

CHAPTER 12

WATER INFRASTRUCTURE

12.1 Introduction

The provision of an adequate supply of water and wastewater treatment facilities is critical to facilitate and sustain the growth of the County over the lifetime of the plan and beyond. The planning of such services shall be in line with the settlement hierarchy of the development plan in order to ensure that areas designated for future development are capable of accommodating the projected population.

Climate change is recognised as the most serious and threatening global environmental problem and it is widely anticipated that changes in rainfall patterns and rises in sea levels resulting from climate change may increase the frequency and severity of flooding in the future. While we cannot prevent the climatic causes of flooding, we can take measures to either avoid development in flood risk areas and to prepare for it and reduce the resulting damage and hardship in existing developed areas.

Strategy

- To protect, improve and conserve the County's water resource;
- To facilitate the provision of necessary water infrastructure, in a sustainable manner;
- To manage and mitigate the risk and consequences of flooding.

12.2 Context

12.2.1 Water Framework Directive & River Basin Management Plans

In providing for and facilitating the provision of water services, the objectives of this plan must have regard to the provision of the EU Water Framework Directive (2000). The Directive establishes an integrated approach to the protection, improvement and sustainable use of rivers, lakes, estuaries, coastal waters and groundwater / aquifers within Europe. It influences the management of water resources and affects conservation, fisheries, flood defence, planning and development. It requires us to control all impacts – physical modification, diffuse and point source pollution, abstraction or otherwise – on our water resource. The primary focus of the Directive is to achieve at least 'good' ecological status and prevent deterioration for all waters by 2015.

The Directive requires that water quality management be centred on river basins, which are natural geographical areas that occur in the landscape. This is in contrast to other water management systems which use administrative management units which have arbitrary boundaries. Management of these basins will be achieved through management plans, a plan being created for each River Basin District. County Wicklow falls within the Eastern and South Eastern Districts and the River Basin Management Plans for each of these districts are scheduled to be adopted in 2009.

The Directive, due to its wide-reaching nature, will eventually replace a number of the other water quality directives (for example, those on Surface Water Abstraction, Freshwater Fisheries and Shellfish Waters) and implementation of others (for example, the Integrated Pollution Prevention and Control, Urban Waste Water Treatment, Habitats and Nitrates Directives) will form part of the 'basic measures' for the Water Framework Directive.

12.2.2 Groundwater Protection Scheme

Groundwater is an important natural resource, which supplies some 20-25% of drinking water in Ireland and is important in maintaining wetlands and river flows through dry periods. Groundwater and aquifers in Ireland are protected under EU and national legislation, and local authorities and the Environmental Protection Agency (EPA) are responsible for enforcing this legislation. A practical and

effective means of protecting groundwater and preventing pollution is through the use of a Groundwater Protection Scheme.

A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater. A Groundwater Protection Scheme aims to maintain the quantity and quality of groundwater and aquifers, and in some cases improve it, by applying a risk assessment-based approach to groundwater protection and sustainable development. In this way it helps public authorities to meet their responsibility to protect groundwater.

12.3 Water Supply & Demand

Wicklow County Council, being the Water Services Authority for the County, is responsible for providing and maintaining adequate public water supply infrastructure throughout the County and continues to invest in the improvement of existing and development of new water supplies, in accordance with the Water Services Investment Programme and rural water programme.

Private water supplies provide an alternative for areas that are not served by public water supply infrastructure and comprise mainly of wells for single dwellings and group water schemes for rural clusters and small settlements. Farms and commercial developments outside of settlements will usually also have their own private supplies. While the Local Authority has a limited role in the provision of such private supplies, for domestic supplies it does administer grants schemes where available and undertakes monitoring.

Our water supplies are under increasing pressure and notwithstanding all efforts being made to increase the supply of water to the County (e.g. through the drilling of new wells, connections to the supply schemes of neighbouring counties), there is uncertainty about the ability to deliver the quantity of water that will be required as the County continues to grow. In this regard, focus requires now to be placed on water conservation as well as supply increase.

