It is recommended that all proposed development, whether in Flood Zone A, B or C, must consider the impact of surface water flood risks on drainage design. A suitable standard for this is specified

by the surface water management policies in the Greater Dublin Strategic Drainage Study (GDSDS). Consideration of the surface water risk should be in the form of a section within the flood risk assessment (for sites in Flood Zone A or B) or part of a surface water management plan.

Areas vulnerable to ponding are indicated on the OPW's PFRA mapping reproduced in Figure 4-3. Particular attention should be given to development in low-lying areas which may act as natural ponds for collection of runoff.

The drainage design should ensure no increase in flood risk to the site, or the downstream catchment. Where possible, and particularly in areas of new development, floor levels should at a minimum be 300mm above adjacent roads and hard standing areas to reduce the consequences of any localised flooding. Where this is not possible, an alternative design appropriate to the location may be prepared.

In addition, for larger sites (i.e. multiple dwellings or commercial units) master planning should ensure that existing flow routes are maintained, through the use of green infrastructure.

## 5.8 Incorporating Climate Change into Development Design

The Flood Zones are determined based on readily available information and their purpose is to be used as a tool to avoid inappropriate development in areas of flood risk. Where development is proposed within an area of potential flood risk (Flood Zone A or B), a flood risk assessment of appropriate scale will be required and this assessment must take into account climate change and associated impacts.

Consideration of climate change is particularly important where flood alleviation measures are proposed as the design standard of the proposal may reduce significantly in future years due to increased rainfall and river flows. As recommended by the planning guidelines, a precautionary approach should be adopted.

Climate change may result in increased flood extents and therefore caution should be taken when zoning lands in transitional areas. In general, Flood Zone B, which represents the 0.1% AEP extent, can be taken as an indication of the extent of the 1% AEP flood event with climate change. In steep valleys (such as the smaller tributary streams) an increase in water level will relate to a very small increase in extent, however in flatter low-lying basins a small increase in water level can result in a significant increase in flood extent.

For most development, including residential, nursing homes, shops and offices, the medium-range future scenario (20% increase in flows) is an appropriate consideration. This should be applied in all areas that are at risk of flooding (i.e. within Flood Zone A and B) and should be considered for sites which are in Flood Zone C, but are adjacent to Flood Zone A or B. This is because land which is currently not at risk may become vulnerable to flooding when climate change is taken into account.

Where the risk associated with inundation of a development is low and the design life of the development is short (typically less than 30 years) the allowance provided for climate change may be less than the 20%. However, the reasoning and impacts of such an approach should be provided in the site specific FRA.

Conversely, there may be development which requires a higher level response to climate change. This could include major facilities which are extremely difficult to relocate, such as hospitals, Seveso sites or waste water treatment plants, and those which represent a high-economic and long term investment within the scale of development of the specific settlement. In such situations it would be reasonable to expect the high-end future scenario (30% increase in flow) to be used as the design standard.

Further consideration to the potential future impacts of climate change will be given for each key site within Section 6.

## 6 Key Sites Review

In the following sections, a review of flood risk to key sites has been provided, along with recommendations for the development of these sites. Reference is made to general management measures that are discussed in more detail under Section 5 of this report.

