

Rosslare Harbour and Kilrane

Local Area Plan

2012 - 2018



Appendix 3 Strategic Flood Risk Assessment



Wexford County Council Planning & Development

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1.0 Context and Background

1.1 Introduction

Flooding is a natural process that can happen at any time in a wide variety of locations. Flooding from the sea and rivers is probably best known but prolonged, intense and localised rainfall can also cause sewer flooding, overland flow and groundwater flooding. Development can also exacerbate the problems of flooding by accelerating and increasing surface water run-off, altering watercourses and removing floodplain storage. Flooding has significant impacts on human activities. It can threaten people's lives and their property, and in addition to economic and social damage, floods can have severe environmental consequences.

1.2 Planning context

Land use management and spatial planning is a key tool in flood risk management. The Planning System and Flood Risk Management-Guidelines for Planning Authorities (DEHLG & OPW, 2009) sets out government policy on development and flood risk management. The overall aim of the guidelines is to deliver sustainable development that minimises the risk of flooding to people and property by the avoidance of inappropriate development in areas at risk of flooding. Planning Authorities are now required to incorporate flood risk management as a key consideration in the preparation of development plans, local area plans and the assessment of planning applications.

1.3 Purpose of Strategic Flood Risk Assessment

The Flood Risk Assessment technique for development plans and local area plans is called a Strategic Flood Risk Assessment, hereon referred to as SFRA. The purpose of this SFRA is to provide a broad assessment of the types of flood risk to Rosslare Harbour and Kilrane, which in turn will inform strategic land-use planning decisions for the plan area. The SFRA will:

- Identify the degree to which flood risk is an issue;
- Identify flood zones within and adjoining the plan area;
- Apply the sequential approach to land use zoning by directing new development towards land that is at low risk of flooding;
- Apply the Justification Test where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding; and
- Outline the key requirements for the management of development in areas at risk of flooding.

1.4 Legal Framework

This SFRA has been prepared in the context of EU and national legislation. The EU Directive 2007/60/EC on the assessment and management of flood risk aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. Member States are required to assess if all watercourses and coastlines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. This will be carried out at river catchment level and in coastal zones.

The Planning System and Flood Risk Management Guidelines were issued by the Minister of the Environment, Heritage and Local Government under Section 28 of the Planning and Development Act 2000 (as amended). Planning Authorities and An Bord Pleanála are required to have regard to the guidelines in carrying out their functions under the Planning Acts.

The core objectives of the guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risks for developments permitted in floodplains;

- Avoid unnecessary restriction of national, regional or local economic and social growth;
- Improve 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 outline three key principles that should be adopted by regional authorities, local authorities, developers and their agents when considering flood risk. These are:

- Avoid the risk, where possible;
- Substitute less vulnerable uses, where avoidance is not possible; and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

2.0 Strategic Flood Risk Assessment

2.1 Flood Risk Identification

The purpose of this stage is to identify whether there are any flooding or surface water management issues relating to the plan area that may warrant further investigation. The OPW flood database identifies a recurring flood point (code 4) in the Ballygerry area as shown on Map 1 below. The cause of the flooding is stated as backing of high tides in surface water drains which results in the road being periodically impassable. There are a number of culverts under the road which require maintenance.



Map 1: Recorded Flood Events in the Plan Area

Coastal flooding is caused by higher sea levels than normal, largely as a result of storm surges, resulting in the sea overflowing onto the land. Coastal erosion of both the foreshore and the shoreline itself is intimately linked with coastal

Source: <u>www.floodmaps.ie</u>

flooding. The Irish Coastal Protection Strategy Study (ICPSS) Phase II (OPW, June 2010) includes flood mapping and an erosion assessment for the south east coast from Dalkey Island to Carnsore Point. The Strategy does not identify coastal flood hazard in Rosslare Harbour but the predictive erosion maps for 2030 and 2050 do affect the plan area.





