Proposed Amendment No 1 Ballincollig-Carrigaline Municipal District Local Area Plan 2017 (Cork City Council)

DRAFT Strategic Flood Risk Assessment

November 2020

Contents

Section 1 Introduction

1.1 Scope

1.1.1 This Strategic Flood Risk Assessment of Proposed Amendment No 1 to the Ballincollig Carrigaline Municipal District Local Area Plan 2017 has been prepared in accordance, in so far as is practicable, with 'The Planning System and Flood Risk Management: Guidelines for Planning Authorities', published in November 2009 by the DEHLG and the OPW, and having specific regard to the areas, within the settlements of this Municipal District, that have been identified as being at risk of flooding.

1.1.2 This report sets out how the Flood Risk Assessment was undertaken, as well as how its findings were addressed and integrated into the Propopesed Amendment The report should be read in conjunction with Proposed Amendment No 1 and the associated maps.

1.2 Report Structure

1.2.1 Section 2 of this report provides a brief introduction to the former Ballincollig-Carrigaline Municipal District, identifying the settlement hierarchy and the key population and household growth targets for the respective categories of settlement with the settlement hierarchy.

1.2.2 Section 3 examines the main sources of flood risk within the Municipal District and recent flood events.

1.2.3 Section 4 examines how the issue of managing flood risk was addressed in the Proposed Amendment and outlines the main provisions of the flood risk management strategy.

1.2.4 Section 5 sets out what this assessment has achieved in terms of managing the adverse effects of flooding within the area of the proposed amendment. It also identifies how information on flood risk will be reviewed and monitored consequent to the proposed amendment.

1.3 The Planning System and Flood Risk

1.3.1 '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. Flooding may be from rivers, the sea, groundwater, sewers or overland flow caused by intense or prolonged periods of rainfall. Climate change effects suggest that the frequency and severity of flooding is likely to increase in the future.

1.3.2 The Guidelines describe good flood risk practice in planning and development management and seek to integrate flood risk management into the planning

process, thereby assisting in the delivery of sustainable development. Planning Authorities are directed to have regard to the Guidelines in the preparation of Development Plans and Local Area Plans, and for development management purposes. For this to be achieved, flood risk must be assessed as early as possible in the planning process.

1.3.3 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".

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

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

1.4 Definition of Flood Risk

1.4.1 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 Guidelines in a consistent manner.

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

Flood risk = Probability of flooding x Consequences of flooding

1.4.3 Likelihood of flooding is normally defined as the percentage probability of a flood of a given severity occurring in any given year. For example, a 1% probability indicates the severity of a flood that is expected to be exceeded on average once in 100 years, i.e. it has a 1 in 100 chance of occurring in any given year.

1.4.4 In the current Local Area Plan, flood risks are defined in relation to the following zones;

- **Flood Zone A**: where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- **Flood Zone B**: where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding or between 0.1% or 1 in 1000 and 0.5% or 1 in 200 for coastal flooding);
- **Elsewhere,** sometimes referred to as Zone C, 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). This zone covers all areas of the Plan which are not in zones A or B.

1.4.5 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).

1.4.6 The 'Planning System and Flood Risk Management: Guidelines for Planning Authorities', provides three vulnerability categories, based on the type of development, 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 facilities, such as changing rooms.

