

Appendix 4 - Flood Risk and Water Resources

- 7.21 Climate change will result in drier summers and warmer, wetter winters which has implications for both water management and flood risk. Local Planning Authorities have always been required to consider the need to avoid the location of certain types of development in areas which are at the highest risk of flooding and this information is obtained through undertaking a Strategic Flood Risk Assessment.
- 7.22 The National Planning Policy Framework says that Local Authorities should also develop policies to manage flood risk from all sources. The National Planning Practice Guidance provides further details on the approach to development and flood risk and how the Strategic Flood Risk Assessment should be carried out.
- 7.23 Areas within Three Rivers are at risk of flooding from rivers, surface water, groundwater, sewers and reservoirs and the effects of climate change are predicted to increase the risk of flooding in the District. Three Rivers is located in one of the driest parts of the UK, with Hertfordshire's average rainfall returning only two thirds of the national average. Due to the potential impacts of climate change and the increasing pressure for development across the District, it is vital that developments are safe and resilient to the risk of flooding, water quality is enhanced and that development makes efficient use of water resources.

Preferred Policy Option 15 Flood Risk and Water Resources

1) Flood Risk

- a) In locations identified as being at risk of flooding, planning permission will only be granted where sequential and exception tests¹ have been undertaken and passed and where the requirements set out in national policy have been demonstrated through a site-specific flood risk assessment.
- b) Development will only be permitted where it would not be subject to unacceptable risk of flooding and would not exacerbate the risk of flooding within the site or elsewhere. Wherever practicable and feasible, development should reduce existing flood risks to and from the site.
- c) New development will not be permitted in Flood Zone 3b, as defined by the Strategic Flood Risk Assessment. Redevelopment of existing built development in Flood Zone 3b will only be permitted where a less vulnerable use class is proposed and should ensure no loss of floodplain or an increase in flood risk elsewhere.
- d) A Flood Risk Assessment (FRA) will be required for:
 - Any proposals for development within Flood Zones 2 and 3
 - Development proposals of 1ha or greater in area within Flood Zone 1
 - For proposals within Flood Zone 1, where a proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding, as identified in the SFRA or by the Lead Local Flood Authority.

¹ The Sequential and Exception Tests are not required for applications for some minor development (householder development, non-residential extensions of less than 250sqm) and changes of use (unless the change of use would introduce a more vulnerable use to flood risk). However, if applicable, these applications should be supported by site-specific FRAs. For allocated housing sites, the Sequential Test is not required but the Exception Test may need to be reapplied.

- e) Development should be designed using a sequential approach; the most vulnerable uses of proposed development should be located in the areas of lowest flood risk within a site, unless there are overriding reasons to prefer a different location. The site and building design will need to ensure that development is safe and resilient to flood risk and to any residual risk in flood defended areas.
- f) Development at risk of flooding should be flood resilient and resistant through appropriate mitigation measures. Safe access and egress routes are required for development at risk of flooding and for changes of use to a more vulnerable use; it should be demonstrated that residual risks can be safely managed.
- g) Finished Floor Levels (FFLs) of development in Flood Zones 2 and 3 should be situated at a freeboard of at least 300mm above the modelled 1% (1 in 100 year) plus climate change predicted maximum water levels. FFLs should also be 300mm above the modelled 1 in 100-year (1%) AEP surface water level with allowance for climate change. If no surface water model is available, FFLs should be 300mm above ground level.
- h) Major development in all areas will require Sustainable Drainage Systems to reduce surface water runoff to greenfield rates or less. Minor developments which incorporate Sustainable Drainage Systems into their designs will be encouraged.
- i) Where appropriate, developers will be required to show that any necessary flood protection and mitigation measures will not have unacceptable impacts on nature conservation, landscape character, recreation or other important matters.
- j) Development should maintain a minimum distance of 8m from a main river (as defined by the Environment Agency) and a minimum distance of 5m from any ordinary watercourse, in order to maintain the riparian habitat and provide access for maintenance.

