

# Flood and Water Management Supplementary Planning Document Draft for Public Consultation

October 2011



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# 1. Introduction

- 1.0.1 Flood risk management is high on the agenda in Peterborough. In order to reduce the likelihood and consequences of flooding in Peterborough, it is necessary that the drainage network and watercourses are managed well, that sites are designed and constructed to drain well and that development is located in a safe environment. The city council takes these issues very seriously, and is now a Lead Local Flood Authority under the Flood and Water Management Act (2010).
- 1.0.2 It is predicted that climate change will bring more frequent short duration, high intensity rainfall and more frequent periods of long-duration rainfall, meaning both river and surface water flooding are likely to be an increasing problem. Around two-thirds of the flooding across the country in summer 2007 was due to surface water (Environment Agency, 2007).
- 1.0.3 The council's adopted Core Strategy proposes a high level of growth in Peterborough up to 2026. The aims of this Supplementary Planning Document (SPD) are: to make sure that new development does not increase the risk of flooding from main rivers and surface water but also actively reduces it; and to expand on adopted policy in the Core Strategy (Policy CS22 - Flood Risk) and emerging policy in the Planning Policies Development Plan Document (Policy PP14 - the Landscaping and Biodiversity Implications of Development) relating to flood risk management and water quality.
- 1.0.4 The objective of the SPD is to provide guidance to applicants and decision makers on:
- (a) what the council will require in terms of sustainable drainage systems (SuDS) and other drainage and flood risk measures as part of a planning application (outline, full and reserved matters);
  - (b) how the provision of water management techniques on site may vary according to different types of development;
  - (c) the measures that will be necessary to satisfy the policies in the Local Development Framework;
  - (d) the way in which flood risk management measures will vary across Peterborough; and
  - (e) how development can assist in meeting the Water Framework Directive (2000), which requires the achievement of 'good ecological status' in all surface freshwater bodies by 2015.
- 1.0.5 This SPD puts forward a range of flood risk management measures including guidance on how to select sites for new development and how to drain water from a proposed development.
- 1.0.6 Once adopted, the SPD will form part of Peterborough City Council's Local Development Framework (LDF).
- 1.0.7 Developers should initially consider the advice provided in this SPD. Thereafter, the council offers a pre-application service for which there will be a charge. Further information can be found at:
- [http://www.peterborough.gov.uk/planning\\_and\\_building/making\\_a\\_planning\\_application/step\\_1\\_pre-application\\_advice.aspx](http://www.peterborough.gov.uk/planning_and_building/making_a_planning_application/step_1_pre-application_advice.aspx).
- 1.0.8 The SPD should be used by:
- developers when selecting sites based on flood risk;

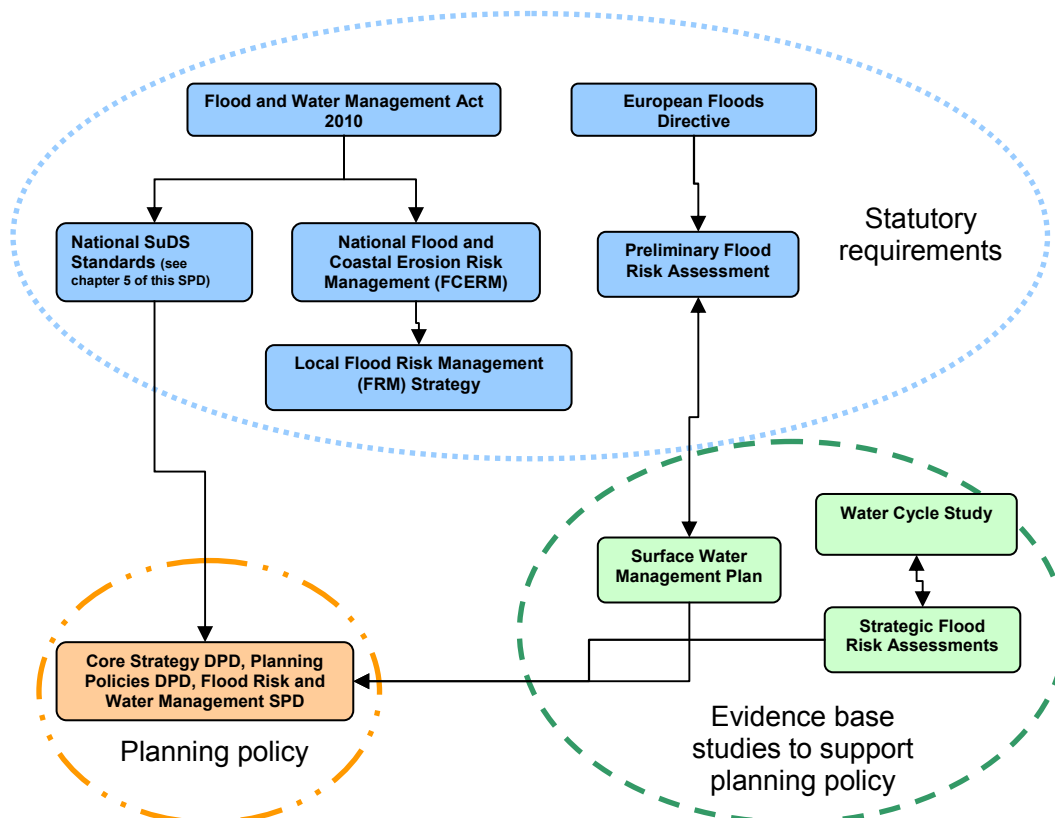
- developers when developing the brief for their design team to ensure drainage schemes are sustainably designed (i.e. does not increase flood risk) to the requirements of the city council;
- design teams responsible for development master plans, landscape and surface water drainage schemes; and
- development management officers when determining delegated planning applications, making recommendations to Committee and drawing up S106 obligations that include contributions for SuDS.