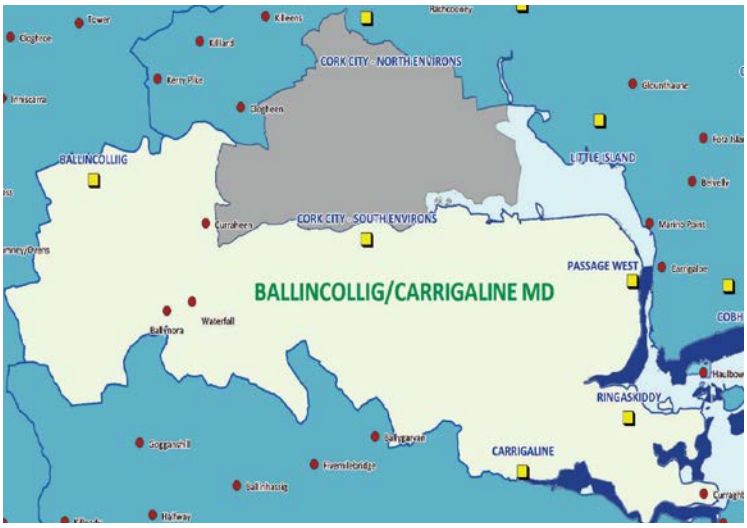
Section 2 Local Study Area

2.1 Introduction: The Ballincollig-Carrigaline Municipal District

2.1.1 The former *Ballincollig-Carrigaline* Municipal District lies entirely within the County Metropolitan Strategic Planning area as defined in the County Development Plan 2014. It is a predominantly rural Municipal District that accommodates an extensive network of settlements as follows:

- **Five Main Settlements** comprising Ballincollig, Carrigaline, Cork City South Environs, Passage West and Ringaskiddy.
- **Two Villages** comprising Ballynora and Waterfall.
- **Three Other Locations** comprising Curraghabinny, Curraheen and Farmers Cross

Figure 1 Ballincollig Carrigaline Municipal District



2.2 Population and Household Growth

2.2.1 Within the Ballincollig-Carrigaline Municipal District the County Development Plan provides for growth in population of 14,376 persons. The number of households is expected to grow by 9,847 leading to a net requirement for 9,546 new houses. The County Development Plan indicates that 347 ha of zoned land are required to meet this level of housing provision in the main towns, in addition to housing opportunities in the villages and rural areas.

2.2.2 Almost all of the growth, 9,144 proposed dwellings is allocated to the towns in the Municipal District, all of which form part of the County Metropolitan Area of Cork City, a designated Gateway in the National Spatial Strategy, and in line with the South West Regional Planning Guidelines. Some modest housing growth is also planned within the villages and other locations within the district (480 units).

2.2.3 Arising from the County Development Plan 2014, Table 2.2 shows that there is a net requirement within the towns of the Municipal District for 9,144 new dwelling units and capacity, in terms of the current provision of zoned lands within the towns, to accommodate 9,509.

Table 2.1: Ballincollig-Carrigaline Municipal District

	Housing Requirement				Housing Supply	
	Census 2011	Population Target	New Units Required	Net Estimated Requirement (ha)	Estimated Net Residential area zoned in LAP / TCP (ha)	Estimated Housing Yield (LAPs and TCPs)
Ballincollig	17,368	23,805	4,033	161	170.3	4,872
Carrigaline (North & South)	14,775	17,870	2,422	97	90.80	2,423
Cork City South Environs	32,635	31,308	1,284	37	93.00	1,285
Passage West	5,790	6,965	925	51	33.90	929
Main Towns	65,710	74,072	8,663	347	388.0	9,509
Villages	278	355	55	-	-	37
Rural	5,958	6,019	425	-	-	--
Total Villages and Rural	6,236	6,374	480			37
Total Municipal District *	**71,946**	**86,322**	**9,144**	**347**	**388**	**9,546**

Current Estimated Strategic Land Reserve (LAPs and TCPs) for this Municipal District is 41.3Ha

Source: Cork County Development Plan 2014- Volume One. Appendix B, Table B 8

***including Carrigaline South**

2.3 Environment and Heritage –

2.3.1 European and National legislation now protects the most valuable of our remaining wild places, through designation of sites as proposed Natural Heritage Areas, candidate Special Areas of Conservation and Special Protection Areas. The current list of protected sites is contained in the County Development Plan 2014 and is shown on the Heritage and Scenic Amenity Maps in Volume 3 in that Plan. Designated sites in the Ballincollig-Carrigaline Municipal District are detailed in the table below.

Designated Sites in the Ballincollig-CarrigalineMunicipal District		
Code	**Description**	**Natura 2000 Site**
pNHA 0094	Lee Valley	No
pNHA 1046	Douglas River Estuary	No
pNHA 1066	Lough Beg (Cork)	No
pNHA 1979	Monkstown Creek	No
pNHA 1990	Owenboy River	No
SPA-4030	Cork Harbour	Yes

2.3.2 To date, sites of geological interest have not been comprehensively covered by the existing nature conservation designations. Cork County Council recognises the importance of geological heritage and to this end has listed the important geological features within the County, in the County Development Plan 2014, with the intention of maintaining their possible conservation value. Geological features of interest in the Ballincollig-Carrigaline Municipal District include; armour stone at Lough Beg and Curraghbinny, and raised beaches in Cork Harbour.