Source: Irish Coastal Protection Strategy Study, Phase II (OPW, 2010)

Map 3: Coastal Erosion 2050



Source: Irish Coastal Protection Strategy Study, Phase II (OPW, 2010)

2.2 Initial Flood Risk Assessment

This stage confirms the sources of flooding that may affect the plan area, to appraise the adequacy of existing information and to scope the extent of the risk through the preparation of indicative flood maps which identify flood zones for river and coastal flooding. Having identified the flood zones, the sequential approach is used to direct, where possible, new development to areas at low risk of flooding.

2.2.1 What are Flood Zones

Flood zones are geographical areas within which the likelihood of flooding is in a particular range. There are three types or levels of flood zones defined for the purposes of the guidelines as shown in Table 1 below.

Table 1: Type of Flood Zones

Zone	Description
Zone A 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).
Zone 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).
Zone C 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)

2.2.2 Mapping Methodology

The Flood Zones were identified and mapped by JBA Consulting Engineers and Scientists Limited.

For the fluvial (river) flood mapping, the processes involved two stages:

- Hydrology This stage involved generating inflows for use in the hydraulic modelling by creating digital catchment descriptors from a wide range of environmental datasets. The design flows were calculated from these descriptors using a statistical method based on the Flood Estimation Handbook. The flows were adjusted based on records from river flow gauges.
- 2. Hydraulic Modelling The design flows, input at 300 metre intervals along each river reach, were then used to simulate overload flooding using a

multi-scale two-dimensional hydraulic model, with the resulting flood outlines captured on flood maps.

The tidal (coastal) flood mapping was undertaken creating a 10km resolution numerical model to simulate tide and surge processes for Ireland, which was then validated against gauge records. Extreme sea levels were generated and projected inland, giving coastal flood extents for the 1 in 200 (0.5%) and 1 in 1000 (0.1%) probability events.

In accordance with the guidelines the sources of flooding are mapped without regard for any form of flood defence and do not specifically model interaction with anything other than the land surface, stripped of all man made features. This approach is required by the guidelines to take into account the risk of defence failure or overtopping.

The Flood Maps do not directly take climate change into account. However, climate change flood extents can be assessed using the Flood Zone B outline as a surrogate for Flood Zone A with allowances.

It should also be noted that the flood zones are indicative of river and coastal flooding only. They should not be used to suggest that any areas are free from flood risk, since they do not include the effects of other forms of flooding such as from groundwater or artificial drainage systems.

2.2.3 Flood Zone Map

Map 4 identifies the flood zones within and adjoining the plan area.

Flood Zone A shows the area where the probability of flooding from rivers and the sea is highest. This area could be flooded:

 From the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year, or



Rosslaro Harbour & Kilrano	Title: Flood Zone Map		
Strategic Flood Risk Assessment	Drawn by: NK	Checked by: FF	
© Ordnance Survey Ireland. All rights reserved. 2010/34/CCMA/WexfordCountyCouncil	Date: 01.07.2011	Мар: 4	



 From a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

Flood Zone B shows the area where the probability of flooding from rivers and the sea is moderate (i.e. the additional extent of an extreme flood from rivers or the sea). This area could be flooded:

- From the sea by a flood that has between 0.1% (1 in 1000) and 0.5% (1 in 200) chance of happening each year, or
- From a river by a flood that has between 0.1% (1 in 1000) and 1% (1 in 100) chance of happening each year.

Flood Zone C is not identified on the map but covers all lands which are outside of Flood Zones A and B. The probability of flooding in this zone from rivers and the sea is low (less than 0.1% of 1 in 1000 for both river and coastal flooding).