The term 'water conservation' refers to the wide range of measures that can be employed to more efficiently utilise the water that we have. Measures can range from reducing the demand for water in homes, farms and places of work, to reducing leakage in the water distribution network to the reuse of rain and storm water and grey water.

Water Objectives

WS1 To facilitate the Wicklow County Council **Water Services Investment Programme**, to provide sufficient storage, supply and pressure of potable water to serve all lands zoned for development and in particular, to endeavour to secure the delivery of the following regional and strategic water supply schemes:

- Wicklow and environs Regional Water Supply Scheme;
- Arklow Water Supply Scheme;
- West Wicklow (Stage 2) Water Supply Scheme;
- Bray and environs Water Supply Scheme;
- Rathdrum Regional Water Supply Scheme;

and any other smaller, localised water improvement schemes required during the lifetime of the plan.

WS2 To protect existing and potential water resources of the County, in accordance with the EU Water Framework Directive, the River Basin Management Plans, the Groundwater Protection Scheme and source protection plans for public water supplies.

WS3 To require new developments to connect to public water supplies where services are adequate or where they will be provided in the near future.

WS4 Where connection to an existing public water supply is not possible, or the existing supply system does not have sufficient capacity, the provision of a private water supply will be

permitted where it can be demonstrated that the proposed water supply meets the standards set out in EU and national legislation and guidance, would not be prejudicial to public health or would not impact on the source or yield of an existing supply, particularly a public supply.

- WS5** To seek to minimise wastage and demand for water, through
- ongoing monitoring and improvement of the Local Authority controlled water supply system;
 - requiring new developments to integrate water efficiency measures (as set out in Section 12.7 of this chapter).

12.4 Waste Water

The Local Authority provides public wastewater collection, treatment and disposal facilities. While significant resources have been invested in such facilities, there are still notable deficiencies throughout the County. These deficiencies undermine both the ability of the Council to support the increasing population and demand for development and the implementation of growth targets set by the DoEHLG / RPGs and also result in risk of pollution and environmental damage. Deficiencies in wastewater services have also been identified as barrier to the economic development of the County and addressing this issue is therefore critical to the success and well being of the County. As with water supplies, a focus must now also be placed on reducing the flows of wastewater into the Local Authority collection system and treatment plants.

The ongoing deficiencies in the County's wastewater systems have lead to increased demand for private treatment plants. While it is not the intention of the Development Plan to stymie development activity, the Plan must in the first instance direct development to the right locations, and in terms of wastewater disposal, this means locations where wastewater collection and treatment facilities are in place. Where there are persuasive arguments for allowing private systems (such as a rural native needing to build on family landholding), the objectives below will apply.

Wastewater objectives

- WW1** To facilitate the *Wicklow County Council Water Services Investment Programme* to ensure that all lands zoned for development are serviced by an adequate wastewater collection and treatment system and in particular, to endeavour to secure the delivery of the following regional and strategic wastewater schemes:
- Arklow wastewater collection network and treatment scheme, including the provision of a new WWTP at Seabank;
 - Newtownmountkennedy regional collection network and treatment scheme, including the provision of a new WWTP at Leamore, Newcastle;
 - Extension of Greystones WWTP;

and any other smaller, localised wastewater improvement schemes required during the lifetime of the plan.

- WW2** To ensure that all foul water generated is collected and discharged after treatment in a safe and sustainable manner, having regard to the standards and requirements set out in EU and national legislation and guidance documents. The Planning Authority will continue to monitor the cumulative effect of grants of planning permission on available waste water treatment capacity under the terms of the relevant Waste Water Discharge Licence. Where there is inadequate capacity within a Waste Water Treatment Plant to accommodate new development or where the Waste Water Treatment Plant does not meet the terms of the relevant Waste Water Discharge License to the Planning Authority will:
- (a) Refuse planning permission for the development, or
 - (b) Consider granting permission with conditions limiting the commencement of development until facilities are suitably upgraded, so long as this is planned to occur within a reasonable timeframe (not more than 3 years) in accordance with the Local Authority's Water Services Investment Programme.