2.3.3 In terms of built heritage, there are numerous recorded monuments and protected structures throughout the Municipal District and these are also detailed in the County Development Plan 2014.

2.4 Infrastructure

Water and Waste Water

2.4.1 There are significant infrastructural deficiencies within the Municipal District in terms of waste water treatment and water supply services that will need to be addressed over the lifetime of the Local Area Plan if the growth targets for the Municipal District are to be achieved, including for example the upgrading of waste water treatment plant facilities and the implementation of water conservation measures.

2.4.2 In the South Environs, pumping of stormwater due to combined sewers is an issue in the area and upgrades to pumping stations in the area may be required to facilitate development during the lifetime of this plan.

2.4.3 Surface water generally discharges to one of a number of local watercourses that feed into the Tramore Valley. At times of heavy rainfall, the extent of development in recent years has sometimes led to floods occurring where flows have exceeded

the capacity of this river system. Future development proposals will require detailed analysis to ensure that the rate and volume of projected surface water discharge is within the capacity of the receiving system.

2.4.4 A drinking water supply is available to accommodate proposed development in Cork City South Environs. However the upgrading of high level supplies including reservoir and watermains is required to provide adequate water pressures to some high level sites. Extension of water mains is required to provide water supply to some other sites.

Road Network

2.4.5 The City South Environs is heavily dependent on a road network which suffers from heavy peak hour congestion. This problem is most acutely felt in Douglas where it is difficult to make improvements to the local road network given the compact nature of the existing urban environment. In order to relieve this congestion the local road network serving the area has to be adapted to accommodate public transport by enhancing the local road infrastructure serving the area, by facilitating greater public transport use and by creating a more pedestrian friendly urban setting.

2.4.6 Insert M28

2.4.7 The N40 South Ring Road is a National Primary Route which provides strategic connectivity between the N22, N71, N27 and N28 with the wider National Route Network. It also serves a traffic distribution function for the southern periphery of Cork City. The N40 Road is subject to heavy congestion and resultant delay during peak periods

2.4.8 In order to protect this regionally important road, a demand study was commissioned by Transport Infrastructure Ireland (TII). This study will seek to ensure that capacity along the N40 is protected as demand rises in the future.

2.4.9 Significant road improvements are also needed to service the current and future traffic volumes in the western portion of the area, along with the provision of footpaths, public lighting and cycling routes from Togher Village to the residential developments which have occurred along Matthew Hill and Togher Road over the last decade.

2.4.10 Ringaskiddy is served by the N-28 National Primary Route which links the settlement to Cork City and onwards to the wider regional and national road network. It is proposed to construct a new M28 Motorway from Cork to Ringaskiddy from the existing N28 N40 Bloomfield interchange on the South Ring Road to Ringaskiddy village.

Section 3 Flood Risk in the Ballincollig-Carrigaline Municipal District

3.1 Sources of Flooding –

3.2.1 This SFRA has primarily reviewed flood risk from fluvial and tidal sources. Flood risks from pluvial and groundwater sources or from drainage systems, reservoirs and canals and other artificial or man-made systems have not been considered in detail in this study and such risks will need to be assessed at the project stage.

3.2.2 This approach has been adopted for two main reasons. Firstly, the review of flooding in the Ballincollig-Carrigaline Municipal District and in particular the City South Environs shows rivers to be the most common source of damage and it is this source of flooding that has been taken into account in the Local Area Plan process. Other sources of flooding are considered to present a lesser risk in this Municipal District but should be considered at the planning application stage. Secondly, Flood Zones in the 'Planning System and Flood Risk Management' are defined on the basis of fluvial, and where appropriate, tidal flood risk.

3.2 Fluvial Flooding

3.2.3 Flooding of watercourses is associated with the exceedance of channel capacity during higher flows. The process of flooding on watercourses depends on a number of characteristics associated with the catchment including; geographical location and variation in rainfall, steepness of the channel and surrounding floodplain and infiltration and rate of runoff associated with urban and rural catchments. There are two main catchment types - large and relatively flat or small and steep, the two giving two very different responses during large rainfall events.