2.2.4 Preliminary Flood Risk Assessment for Catchment Flood Risk Assessment and Management Studies

The draft Preliminary Flood Risk Assessment (PFRA) integrated maps for the County were received from the OPW in October 2011. The PFRA is a requirement of the EU Floods Directive. The objective of the PFRA is to identify areas where the risks associated with flooding might be significant. These areas (referred to as Areas for Further Assessment, or 'AFAs') are where more detailed assessment is required to accurately assess the extent and degree of flood risk. The more detailed assessment that will focus on the AFAs, will be undertaken through Catchment Flood Risk Assessment and Management (CFRAM) Studies.¹

The draft PFRA maps show no risk of flooding from rivers within the plan area, as shown on Map No. 5. Small areas of land at the Europort and the beach are identified as being at risk of flooding from the coast, while several areas in the

¹ <u>http://www.cfram.ie/prfa/</u> [14th October 2011]

Plan are identified as being as risk of pluvial flooding. At the time of preparing this assessment the maps were not available in a format which could be incorporated into the Flood Zone Map in Section 2.2.3 of this report.

The draft PFRA maps show no risk of flooding on the NVD site at Ballygerry. The draft PFRA maps are more sophisticated than the Flood Zone Mapping available to date and are a significant enhancement of the flood risk information available to Wexford County Council. Taken together, the various sources of flood risk mapping inform the Flood Zone locations for the plan area.

2.2.5 Sequential Approach

Having identified the flood zones within and adjoining the plan area the next step is to apply the sequential approach to land use planning in the area. The guidelines require a sequential approach to planning and flood risk management as it is considered a key tool in ensuring that development, particularly new development, is directed towards land that is at low risk of flooding. The philosophy underpinning the sequential approach in flood risk management is:

Avoid:	Preferably chose lower risk flood zoned for new development.	
Substitute:	Ensure the type of development proposed is not especially	
	vulnerable to the adverse impacts of flooding.	
Justify:	Ensure that the development is being considered for strategic	
	reasons.	
Mitigate:	Ensure flood risk is reduced to acceptable levels.	
Proceed:	Only where the Justification Test passes. Ensure emergency	
	planning measures are in place.	

2.2.6 Vulnerable Uses

The guidelines classify the vulnerability of different types of development and match this vulnerability to the appropriate flood zone. The planning implications for each flood zone are outlined in Table 2 below.

Vulnerability Class	Land uses and types of development which include*:		
Highly	 Garda, ambulance and fire stations and command 		
vulnerable	centres required to be operational during flooding;		
development	 Hospitals; 		
(including	 Emergency access and egress points; 		
essential	 Schools; 		
infrastructure)	 Dwelling houses, student halls of residence and hostels; 		
	 Residential Institutions such as residential care homes, children's homes and social services homes; 		
	 Caravans and mobile home parks; 		
	 Dwelling houses designed, constructed or adapted for 		
	the elderly or, other people with impaired mobility; and		
	 Essential infrastructure, such as primary transport and 		
	utilities distribution, including electricity generating		
	power stations and sub-stations, water and sewage		
	treatment, and potential significant sources of pollution		
	(SEVESO sites, IPPC sites, etc) in the event of		
	flooding.		
Less Vulnerable	 Buildings used for: retail, leisure, warehousing, 		
Development	commercial, industrial and non-residential institutions;		
	 Land and buildings used for holiday or short-let 		
	caravans and camping subject to specific warning and		
	evacuation plans;		
	 Land and buildings used for agriculture and forestry; 		
	 Waste treatment (except landfill and hazardous waste); 		
	 Mineral working and processing; and 		
	 Local transport infrastructure 		

Table 2: Vulnerability and Type of Development

Water-	 Flood control infrastructure;
compatible	 Docks, marinas and wharves;
development	 Navigation facilities;
	 Ship building, repairing and dismantling, dockside fish
	processing and refrigeration and compatible activities
	requiring a waterside location;
	 Water-based recreation and tourism (excluding
	sleeping accommodation);
	 Lifeguard and coastguard stations;
	 Amenity open space, outdoor sports and recreation
	and essential facilities such as changing rooms; and
	 Essential ancillary sleeping or residential
	accommodation for staff required by uses in this
	category(subject to specific warning and evacuation
	plan)

* Uses not listed in this table should considered on their own merits

2.2.7 Application of the Sequential Approach

The Flood Zone Map was overlaid on the Rosslare Harbour and Kilrane LAP 2002 zoning map. The flood zones affect three areas within the plan boundary as follows.