2) Water Resources

The Council will support development where:

- k) The quantity and quality of surface and groundwater resources are protected from pollution and where possible enhanced.
- l) It will not be at risk or adversely affected by unacceptable levels of aquatic pollution.
- m) Efficient use is made of water resources and account taken of climate change. This means incorporating all or some of the following measures as part of development:
 - Rainwater harvesting techniques (for example providing waterbutts fitted to drainpipes and rainwater storage tanks as part of new development)
 - Harvesting and recycling greywater (wastewater from baths, showers, washbasins, kitchen sinks)
 - Using water efficient appliances (for showers, taps, washing machines, toilets etc.)
 - Using water efficient landscaping and irrigation measures (for example by using drought tolerant plants)
 - New development adjacent to watercourses should seek to restore rivers to their natural state, including through de-culverting piped watercourses. Further culverting and building or within 8m of existing culverts will not be permitted.

- n) Any development adjacent to, over or in a watercourse needs to take into account consideration of the Water Framework Directive requirements and opportunities outlined in the Thames River Basin Management Plan. All developments should seek to improve the biodiversity of the site and contribute towards the riparian corridor's ability to be used by migrating species.
- o) All new residential development must achieve as a minimum the optional requirement set through Building Regulations for water efficiency that requires an estimated water use of no more than 110 litres per person per day. Non-residential development achieving the 'BREEAM Excellent' rating for water efficiency will be supported.

3) Wastewater

- a) Where appropriate, planning permission for developments resulting in the need for off-site upgrades to wastewater infrastructure will be subject to conditions to ensure the occupation does not outpace the delivery of necessary infrastructure upgrades.

4) Driveways

- a) **Where planning permission is required for the provision of a hard surface, the hard surface should either be made of porous materials, or provision is made to direct run-off water from the hard surface to a permeable or porous area or surface within the curtilage of the dwelling house.**

Why is this the Preferred Policy Option?

7.25 National Policy aims to ensure that flood risk is taken into account at all stages of the planning process and to avoid inappropriate development in areas at risk from flooding by directing development away from areas at highest risk. Where development cannot be allocated or granted permission in areas of low risk, it must be made safe without increasing flood risk elsewhere.

7.26 The District is mapped according to the level of flood risk; Flood Zones in Three Rivers are defined in the Council's Strategic Flood Risk Assessment.

Flood Zone	Definition
Zone 1 – Low Probability	Land having a less than 1 in 1,000 annual probability of flooding from rivers or sea.
Zone 2 – Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of flooding from rivers or sea.
Zone 3a – High Probability	Land having a 1 in 100 or greater annual probability of flooding from rivers or sea.
Zone 3b – The Functional Floodplain	Land providing flood storage or where water has to flow in times of flood.

7.27 Through applying a risk-based, sequential approach, the overall aim is to steer new development to Flood Zone 1 (low risk) in the first instance. Development in Zone 2 and Zone 3a may be considered if no other preferable, reasonably available sites in areas of lower flood risk exist and both parts of an 'Exception Test' are satisfied. Development in Flood Zone 3b will not be permitted; Flood Zone 3b will be protected as the functional floodplain and its capacity to attenuate periodic flood events will not be compromised.