3.2.4 In a large, relatively flat catchment, flood levels will rise slowly and natural floodplains may remain flooded for several days, acting as the natural regulator of the flow. In small, steep catchments, local intense rainfall can result in the rapid onset of deep and fast-flowing flooding with little warning. Such “flash” flooding, which may only last a few hours, can cause considerable damage and possible threat to life.

3.2.5 The form of the floodplain, either natural or urbanised, can influence flooding along watercourses. The location of buildings and roads can significantly influence flood depths and velocities by altering flow directions and reducing the volume of storage within the floodplain. Critical structures such as bridge and culverts can also significantly reduce capacity creating pinch points within the floodplain. These structures are also vulnerable to blockage by natural debris within the channel or by fly tipping and waste.

3.2.6 Rivers are the primary cause of flooding in the Ballincollig Carrigaline Municipal District with flood events attributed to fluvial sources ranging from the Curraheen and Tramore Rivers in particular to smaller tributaries and drains.

3.2.7 The City South Environs is most affected by flooding from the River Lee and its tributaries. The Lee River catchment covers an area of approximately 2,000 square kilometres. The catchment is defined by the land area drained by the River Lee, its tributaries and Cork Harbour.

3.2.8 The Lee River can be broken down into nine sub catchments as follows: Upper River Lee; Lower River Lee; Tramore/Douglas River; Kiln River; Glashaboy River; Owennacurra River; Carrigtohill area; Owenboy River; and Cork Harbour. The

majority of the Ballincollig Carrigaline Municipal District is covered by the sub catchments of the Lower Lee and the Owenboy. Curaheen and Tramore River catchments. The Lower Lee system runs between Inniscarra dam and the City boundary before entering Lough Mahon.

Douglas (City South Environs) was badly affected by flooding in 2012. As a result Cork City Council , acting as Agents for the OPW has now commenced works on a Flood Relief Scheme for Douglas. The scheme involved the replacement of the existing under capacity culverts on the Tramore River.

3.3 Other Sources of Flooding

3.3.1 Other sources of flooding including pluvial, ground water, drainage systems and reservoirs are detailed below. Risks from these sources have not been specifically considered in the Strategic Flood Risk Assessment undertaken for the Proposed Amendment and need to be addressed at the planning application stage.

- **Pluvial Flooding:** Pluvial flooding is a result of rainfall generated overland flows of water. Flooding of land from surface water runoff is usually caused by intense rainfall that may only last a few hours. The resulting water follows natural valley lines, creating flow paths along roads and through and around developments and ponding in low spots, which often coincide with fluvial floodplains in low lying areas.
- **Groundwater Flooding:** Groundwater flooding is caused by the emergence of water originating from underground, and is particularly common in karstic landscapes. This can emerge from either point or diffuse locations. The occurrence of groundwater flooding is usually very local and unlike flooding from rivers and the sea, does not generally pose a significant risk to life due to the slow rate at which the water level rises.
- **Flooding from Drainage Systems:** Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its discharge capacity, it becomes blocked or it cannot discharge due to a high water level in the receiving watercourse. Sewer flooding problems will often be associated with regularly occurring storm events during which sewers and associated infrastructure can become blocked or fail.
- **Flooding from Reservoirs**, **Lakes and other Artificial Sources:** Reservoirs can be a major source of flood risk, as demonstrated in the 2009 flooding, when waters released from the Inniscarra Dam flooded sections of Cork City.

Section 4 Addressing Flood Risk in Proposed Amendment No 1 to the Ballincollig Carrigaline MD Local Area Plan

4.1 Introduction

4.1.1 This section details the approach to Flood Risk Management adopted in the Proposed Amendment

4.2 Collation of Flood Risk Data

4.2.1 In 2010, as part of the review of its Local Area Plans, and in order to meet the needs of the Strategic Environmental Assessment process and the requirements of the Department of the Environment, Heritage and Local Government / Office of Public Works Guidelines, "The Planning System and Flood Risk Management" (2009), Cork County Council undertook a county wide Strategic Flood Risk Assessment using data prepared on its behalf by JBA Consultants. The Council also conferred with OPW officials, the Lead Agency for Flood Risk Management in Ireland, in completing the county wide assessment of flood risks and in formulating the flood risk management strategy which informed the preparation the 2011 Local Area Plans.