1. Rosslare Europort

The zoning of this area under the 2002 LAP, which has now expired, was split between Port Related and Employment Related Land Uses. A significant proportion of the Europort, including the terminal building, car parking area and ancillary developments are located in Flood Zone A. There is also approximately 12ha. of brownfield (reclaimed) land to the west of the port which is located in Flood Zone A. Permission has recently been granted on part of these lands for the storage and handling of shipping containers.



These lands are zoned for Industry (I) in the 2012-2018 LAP. This zoning provides for a range of less vulnerable uses including warehousing, transport, industrial and ancillary offices.

2. Lands at Ballygerry

These lands were zoned under the 2002 LAP for Employment Related Land Uses. National Vehicle Delivery (NVD) currently occupies this site. Approximately 2.7ha. is located in Flood Zone A.

These lands are zoned for Port Related Activities (PRA) in the 2012-2018 LAP. This zoning provides for a range of less vulnerable uses including warehousing, industrial and ancillary offices.



3. Rosslare Harbour Beach

This area was not previously zoned under the 2002 LAP. It comprises part of the public beach.

In the 2012-2018 LAP, this area is zoned Open Space and Amenity (OSA) which is classified as water-compatible development.



3.0 Justification Test

3.1 Justification Test

The guidelines state that where a Planning Authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate, the Planning Authority must be satisfied that it can clearly demonstrate on a solid evidence base that the zoning or designation for development will satisfy the Justification Test. Table 3 below illustrates those types of development that would be required to meet the Justification Test.

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

 Table 3: Type of Development Requiring the Justification Test

Section 4.23 of the guidelines outlines all of the criteria that must be satisfied in the Justification Test. This is shown in Table 4 below.

Table 4: Justification Test for Development Plans

Justification Test for Development Plans

Where, as part of the preparation and adoption or variation and amendment of a development/local area plan, a planning authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate as set out in Table 3.2, all of the following criteria must be satisfied:

- The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, as amended.
- The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
 - Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;
 - (ii) Comprises significant previously developed and/or under-utilised lands;
 - (iii) Is within or adjoining the core of an established or designated urban settlement;
 - (iv) Will be essential in achieving compact and sustainable urban growth; and,
 - (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.
- 3. A flood risk assessment to an appropriate level of details has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

N.B. The acceptability or otherwise of levels any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment.

3.2 Application of the Justification Test

As identified in section 2.2.6 above the flood zones affect three areas within the plan boundary as follows:

- Rosslare Europort
- Lands at Ballygerry (NVD Site)
- Rosslare Harbour Beach

The proposed zoning for Rosslare Eurport is 'Port Related Activities' which is classified as a less vulnerable use. The zoning for the NVD site is 'Industry' which is also classified as a less vulnerable use. In accordance with the guidelines, less vulnerable uses must be subject to the Justification Test where the use is proposed within Flood Zone A. The Justification Test for both sites is provided below.

The proposed zoning for Rosslare Harbour Beach is Open Space and Amenity which is classified as water-compatible development. The Justification Test is not required for such uses in Flood Zones A and B.

Criterion 1 for Rosslare Europort and NVD Site

The urban settlement is targeted for growth under the National Spatial Strategy, Regional Planning Guidelines, statutory plans or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, as amended.

District Towns are identified in the Regional Planning Guidelines for the South-East Region 2010-2022 (RPGs) as towns with a population between 1,500 and 5,000. These centres are described as having well developed services and community facilities and have the capacity to accommodate additional growth. The population of Rosslare Harbour and Kilrane has been estimated at 1,639 persons in 2011. This is assuming that the average growth rate for County Wexford as set out in the RPGs has occurred during the period 2006-2011. With 20% growth over the plan period this will result in an increase of 328 persons by 2021 bringing the population to 1,967 persons by the end of the plan period.