- WW3** Permission will be considered for private wastewater treatment plants for single rural houses where:
- The specific ground conditions have been shown to be suitable for the construction of a treatment plant and any associated percolation area;
 - The system will not give rise to unacceptable adverse impacts on ground waters / aquifers and the type of treatment proposed has been drawn up in accordance with the appropriate groundwater protection response set out in the Wicklow Groundwater Protection Scheme (2003);
 - The proposed method of treatment and disposal complies with the Environmental Protection Agency “Waste Water Treatment Manuals”;
 - An annually renewed maintenance contract for the system is contracted with a reputable company / person, details of which shall be provided to the Local Authority;
 - In all cases the protection of ground and surface water quality shall remain the overriding priority and proposals must definitively demonstrate that the proposed development will not have an adverse impact on water quality standards and requirements set out in EU and national legislation and guidance documents.
- WW4** Private wastewater treatment plants for multi-house developments will not be permitted.
- WW5** Private wastewater treatment plants for commercial / employment generating development will only be considered where
- The site is due to be connected to a future public system in the area¹;
 - There are no plans for a public system in the area and it can clearly demonstrated that the proposed system can meet all EPA / Local Authority environmental criteria;
 - An annually renewed contract for the management and maintenance of the system is contracted with a reputable company / person, details of which shall be provided to the Local Authority.
- WW6** Where any application for a private treatment plant would require a discharge licence under the Water Pollution Acts, a simultaneous application for same shall be required to be made when submitting the planning application.
- WW7** To require new developments to integrate water efficiency measures, (as set out in Section 12.7 of this chapter).
- WW8** To examine the feasibility of connecting of unsewered areas, including individual properties / premises serviced by septic tanks, to existing and planned sewer networks.

¹ The developers of the private temporary treatment plants will be required to submit details of how the proposed development will be decommissioned where a connection to the future public sewer is possible and the subject lands returned to their previous state

12.5 Storm & Surface Water

The efficiency and capacity of wastewater collection and treatment systems can be radically improved through the removal of uncontaminated storm and surface water from the system. Many drainage systems in our towns and villages have combined systems (foul and surface) and the extent of these older systems means that retrospective separation would not be feasible. However, all new development will be required to minimise surface water discharges through Sustainable Urban Drainage Systems, to separate foul and surface water and not to dispose of surface water to the foul drainage system.

Storm & Surface Water Objectives

SW1 Ensure the separation of foul and surface water discharges in new developments through the provision of separate networks.

SW2 Ensure the implementation of Sustainable Urban Drainage Systems (SUDS) and in particular, to ensure that all surface water generated in a new development is disposed of on-site or is attenuated and treated prior to discharge to an approved surface water system.

12.6 Flooding

Flooding is a natural phenomenon of the hydrological cycle. It constitutes a temporary covering of land by water and presents a risk only when people and human assets are present in the area which floods. Flooding can happen at any time in a wide variety of locations. Different types of flooding include overland flows, river flooding, coastal flooding, groundwater flooding, estuarial flooding and flooding resulting from the failure of infrastructure. Rivers with a low gradient are more susceptible to flooding at any time of the year; however, the increasing tendency for heavy summer downpours can also cause significant flooding in steep, flashy catchments.

Flooding can pollute water and cause significant damage to human life, the local economy, local biodiversity and local public health. Like any other natural process, flooding cannot be completely eliminated, but its impacts can be avoided or minimised with proactive and environmentally sustainable management and planning.

The Office of Public Works (OPW) is the lead agency for flood risk management in Ireland. This gives the OPW a role in policy advice and coordination in addition to its operational roles, but not responsibility for addressing all issues to flooding. Local Authorities are required to implement the provisions of 'The Planning System and Flood Risk Management' Guidelines (draft) 2008 in the carrying out of their development management functions.