4.2.2 For the purposes of the assessment, information about flood risks was collated from a number of sources including:

- 'Floodmaps.ie' – The national flood hazard mapping website operated by the Office of Public Works, where information about past flood events is recorded and made available to the public. 'Flood point' information available on this site has not been included for technical reasons.
- 'Flood Hazard Mapping' for fluvial and tidal areas commissioned by Cork County Council from JBA Consulting. These indicative flood extent maps provided flood extent information for river catchments where a more detailed CFRAMS study was not available.
- Draft River Lee Catchment Flood Risk Assessment and Management Study (Lee CFRAMS) data was used for areas within the catchment of the study.

4.2.3 This data was amalgamated into a single 'Indicative Flood Zone Map' for the County, which was then used as the basis for the flood risk assessment of the 2011 Local Area Plans. The flood zone map showed the areas known to be at risk of fluvial (river) or tidal flooding only. It should be noted that the flood zones are based on an undefended scenario and do not take the presence of flood protection structures such as walls or embankments into account. This is to allow for the fact that there is still 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. This is accordance with the requirements of the Guidelines which specify an undefended assessment of risk.

4.2.4 In 2016, as part of the further review of the Local Area Plans the Council commissioned an update of the flood zone mapping used in the 2011 to take account of the information that has become available in the intervening period from other flood studies, including the outputs from the National CFRAM Programme (Catchment Flood Risk Assessment and Management), undertaken by the OPW.

4.2.5 The updated flood zone mapping provides information on the three main flood zones as follows:

- **Zone A** – High probability of flooding. Most areas of the County that are subject to flood risks fall into this category. Here, most types of development would be considered inappropriate. Development in this zone should be avoided and/or only considered in exceptional circumstances, such as in major urban or town centres, or in the case of essential infrastructure that cannot be located elsewhere. A Justification Test set out in Ministerial Guidelines applies to proposals in this zone. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation, would be considered appropriate in this zone.
- **Zone B** - Moderate probability of flooding. In most parts of the County this designation applies only to limited areas of land. In only a few locations do significant sites fall into this category. Here, highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities infrastructure, would generally be considered inappropriate. Less vulnerable development, such as retail, commercial and industrial uses, sites used for short-let for caravans and camping and secondary strategic transport and utilities infrastructure, should only be considered in this zone if adequate sites are not available in Zone C, and subject to a flood risk assessment demonstrating that the risk can be appropriately managed".
- **Elsewhere** (referred to in the Guidelines as Flood Zone C) – Localised flooding from sources other than rivers and the coast can still occur and may need to be taken into account at the planning application stage. l

4.2.6 Extracts from the flood zone map are shown, where relevant, on the settlement maps included in the Local Area Plan. The maps are indicative in nature and are intended to primarily function as a screening tool. The areas at risk may be more or less extensive in practice than indicated in the flood mapping. The mapping may be refined where possible over time as other more detailed flood risk assessments are completed by the OPW.

4.2.7 Within areas not specifically identified by the plan as being at risk of fluvial or tidal flooding (i.e. within Zone C) a flood risk screening assessment may still be required to assess potential impact of development on adjoining Flood Zones A or B, particularly with respect to surface water management . An assessment of the risk of other sources of flooding such as pluvial or ground water flooding may also be needed.

4.2.8 The inclusion of the flood zone information on the settlement maps of the Municipal District is the first step in managing flood risk in the future. The updated mapping provides for an improved understanding of flood risk issues within the County. The maps indicate the extent of flood zones that should be safeguarded from development and will support the application of the sequential approach, and the justification test as appropriate, in areas where development is proposed.

4.2.9 As part of the review of the Local Area Plans, all zoned lands in areas at risk of flooding have been considered in the context of the updated indicative flood zone maps.

4.3 Flood Risk within the Ballincollig-CarrigalineMunicipal District

4.3.1 Flood risk to each settlement has been appraised based on the Indicative Flood Zones which cross the settlement boundary, and is summarised in Table 4.1.