The population projections are consistent with the Core Strategy contained in Variation No. 1 of the Wexford County Development Plan 2007-2013. The Core Strategy has been prepared in accordance with the Planning and Development (Amendment) Act 2010, to incorporate the population targets for the County as set out in the RPGs. Rosslare Harbour, which is identified as a District Town, is projected to grow by 20% over the plan period. Rosslare Harbour has been allocated additional population growth due to the fact that it is identified as a District Town, the availability of infrastructural capacity and the potential for significant industrial/port-related development that would increase the demand for housing in the area.

The RPGs acknowledge that Rosslare Europort is a major port in the region with great potential in the logistics sector. The port provides strategic international access from Britain and continental Europe to the Waterford Gateway and South-East region. One of the key goals/objectives in the Regional Development Strategy is to establish a spatial policy framework through which development of the ports in the region can be co-ordinated to deliver a critical mass of services and facilities, boosting the national and international competitiveness of the region. Policy PPO 5.16 of the guidelines recognises the need to develop LAPs for the larger commercial ports to identify and reserve key strategic sites for the further development of the ports.

Criterion 2 for Rosslare Europort

The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:

(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;

This land use is not considered compatible with a town centre setting, for reasons including access, traffic, noise, the nature of industrial processes involved and health and safety. As such, in the interests of protecting the town centre and encouraging regeneration in the core area by attracting more desirable land uses, the locating of these land uses outside of the town centre would be in the interests of the proper planning and sustainable development of the overall plan area.

The Europort is of strategic importance to the region and its development is an objective of both the RPGs and the Wexford County Development Plan 2007-2013. It is considered that removing the limited lands that could facilitate its further expansion would have serious implications not only for its continued operation but also for the economy of the town, region and country.

Section 5.1.17 of the RPGs states that the Ports of Belview, New Ross and Rosslare are of strategic importance to the region for the development of industry, commerce and tourism. These Ports must continue to be developed to meet the needs of the Marine, Freight and Cruise Sectors. There is considerable potential to develop the region's port infrastructure in terms of value-added shore based economic activity. In relation to Rosslare Europort, it is stated that the Port's logistics business has great potential and that the Port is well placed to develop a presence in this growth sector. As such, to restrict any further development would be contrary to this objective.

(ii) Comprises significant previously developed and/or under-utilised lands;
 A significant amount of the subject lands at Rosslare Europort are developed or committed to development through planning permissions.
 The remainder of this land was previously used for vehicle storage/ distribution.

(iii) Is within or adjoining the core of an established or designated urban settlement;

This area is not within the core of the urban settlement of Rosslare Harbour and Kilrane, which is desirable given the nature of the land uses involved. It should be noted that the settlement of Rosslare Harbour was brought about by the development of the Port and as such the Port forms part of the history and function of the town.

- (iv) Will be essential in achieving compact and sustainable urban growth, The LAP proposes a development strategy that concentrates on the renewal and regeneration of underutilised sites within the town centre. These sites should be retained for land uses that are more appropriate to a town centre setting, such as retail, commercial, leisure and residential. The continued operation and development of the subject lands at Rosslare Europort are essential for the development of the Port.
- (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.
 Lands adjacent to the Europort are required to be developed for the operation and functioning of the Port. There are no suitable alternative lands for this particular use.

Criterion 2 for NVD Site

The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:

(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;

This land use is not considered compatible with a town centre setting, for reasons including access, traffic, noise, the nature of industrial processes involved and health and safety. As such in the interests of protecting the town centre and encouraging regeneration in the core area by attracting more desirable land uses, the locating of these land uses outside of the town centre would be in the interests of the proper planning and sustainable development of the overall plan area.