- 7.28 Although Flood Zone 1 represents areas of low flood risk, it does not account for the risk of flooding from other sources (e.g. surface water, groundwater). All sources of flood risk and the impacts of climate change, must be taken into account.
- 7.29 As a means of assessing levels of risk, the Council commissioned a Strategic Flood Risk Assessment (SFRA).
- 7.30 The SFRA defines the flood risk within the District, taking into account all sources of flooding and future climate change impacts. The document details the following flood risk objectives:
- Achieve a reduction in flood risk through spatial planning and site design;
 - Consider the cross-boundary and cumulative impacts of flood risk;
 - Inform flood risk and drainage assessments and promote SuDS; and
 - Identify strategic flood risk solutions, including river and floodplain restoration and enhancement.
- 7.31 Site-specific Flood Risk Assessments (FRAs) will be required for proposals for development in locations identified as being at risk of flooding and these should demonstrate how flood risk will be managed, taking into account climate change and having regard to the vulnerability of different land uses to flood risk.
- 7.32 In addition, for sites located in catchments identified in the SFRA as highly sensitive to the cumulative impact of development, site-specific FRAs should also consider the cumulative effects of the proposed development and should demonstrate that flood risk downstream will not be made worse as a result of cumulative development. Where developments are located in areas benefitting from defences or adjacent to a canal, FRAs should include an assessment of the residual risk, considering the impact of breach, including the effect on safe access and egress, as well as potential for flood risk to increase in the future due to overtopping.
- 7.33 The use of Sustainable Drainage Systems (SuDS) to manage surface water flows is an important tool in managing flood risk, designed to control surface water run off close to where it falls and to mimic natural drainage as closely as possible. SuDS increases permeable surfaces in a development, allowing water to seep into the ground rather than running off directly into rivers and drainage systems and they also help to reduce the burden on traditional water management systems such as sewers and reduce the impact of pollution on receiving water bodies.
- 7.34 We propose that SuDS should be integrated into the design of all development sites and that the techniques used should be appropriate to local conditions. Surface Water Drainage Strategies will also be required for major development and where appropriate, for minor developments.
- 7.35 In order to maintain the riparian habitat and provide access for maintenance, a minimum 8m buffer zone from development to a main river (as defined by the Environment Agency) will be required and a 5m buffer zone between an ordinary watercourse and development is proposed.
- 7.36 The Three Rivers District is entirely underlain by a chalk aquifer, which is the main drinking water resource for the area and a regionally important source of groundwater. It is important to protect this resource from pollution and to safeguard it, taking into account future climate change. The Three Rivers area has a large number of surface water resources including the Rivers Colne, Gade and Chess, the Grand Union Canal, as well as several lakes and ponds, particularly within the floodplain of the River Colne.

- 7.37 It is essential for development to protect and, where possible, enhance water quality. This means controlling pollution, protecting and enhancing the quality and quantity of groundwater, protecting and enhancing surface water resources, such as through the use of SuDS to manage surface water.. Changes to the design of developments and the implementation of mitigation measures should ensure potential harm to water bodies is prevented, however, where it is likely that a proposal would have a significant adverse impact on water quality, a more detailed assessment will be required. If adequate mitigation cannot be provided against any significant adverse impact on water quality, the application should be refused.
- 7.38 Three Rivers is an area of serious water stress (as classified by the Environment Agency) , so reducing water consumption levels is important. Measures that will reduce water consumption will be expected, recognising that the incorporation of water efficiency measures into developments is essential to prepare and be able to adapt to climate change and increased water demand in future. The efficient use of water resources, including water re-use and recycling, should be sought through sustainable construction methods (such as rainwater harvesting) that conserve and make prudent use of water and other natural resources. Water efficient appliances (for showers, taps, washing machines, toilets, etc.) and water efficient landscaping and irrigating measures in new developments will also help to support sustainable supplies of water for the future.
- 7.39 It is noted that many existing water mains and sewerage systems are increasingly becoming overloaded by successive development. It is therefore important that new development is served by an adequate means of water supply and sufficient foul and surface water drainage and adequate provision must be made for water supply and sewerage infrastructure.
- 7.40 The Local Planning Authority will seek to ensure that there is adequate wastewater infrastructure to serve all new developments. Developers are encouraged to contact Thames Water as early as possible to discuss their development proposals and intended delivery programme to assist with identifying any potential wastewater network reinforcement requirements. Where there is a capacity constraint the Local Planning Authority will, where appropriate, apply phasing conditions to any approval to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of the relevant phase of development.
- 7.41 In order to reduce flood risk an additional policy requirement relating to driveways has been proposed to ensure that where planning permission is required, the hard surface should either be made of porous materials, or provision is made to direct run-off water from the hard surface to a permeable or porous area or surface within the curtilage of the dwelling house.