Table 4.1: Flood Risk by Settlement in the Ballincollig-Carrigaline Municipal District		
Settlement	**Indicative Fluvial/ Coastal Flood Risk within Development Boundary**	**Comment**
Main Settlements		
Ballincollig	Yes	All development proposals within the Indicative Flood Zone Areas will need to comply with the flood risk assessment procedure detailed in Section 4.6 of this report i.e. verification of Indicative Flood Zone mapping, compliance with the requirements of the Development Plan Justification Test, and detailed site specific assessment, as appropriate.
Carrigaline	Yes	
City South Environs	Yes	

4.4 Flood Risk Management Strategy

4.4.1 The assessment and management of flood risks in relation to planned future development is an important element of sustainable development. The majority of towns, villages and smaller settlements have a river or stream either running through the built-up area or close by and are inevitably exposed to some degree of flood risk when those rivers or streams overflow their normal course. Similarly, in coastal areas, flooding can periodically occur following unusual weather or tidal events.

4.4.2 Generally, the purpose of zoning is to indicate to property owners and members of the public the types of development which the Planning Authority considers most appropriate in each land use category. Zoning is designed to reduce conflicting uses within areas, to protect resources and, in association with phasing, to ensure that land suitable for development is used to the best advantage of the community as a whole.

4.4.3 The approach adopted has generally been to

- Include, on the settlement maps, information on the areas at risk of flooding (extent of Flood Zones A and B),
- Avoid development in areas at risk of flooding; and
- Where development in floodplains cannot be avoided, to take a sequential approach to flood risk management based on avoidance, reduction and mitigation of risk.

4.4.4 In response to local circumstances, particularly where there may be some uncertainties in relation to flood risk data or where land has been zoned in a previous plan or planning permission has already been granted, the approach has been modified and lands have been zoned for development with a requirement that

a detailed site specific flood risk assessment be carried out at the project stage. This is explained in more detail below.

4.5 The Approach to Zoning in Areas at Risk of Flooding.

4.5.1 Within the areas identified by the Indicative Flood Risk Mapping as being at risk (Zone A or B), all proposals for development will need to comply with the Ministerial Guidelines – 'The Planning System and Flood Risk Management. In this LAP, land use zoning objectives within the indicative Flood Risk Areas have been included in the plan where either:

- The land use zoning objective has been considered in the context of the "Development Plan Justification Test" set out in the Ministerial Guidelines;
- The zoning objective stemmed from a similar objective in a previous Plan and has been included in this Plan in order to facilitate the local verification of the indicative Flood Risk Maps at the project planning/planning application stage.

4.5.2 In the preparation of Proposed Amendment No 1 to the Ballincollig-Carrigaline Municipal District LAP, proposed zonings were generally assessed relative to the provisions of the Guidelines and the Justification Test for Development Plans as detailed in the Guidelines. The Justification Test is generally required in situations where the planning authority needs to consider future development in areas at a high or moderate risk of flooding, for uses or development vulnerable to flooding that would otherwise be inappropriate. In such circumstances, all of the following criteria must be satisfied :

a) The urban settlement is targeted for growth in the NSS, RPGs, or statutory plans defined under the provisions of the Planning and Development Act, 2000, as amended.

b) the zoning is required to achieve the proper planning and sustainable development of an urban settlement and is

- Essential to facilitate the regeneration and/or expansion of the centre of the urban settlement;
- Comprises significant previously developed and/or under-utilised lands;
- Is within or adjoining the core of an established or designated urban settlement;
- Will be essential to achieving compact and sustainable urban growth; and
- There are no suitable alternative lands for the particular use in areas at lower risk of flooding within or adjoining the core of the urban settlement

c) A flood Risk Assessment to the appropriate level of detail has been carried out as part of the SEA, which demonstrates that flood risk to the development can be adequately managed and the development will not cause adverse impacts elsewhere.

4.4.5 In the preparation of the Draft Ballincollig-CarrigalineMunicipal District Local Areas Plan the final element of the Justification Test (part (c) above), which requires a site specific flood risk assessment to be carried out, was not undertaken. In some cases, certain zonings were included in areas at risk of flooding, even when such zoning did not pass the Justification Test, as a response to a desire to retain those zonings

where planning permission had been granted or where the zoning had already been made in a previous Plan.