- (ii) Comprises significant previously developed and/or under-utilised lands; The subject lands at Ballygerry are developed and occupied by National Vehicle Delivery (NVD) which requires a location near the Europort. Several planning permissions have been granted on this site dating back to 1986.
- (iii) Is within or adjoining the core of an established or designated urban settlement;
 This area is not within the core of the urban settlement of Rosslare Harbour and Kilrane, which is desirable given the nature of the land uses involved.
- (iv) Will be essential in achieving compact and sustainable urban growth, The subject lands are located away from the town centre and the primary residential areas which are concentrated in the east. In the interests of achieving compact and sustainable urban growth the industrial uses, due

to operational requirements, are better located in this area. It is envisaged that, in the longer term, development of shore-based economic activity associated with the Europort will continue to expand to the west of the plan area.

(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.

Although there are alternative lands available, NVD are well established on this site. There is no record of a flooding history on this site and these lands are not identified on the draft PFRA integrated maps as being at risk of flooding. Based on this report, any future planning applications on this site for development which is vulnerable to flooding will be required to be accompanied by a site specific flood risk assessment. This assessment will be required to outline appropriate mitigation measures to avoid or reduce the risk of flooding on the site.

Criterion 3 for Rosslare Europort and NVD Site

A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

The Strategic Environmental Assessment (SEA) Environmental Report documents the current state of the environment, including flood risk, and outlines the likely significant effects on the environment of implementing the LAP. A matrix was used to identify conflicts or potential conflicts between the policies and objectives of the LAP and the Strategic Environmental Objectives (SEOs) contained in the Environmental Report. Where conflicts arose, opportunities to prevent, reduce or offset any significant adverse effects of implementing the LAP were examined and readdressed, and if necessary, some objectives were improved with measures to mitigate the effects on the environment. The mitigation measures relating to flood risk are shown in the table below.

	Table 5: SE	EA Mitigation	Measures	Relating	to Flood Risk
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MM15	Zone for compatible uses in areas identified as having high
	probability of flooding (Zone A) and mitigate the risk of flooding
	through layout and design of new developments.
MM16	Protect and improve natural drainage systems where possible and in
	the case of development works require the provision of acceptable
	mitigation measures in order to minimise the risk of flooding and
	negative impacts on water quality.
MM17	Require the provision of adequate storm water retention facilities in
	all new developments, including the use of soft landscaping and
	sustainable drainage techniques.
MM18	Ensure that development should not itself be subject to an
	inappropriate risk of flooding nor should it cause or exacerbate such
	a risk at other locations.

The mitigation measures have been incorporated into the LAP through the land use zoning objectives and the following policies contained in Section 5.14:

- Ensure that development should not itself be subject to an inappropriate risk of flooding nor should it cause or exacerbate such a risk at other locations. The Planning Authority will have regard to the guidelines for Planning Authorities 'The Planning System and Flood Risk Management' when assessing applications for new development.
- To carefully consider the alteration of natural drainage systems and in the case of development works require the provision of acceptable mitigation measures in order to minimise the risk of flooding and negative impacts on water quality.

- 3. To require all applications for new development in Flood Zones A and B for developments that are vulnerable to flooding to be accompanied by an appropriate site specific flood risk assessment carried out in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities (DEHLG, OPW November 2009). The assessment must detail how the Development Management Justification Test has been met.
- 4. To require the provision of adequate storm water retention facilities in new developments, including the use of soft landscaping and sustainable drainage techniques. The Council will seek to ensure that all proposed drainage systems are consistent with Sustainable Urban Drainage Systems (SuDS) and will ensure that the rate of discharge into the public surface water system are restricted in line with storm water management policy.

The Environmental Report also contains a monitoring programme to cross check for significant effects which arise during the implementation stage of the LAP against those predicted during the plan preparation stage. The monitoring programme outlines a number of targets and indicators to measure impacts during the lifetime of the Plan, so that residual or unforeseen impacts can be monitored and remedial action taken where necessary.