These guidelines require the planning system at national, regional and local levels to:

- Avoid development in areas at risk of flooding by not permitting development in flood risk areas, particularly floodplains, unless where it is fully justified that there are wider sustainability grounds for appropriate development and unless the flood risk can be managed to an acceptable level without increasing flood risk elsewhere and where possible, reducing flood risk overall;
- Adopt a sequential approach to flood risk management based on avoidance, reduction and then mitigation of flood risk as the overall framework for assessing the location of new development in the development planning processes; and
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

Flood Management Strategy

The Council shall adopt a comprehensive risk-based planning approach to flood management to prevent or minimize future flood risk. In accordance with the (draft) Ministerial *Guidelines on the Planning System and Flood Risk Management*, the avoidance of development in areas where flood

risk has been identified shall be the primary response. Proposals for mitigation and management of flood risk will only be considered where avoidance is not possible and where development can be clearly justified with the guidelines' *Justification Test*. Flood management should have regard to surface water, groundwater, drinking water supply, flood plains and water and wastewater infrastructure.

Avoidance of development in flood risk areas

Flood zones are geographical areas within which the likelihood of flooding is in a particular range and they are a key tool in flood risk management within the planning process as well as in flood warning and emergency planning. There are three types or levels of flood zones defined for the purposes of the guidelines:

- Flood zone A – where the probability of flooding is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding) and where a wide range of receptors would be vulnerable;