4.4.6 Instead, the approach taken in the Draft Local Area Plan provides, in the first instance, for the detailed assessment of the extent of the actual flood risk relative to that indicated on the indicative mapping via a phased flood risk assessment procedure, as detailed in Section 4.6 of this report. The first stage of this assessment process provides a prospective developer with the opportunity to verify the Indicative Flood Zone Mapping in the first instance, and address any local ambiguities. Depending on the outcome of the verification stage, a prospective developer may then have the opportunity to demonstrate compliance with the requirements of the Development Plan Justification Test and carry out a detailed site specific assessment, as appropriate.

4.4.7 Development proposals on lands within areas at risk of flooding will also be subject to the 'Development Management Justification Test', details of which are set out in the Guidelines.

Note: Proposals for 'open space or outdoor recreation development have not been included in Table 4.2 because these are normally water compatible forms of development and, therefore, do not need to be subjected to the 'Development Plan' Justification Test. However, an appropriate flood risk assessment will be necessary at the project planning/ planning application stage.

Approach to Development in Areas at Risk of Flooding

4.5.1 Where development is proposed within an area at risk of flooding, either on land that is subject to a specific zoning objective, lands within the "existing built up area" of a town or within a development boundary of a village, there are a number of steps that a applicant for planning permission may need to complete as follows:

a) Verification of the Indicative Flood Zone Mapping:

b) Compliance with the 'Development Plan Justification Test' ;

c) Detailed site specific flood risk assessment.

4.5.2 These steps are set out in more detail in the Table below.

Table Flood Risk Assessment Procedure for Development Proposals Located within Areas at Risk of Flooding		
1	**Verification of flood zone mapping**	In order to reflect the possibility that the 'Indicative Flood Zone Maps' may include some localised uncertainties, all applicants have the opportunity to carry out their own flood risk assessment to verify the accuracy of the flood zone information included within the Local Area Plan. The extent of the study area to be included in such an assessment should be agreed in advance with the Planning Authority. This verification process is intended to be carried

Table Flood Risk Assessment Procedure for Development Proposals Located within Areas at Risk of Flooding		
		out relatively quickly and at modest expense, but should include the following: • An examination of all sources of flooding that may affect a particular location, in addition to the fluvial and tidal risk represented in the indicative flood risk maps. Local knowledge of flood events may be useful. • A review of all available flood related information, including the flood zone maps and historical flood records (from www.floodmaps.ie, and through wider internet / newspaper / library search/ local knowledge of flooding in the area). • An appraisal of the relevance and likely accuracy / adequacy of the existing information. For example, if the outline is from CFRAM or other detailed study they can be relied on to a greater extent than if they are from other sources. • Site cross sections or spot levels, including the river and surrounding lands. • Description of the site and surrounding area, including ground conditions, levels and land use. • Commentary on any localised uncertainty in the existing flood mapping and other sources of flood risk information and the site area. • Proposal as to the appropriate course of action which could be either: ▪ further study in relation to the flood risk affecting the lands; ▪ revision of development proposals to avoid areas shown to be at risk of flooding; or ▪ Continue with development as proposed (if the site is clearly demonstrated to be outside Flood Zones A or B and has been shown not to be at flood risk, having also had regard to the provisions of Section 3.3). It is recommended that prospective applicants for planning permission should carry out this first stage 'Verification' process' well in advance of the submission of their application