4.1 Development Management Process

The Planning Authority shall have regard to the requirements of The Planning System and Flood Risk Management (and Technical Appendices) Guidelines for Planning Authorities (DEHLG, OPW, 2009) when assessing development proposals where flood risk may be an issue. The following key requirements for the management of development in areas at risk of flooding shall be adhered to:

- Development proposals within, or incorporating, areas at moderate to high risk of flooding will require a site-specific and appropriately detailed flood risk assessment.
- Development proposals within, or incorporating, areas at moderate to high risk of flooding will require the application of the development management justification test in accordance with The Planning System and Flood Risk Management (and Technical Appendices) Guidelines for Planning Authorities (DEHLG, OPW, 2009); and
- Any proposal that is considered acceptable in principle shall demonstrate the use of the sequential approach to inform the site layout and design of development. Proposals shall demonstrate that appropriate mitigation and management measures can be put in place and that development will not increase flood risk elsewhere.

4.2 Pre-application discussions

Pre-application discussions will be important in identifying the broad range of issues affecting a site and present an opportunity for the Planning Authority to make clear to the applicants that an appropriate flood risk assessment should be carried out as part of the application preparation process. It is recommended that where flood issues are present, the Planning Authority should highlight the policies and objectives of the LAP in relation to flood risk and the available information on flood zones.

4.3 Site-specific Flood Risk Assessment

Where flood risk may be an issue for any development, a more detailed flood risk assessment should be carried out appropriate to the scale and nature of the development and the risks arising. The detailed site-specific flood risk assessment should quantify the risks and the effects of any necessary mitigation, together with the measures needed or proposed to manage residual risks. A site-specific flood risk assessment should provide the information detailed in Appendix A of The Planning System and Flood Risk Management (and Technical Appendices) Guidelines for Planning Authorities (DEHLG & OPW, 2009) but in general should include:

- Plans showing the site, the development proposal and its relationship with watercourses and structures which may influence local hydraulics;
- Surveys of site levels and cross-sections relating relevant development levels to sources of flooding and likely flood water levels;
- Assessments of:
 - All potential sources of flooding;
 - Flood alleviation measures already in place;
 - The potential impact of flooding on the site;
 - How the layout and form of the development can reduce those impacts, including arrangements for safe access and egress;
 - Proposals for surface water management according to sustainable drainage principles;
 - The effectiveness and impacts of any necessary mitigation measures;
 - The residual risks to the site after the construction of any necessary measures and the means of managing those risks; and
 - A summary sheet which describes how the flood risks have been managed for occupants of the site and its infrastructure.

4.4 Application of the Justification Test in Development Management

Where the planning authority is considering proposals for new development in areas at high or moderate risk of flooding that include types of development that are vulnerable to flooding and that would generally be inappropriate as set out in Table 3.2 of the guidelines, the Planning Authority must be satisfied that the development satisfies all of the criteria of the Justification Test as it applies to development management. Section 5.15 of the guidelines outlines all of the criteria that must be satisfied in the Justification Test. This is shown in the box below.

Table 6: Justification Test for Development Management

Justification Test for Development Management

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

- The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of the guidelines.
- 2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
 - the development proposed will not increase flood risk elsewhere, and if practicable, will reduce overall flood risk,
 - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
 - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of

any future flood risk management measures and provisions for emergency services; and

(iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

5.0 Conclusion

5.1 Conclusion

Land use management and spatial planning is a key tool in flood risk management. The Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG & OPW, 2009) aims to deliver sustainable development that minimises the risk of flooding to people and property by the avoidance of inappropriate development in areas at risk of flooding.

The SFRA was prepared in accordance with the guidelines and forms an intrinsic part of the LAP. The flood zones identified in this assessment have been used to guide land use zoning in the areas identified as being vulnerable to flooding. Most of the lands in Flood Zone A and Flood Zone B are either developed or brownfield sites. These lands are zoned either Port Related Activities or Open Space and Amenity Uses.

It is considered that a fair balance has been struck between avoiding flood risk and facilitating necessary development, enabling future development to avoid areas of highest risk and ensuring that appropriate measures will be taken to reduce flood risk to an acceptable level for those developments that have to take place, for reasons of proper planning and sustainable development, in areas at risk of flooding.