- Flood zone B – where the probability of flooding is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
- Flood zone C – where the probability of flooding is low (less than 0.1% or 1 in 1000 for both river and coastal flooding).

While there are records available of flood events in the County (particularly those held by the OPW), the in-depth and considerable research and analysis that would be required to categorise the entire County into A, B and C zones has not been carried out. This type of detailed analysis of flood risk is more appropriate at a local level where data is readily available and the spatial extent of the analysis is not as wide.

Where an area or site has been determined to be in the high risk zone (having been evaluated in accordance with the 'Justification Test' set out in the Guidelines), it is an objective of this plan that that land will not be zoned for development unless the flood risk can be managed to an acceptable level without increasing flood risk elsewhere and where possible, reducing flood risk overall.

Reduction and mitigation of flood risk

The risks associated with flooding at any particular location can be reduced and mitigated in a number of ways depending on the scale and type of flooding that may be likely, for example

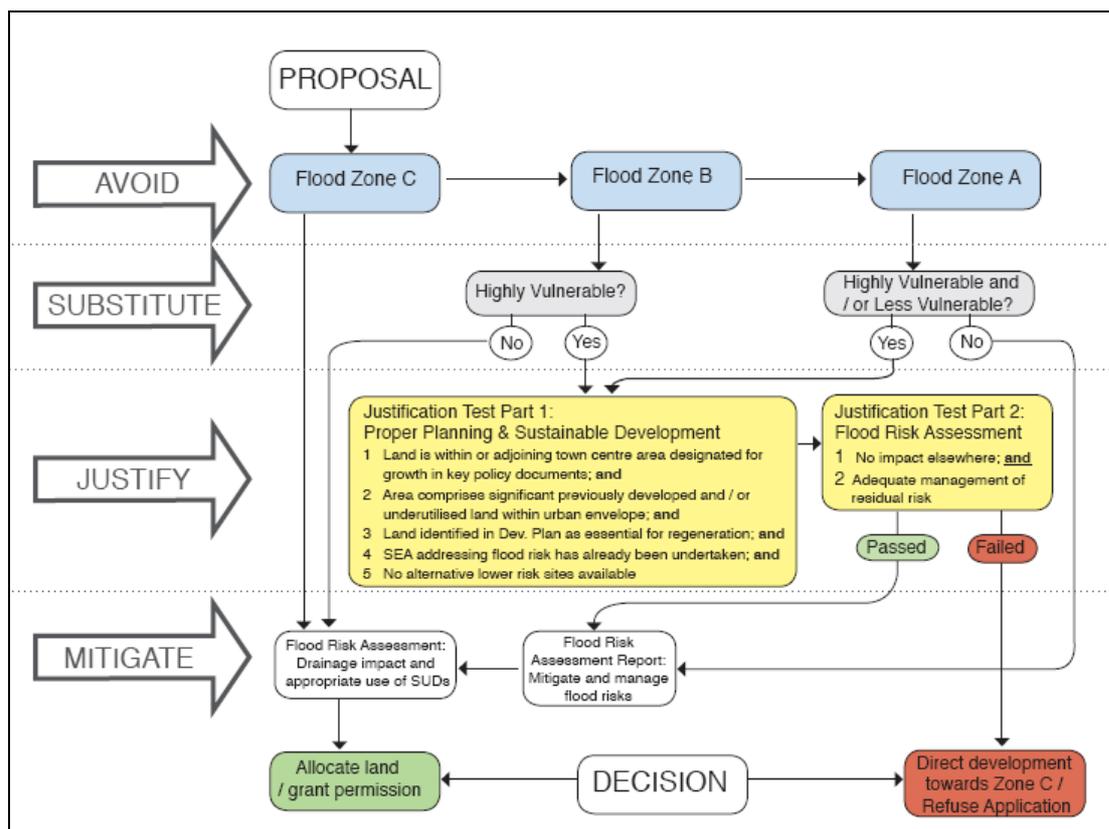
- through structural measures that block or restrict the pathways of floodwaters, such as river or coastal defences;
- the provision of attenuation measures (either natural or man made) that hold excess water until it can be released back into the natural water systems;
- through the proper design of surface water systems, that allow the system to convey away from the site (to an appropriate outfall) the water that may be generated in an extreme event²;
- through the minimisation of 'hard surfacing' in new developments, which prevents waters from seeping into the ground;
- Through 'flood routing' i.e. the integration into the design of a development of escape routes for water;
- Flood resistant and resilient construction;
- Effective emergency planning.