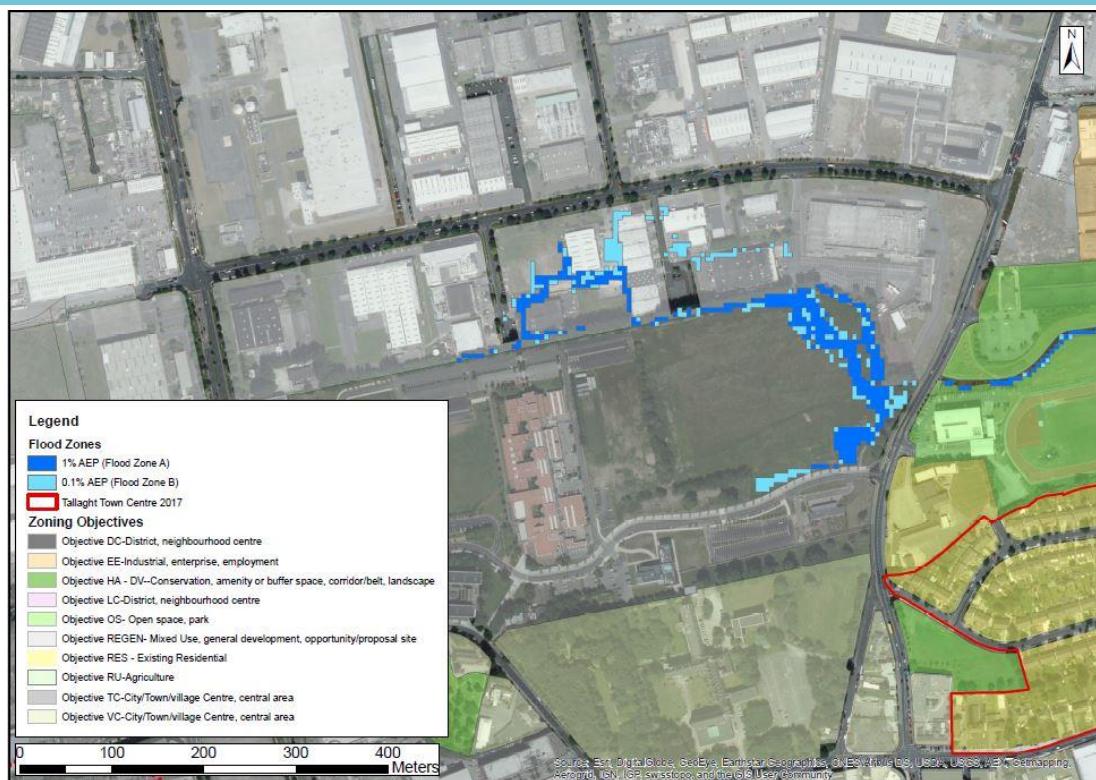
For each site consideration of flood risk will be required at the development management stage of the planning process. This ranges from an assessment of surface water drainage for sites within Flood Zone C, to more considered FRAs for sites in Flood Zone A and B. The construction of any significant new re-development in close proximity to or within Flood Zone A and B, will necessitate that a detailed flood risk assessment will be required to define residual flood risk and lead mitigation design. In other areas, it is possible to understand risks through an initial FRA without incurring the cost and time input required for a detailed FRA.

In all cases, the advice on flood mitigation for site design contained in Section 5 should be followed, along with any site specific recommendations detailed in the following sections.

### 6.1 Commercial Lands

	
<b>Flood Zone Data</b>	OPW CFRAM mapping
<b>Flood Risk Overview</b>	Potential flood risk from Tallaght Stream to existing commercial lands.
<b>Sensitivity to Climate Change</b>	High
<b>Historical Flooding</b>	None recorded
<p><b>Comment:</b> Some existing commercial lands are at risk of flooding from the Tallaght River. The OPW Eastern CFRAM has not recommended any flood defences or minor works schemes to enable protection of this area. Any undeveloped lands within Flood Zone A/B are appropriately zoned as amenity and open space.</p> <p>The 0.1% AEP flood extents can be substituted to represent the 1% AEP plus Climate Change event. This suggests that the area is highly sensitive to the potential impact of climate change.</p> <p>Future applications for re-development on any commercial sites on or adjacent to Flood Zone A/B will require an FRA at development management stage - in accordance with the requirements stated under Section 5 of this SFRA.</p>	

## 6.2 Tallaght IT



<b>Flood Zone Data</b>	OPW CFRAM mapping
<b>Flood Risk Overview</b>	Potential flood risk from Tymon River to existing District Centre/ Tallaght IT
<b>Sensitivity to Climate Change</b>	Low/Moderate
<b>Historical Flooding</b>	None recorded

**Comment:**

Some existing commercial lands are at risk of flooding from the Tymon, while part of the Tallaght IT lands zoned as regeneration are within Flood Zone A/B. Any re-development of existing commercial properties within Flood Zone A/B will require a site specific FRA.