Table Flood Risk Assessment Procedure for Development Proposals Located within Areas at Risk of Flooding		
		for planning permission and that its recommendations should be brought to the attention of Council staff as part of a pre-planning meeting.
2	**Flood Risk Is verified:**	Where the 'Verification' process outlined above indicates that the land is in fact at risk of flooding then, in accordance with the "avoid" principle of the Guidelines, there is a presumption against development, and the sequential approach should be used to find an alternative site for development that is not at risk of flooding.
2(a)	Development Plan Justification Test.	Should the applicant wish to proceed further with the development proposal, then the applicant needs to be able to demonstrate, to the satisfaction of the Planning Authority, that the proposal meets the requirements of the 'Development Plan Justification Test' as set out in the Guidelines and as detailed in section 4.4.3 above. Where the Council is satisfied that the proposal satisfies the requirements of the Development Plan Justification Test, it shall confirm this in writing to the applicant. If the proposal is considered to meet the requirements of the Development Plan Justification Test then prospective developers should proceed to a more detailed site specific flood risk assessment in line with Chapter 5 of the Guidelines. Thereafter, where development has to take place in areas at risk of flooding, the risks should be mitigated and managed through the location, layout and design of the development to reduce such risks to an acceptable level. Prospective applications are asked to advise Cork County Council of the actual verified flood risk.
2(b)	**Detailed site specific Assessment**	Where, following a detailed site specific assessment, it can be satisfactorily shown that the proposed development, and its infrastructure, will avoid significant risks of flooding in line with the principles set out in the Ministerial Guidelines, then, subject to other relevant proper planning considerations, permission may be granted for the development.
3	**No flood risk demonstrated.**	Where the 'Verification' process outlined above shows satisfactorily that the site is not at risk of flooding, and the County Council has agreed in writing with such a conclusion, then, subject to other normal planning considerations, an application for planning permission may be favourably considered.

4.6 Flood Risk and Development Management

4.6.1 In addition to the requirements set out in Table regard should also be had to the following:

a) Minor proposals for development, for example small extensions to existing houses or changes of use, in areas at moderate to high risk of flooding should be assessed in accordance with Planning Guidelines: The Planning System and Flood Risk Management.

b) Where flood risk constitutes a significant environmental effect of a development proposal, a sub-threshold EIS may be triggered. Screening for EIA should be an integral part of all planning applications in areas at risk of flooding.

c) Any proposal in an area at risk of flooding that is considered acceptable in principle must demonstrate that appropriate mitigation measures can be put in place and that residual risks can be managed to acceptable levels. Addressing flood risk in the design of new development should consider the following:

- Locating development away from areas at risk of flooding, where possible.
- Substituting more vulnerable land uses with less vulnerable ones.
- Identifying and protecting land required for current and future flood risk management, such as conveyance routes, flood storage areas and flood protection schemes etc.
- Addressing the need for effective emergency response planning for flood events in areas of new development.

d) Site layout, landscape planning and drainage of new development must be closely integrated to play an effective role in flood-reduction. As such, proposals should clearly indicate:

- The use of Sustainable Drainage Systems (SuDS) to manage surface water run-off.
- Water conveyance routes free of barriers such as walls or buildings.
- The signing of floodplain areas to indicate the shared use of the land and to identify safe access routes.

e) To ensure that adequate measures are put in place to deal with residual risks, proposals should demonstrate the use of flood-resistant construction measures that are aimed at preventing water from entering a building and that mitigate the damage floodwater causes to buildings. Alternatively, designs for flood resilient construction may be adopted where it can be demonstrated that entry of floodwater into buildings is preferable to limit damage caused by floodwater and allow relatively quick recovery. Such measures include the design and specification of internal building services and finishes. 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.

Section 5 Managing Flood Risk in the Future

5.1 What has the LAP Achieved

5.1.1 The inclusion of Indicative Flood Zone maps for the settlements of the Municipal District is the first step in managing flood risk in the future. The maps are primarily intended to function as a screening tool. They are not a substitute for detailed hydraulic modelling, such as may be required to assess the level of flood risk for a specific development. The flood maps should be used to guide decision making when determining whether a detailed Flood Risk Assessment is required for any given site. The maps are intended for guidance, and cannot provide details for individual properties.

5.2 Monitoring and Review

5.3.1 Information in relation to flood risk will be monitored and reviewed by the Council and the Flood Risk Assessment will be updated as appropriate as new information becomes available. There are a number of key outputs from possible future studies and datasets which could inform any update of the FRA as availability allows. A list of potential sources of information which will inform an FRA review is provided in the table below.

Potential Sources of Flood Risk Data		
Data	**Source**	**Timeframe**
City Development Plan Review	Cork City Council	2021
Flood maps of other sources, such as canal breach and drainage networks	Various	Unknown
Significant flood events	Various	Unknown
Changes to Planning and / or Flood Management Policy	DoEHLG /OPW /Cork City Council	Unknown
SFRAs for Development Plan	Cork City Council	Upon CDP review
Detailed FRAs	Various	Unknown
Flood Defence Feasibility / Design Reports	OPW primarily	Unknown