Flood risk management

Applications for permission will be evaluated following the sequential approach as set out in the guidelines. This is summarised in this flow diagram³:

² What constitutes an extreme event will depend on the location of the site and the uses thereon. For urban/built up areas or where developments (existing, proposed or anticipated) are involved, design for a 1 in 100 year event will be required; along estuaries, design for the 200-year tide level will be required.

³ Reproduced with permission from jba Consulting



Flood Risk Assessment

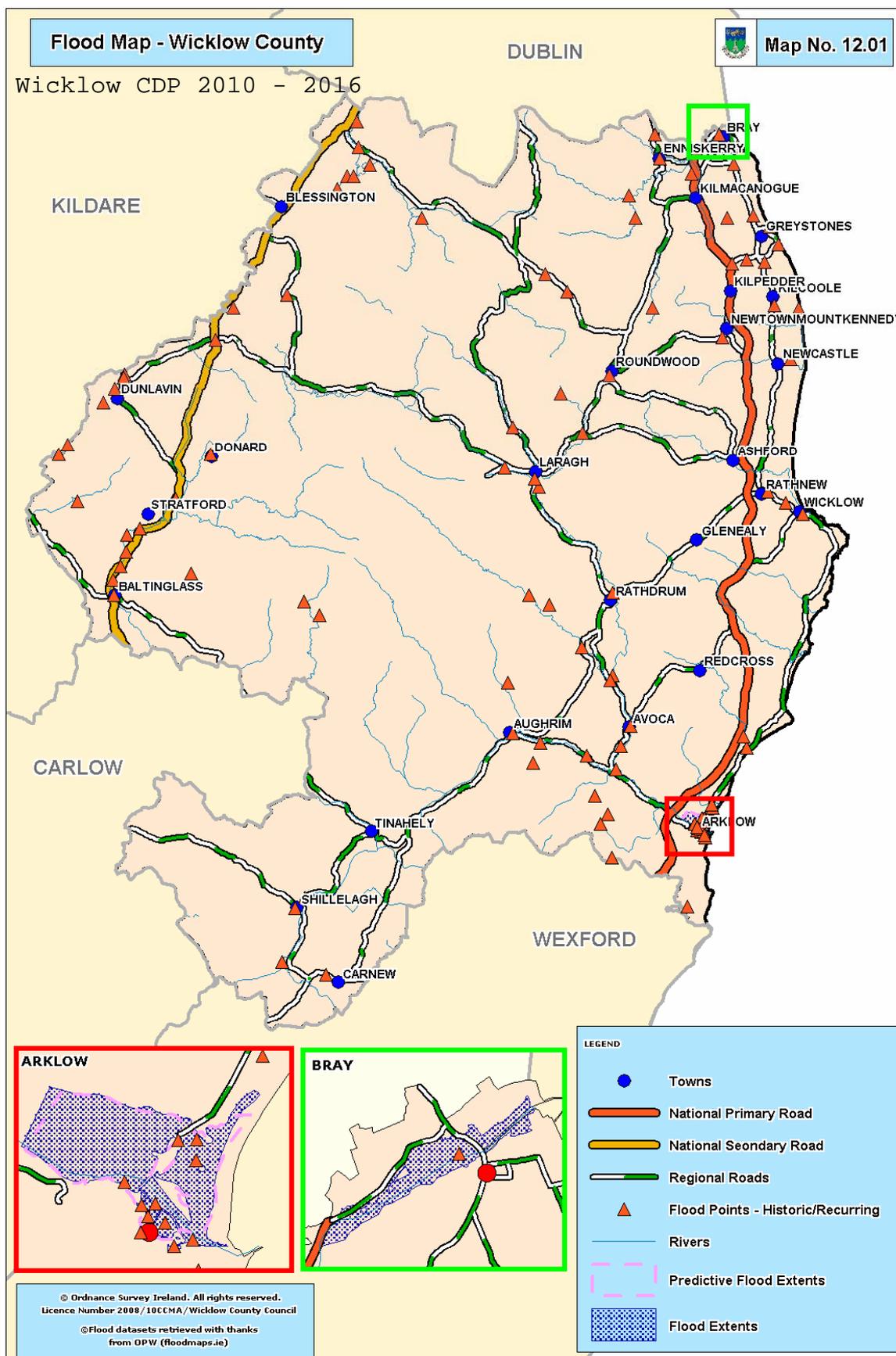
Where flood risk may be an issue for any proposed development, a flood risk assessment should be carried out that is appropriate to the scale and nature of the development and the risks arising. This shall be undertaken in accordance with the DoEHLG Flood Risk Assessment Guidelines. This shall include proposals for the storage or attenuation of runoff/discharges (including foul drains) to ensure the development does not increase the flood risk in the relevant catchment. Those planning new developments are advised to refer to the OPW National Flood Hazard Mapping Website, Coastal flood maps and GSI data etc prior to submitting proposals.

Flood Management Objectives

- FL1** To prepare flood zone maps for all zoned lands within the County as part of future Local Area Plans.
- FL2** Land will not be zoned for development in an area identified as being at high or moderate flood risk (as set out in the Guidelines⁴), unless where it is fully justified (through the Justification Test set out in the Guidelines) that there are wider sustainability grounds for appropriate development and unless the flood risk can be managed to an acceptable level without increasing flood risk elsewhere and where possible, reducing flood risk overall.
- FL3** Applications for significant new developments or developments in high or moderate flood risk areas shall follow the sequential approach as set out above.
- FL4** To prohibit development in river flood plains or other areas known to provide natural attenuation for floodwaters except where the development can clearly be justified with the guidelines 'Justification Test'.

⁴ DEHLG Consultation Draft Guidelines for planning authorities entitled 'The Planning System and Flood Risk Management'