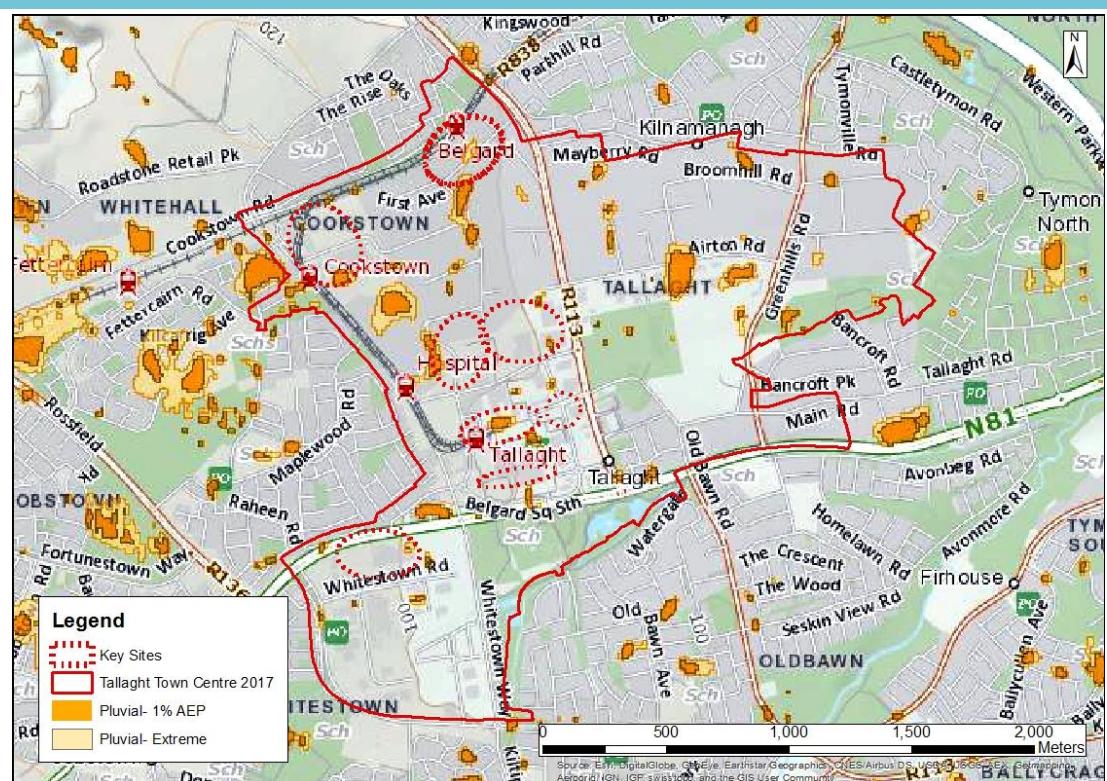
All Tallaght IT lands within Flood Zone A/B zoned as regeneration should (as part of any overall masterplan for the Tallaght IT/ regeneration scheme) integrate SUDS and open greenspace landscaping so as to maintain the same floodplain volume as part of a detailed drainage impact assessment/flood risk management strategy.

Substituting the 0.1% AEP flood extents to represent the 1% AEP plus Climate Change event, suggests that the area is not sensitive to the potential impacts of climate change.

Any remaining undeveloped lands to the east of Tallaght IT within Flood Zone A/B, are appropriately zoned as amenity and open space.

As part of any regeneration programme, applications for re-development on any sites on or adjacent to Flood Zone A/B will require an FRA at development management stage - in accordance with the requirements stated under Section 5 of this SFRA.

## 6.3 Key Development Sites



<b>Flood Zone Data</b>	OPW PFRA mapping
<b>Flood Risk Overview</b>	Minor Pluvial Flood Risk
<b>Sensitivity to Climate Change</b>	Low/Moderate
<b>Historical Flooding</b>	None recorded
<b>Comment:</b>	
Key development sites have been identified throughout the Tallaght LAP. All of the identified sites are located within Flood Zone C and therefore, have a low risk of fluvial flooding.	
As part of any regeneration programme, any areas identified to be at risk of pluvial/surface water flooding will require an FRA at development management stage - in accordance with the requirements stated under Section 5 of this SFRA.	
All stormwater design proposals/drainage assessments should be undertaken in accordance with the GDSDS guidance document. Reference should also be made to the Surface Water Management policies and objectives contained within the South Dublin County Development Plan and the Tallaght LAP.	

## 7 SFRA Review and Monitoring

An update to the SFRA will be triggered by the six-year review cycle that applies to Local Authority development plans. In addition, there are a number of other potential triggers for an SFRA review and these are discussed below.

There are a number of key outputs from possible future studies and datasets, which should be incorporated into any update of the SFRA as availability allows. Not all future sources of information should trigger an immediate full update of the SFRA; however, new information should be collected and kept alongside the SFRA until it is updated.

Tallaght has been subject to a detailed flood risk mapping and management study under the Eastern CFRAM Study. Final flood maps were issued during 2017. The Eastern CFRAM will be reviewed on a six year cycle. Any updates to the flood mapping during subsequent updates may trigger a review of the LAP.

Detailed, site specific FRAs may be submitted to support planning applications. Whilst these reports will not trigger a review of the Flood Zone maps or SFRA, they should be retained and reviewed as part of the next cycle of the Development Plan.

Offices at  
Dublin  
Limerick

Registered Office  
24 Grove Island  
Corbally  
Limerick  
Ireland

t: +353 (0) 61 345463  
e:info@jbaconsulting.ie

JBA Consulting Engineers and  
Scientists Limited  
Registration number 444752



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