- FL5** To limit or break up large areas of hard surfacing in new developments and to require all surface car parks to integrate permeability measures such as permeable paving.
- FL6** Excessive hard surfacing shall not be permitted for new, or extensions to, residential or commercial developments and all applications will be required to show that sustainable drainage techniques have been employed in the design of the development.
- FL7** To require all new developments to include proposals to deal with rain and surface water collected on site and where deemed necessary, to integrate attenuation and SUDS measures.
- FL8** Flood assessments will be required with all planning applications proposed in flood risk areas to ensure that the development itself is not at risk of flooding and the development does not increase the flood risk in the relevant catchment (both up and down stream of the application site). Generally a Flood Impact Assessment will be required with all significant developments and a certificate (from a competent person stating that the development will not contribute to flooding within the relevant catchment) will be required with all small developments of areas of 1 hectare or less.
- FL9** For developments adjacent to all watercourses of a significant conveyance capacity or where it is necessary to maintain the ecological or environmental quality of the watercourse, any structures (including hard landscaping) must be set back from the edge of the watercourse to allow access for channel clearing/ maintenance/ vegetation. A minimum setback of up to 10-15m will be required either side depending on the width of the watercourse.



Source: OPW. For more detailed and local information, refer to OPW website www.floodmaps.ie

12.7 Development Management Objectives

12.7.1 Water supply

- Proposed developments connecting to the public water supply shall provide the following information at application stage:
 - point of connection to existing mains system;
 - information on the capacity and supply available at the point of connection;
 - analysis of pressure available;
 - proposals for pressure boosting or on-site water storage as may be required;
 - the design of the water supply network on site, which shall be compliant with the specifications of Sections 3 and 4 of “*Recommendations for Site Development Works for Housing areas*” (DoEHLG 1998), as may be revised or amended.
- Proposed developments dependent on an existing or new private well source shall provide the following details at application stage:
 - location of water source and aquifer type and vulnerability;
 - hydrogeological analysis of the water regime in the area, direction of flows, location of possible sources of contamination etc;
 - measures to ensure the protection of the source ;
 - yield and quality analysis (in accordance with current Drinking Water Regulations);
 - proposals for a duty and standby well, each with its own submersible pump to ensure security and continuity of supply to the proposed development;
 - management measures including treatment (where necessary) and ongoing maintenance;
 - such assessment shall be provided by a recognised hydrogeological professional with professional indemnity insurance.

12.7.2 Water demand

- Water conservation measures shall be integrated into all new developments, through the provision of “dual flush” toilets in accordance with Part G of the Building Regulations (as amended 2008) and water re-use / recycling measures, in particular on commercial / industrial sites with high water usage;
- Rainwater butts⁵ shall be installed by the developer for all new residential developments.

12.7.3 Wastewater systems

- Proposed developments connecting to the public wastewater collection system shall provide the following information at application stage:
 - point of connection to existing mains system;
 - information on the capacity available at the point of connection;
 - the design of the wastewater collection system on site, which shall be compliant with the specifications of Sections 3 and 4 of “*Recommendations for Site Development Works for Housing areas*” (DoEHLG 1998), as may be revised or amended;
 - details of any proposed pumping stations, to include full details of design and operating processes, which accord with the requirements of the Water Services Authority.
- Proposed developments dependent on private wastewater collection and treatment systems shall comply with the appropriate EPA Wastewater Treatment Manual:
 - Persons carrying out a site assessment must submit appropriate background information confirming their competency to carry out the assessment and details of their professional indemnity insurance;

⁵ A water *butt* is a container for collecting rainwater from the roof and downpipes of a dwelling, which can later be used for gardening etc.

- Developers of private temporary treatment plants will be required to submit a maintenance contract for the operational lifetime of the plant.

12.7.4 Surface & storm water systems

All new developments shall be designed to ensure:

- the on-site collection of surface water separate from foul water;
- surface water is appropriately collected on site to prevent flow onto the public roadway, adjoining properties or into the public foul sewer / sewage treatment plant;
- the appropriate on-site disposal of surface water (where the scale and amount of water generated makes this feasible) e.g. through soakpits. For larger scale developments, it may be necessary to demonstrate through soil and subsoil tests that the site is capable of absorbing the surface water generated;
- where on-site disposal is not feasible and discharge to surface waters is necessary, that the system has been designed in accordance with Sustainable Urban Drainage measures (SUDS) and in particular, that run-off has been attenuated to greenfield conditions;
- discharges to water courses shall be channelled through adequately sized filters / interceptors for suspended solids and petrol/ oils prior to discharge.