1.0.9 Applicants and all water management related partners should be able to use this guidance to ensure a consistent, locally specific approach to flood risk management.

## 2. Setting the Scene

2.0.1 Flood and water management in Peterborough is influenced by legislation, national policy, local technical studies and local information. This chapter gives the background information on the local, national, statutory and non statutory influences, in Figure 1 below and in the text that follows. Chapter 3 sets out how flood and water management is considered in Peterborough’s Local Development Framework.

Figure 1 – Linkages between relevant flood risk management documents and legislation



### 2.1 National Background Information

#### Flood and Water Management Act 2010

2.1.1 The Flood and Water Management Act places the responsibility for co-ordinating ‘local flood risk’ management on the county or unitary authority, making them a Lead Local Flood Authority (LLFA). In this context, the Act uses the term ‘local flood risk’ to mean flood risk from:

- (a) surface runoff,
- (b) groundwater and
- (c) ordinary watercourses.

2.1.2 Peterborough City Council is, therefore, officially recognised as a LLFA.

2.1.3 The Act also seeks to encourage the uptake of sustainable drainage systems (SuDS) by agreeing new approaches to the management of drainage systems and providing for LLFAs

to adopt SuDS for new developments and redevelopments. In this regard, the city council intends to establish a SuDS Approving Body, which will review, approve and adopt drainage strategies and systems alongside the current planning approval system.

## **National Planning Policy**

- 2.1.4 Government is reforming the planning system and has produced a draft National Planning Policy Framework (NPPF) that consolidates all of the existing national planning policy statements, national planning policy guidance and some circulars into one document. However, whilst the it is brief, the draft NPPF is consistent with existing guidance being replaced, such as Planning Policy Statement 25: Development and Flood Risk, Planning Policy Statement 1: Delivering Sustainable Development and the supplement to PPS1: Planning and Climate Change.
- 2.1.5 However, through the Localism agenda, Local Authorities should take steps to define their own locally appropriate standards. An assumption is made that forthcoming national SuDS standards issued by Defra will also require this local detail.
- 2.1.6 This SPD should be read alongside the policy in the final version of the NPPF, which is due in early 2012.

## **Code for Sustainable Homes**

- 2.1.7 The Code for Sustainable Homes was launched in December 2006 and sets a national standard for the sustainable design and construction of new homes. It is predominantly a 'building control' requirement rather than a 'planning' requirement. Attenuation (reduction) of surface water through SuDS is included in the Code. For example, if SuDS are provided to attenuate runoff from both hard surfaces and roofs, 1 point can be awarded towards the overall sustainability rating.
- 2.1.8 In addition, it is mandatory for all levels of the Code that run-off rates and annual volumes of run-off post-development will be no greater than the previous conditions for the site. Further information can be found here:

<http://www.planningportal.gov.uk/buildingregulations/greenerbuildings/sustainablehomes>

## **2.2 Local Background Information**

### **Local Flood Risk**

- 2.2.1 Flood risk in Peterborough exists from a variety of sources. These include:
- The sea
  - Main rivers (Peterborough has 18 rivers, of a variety of sizes, which have been classified as main river and are managed by the Environment Agency)
  - Ordinary watercourses (see glossary)
  - Surface run off
  - Groundwater (high water table)
  - Reservoirs
  - The sewerage network – sewers, rising mains and pumping stations
  - The mains water supply
- 2.2.2 The frequency of flooding is likely to increase in the future as a result of climate change, and particular care must be taken to ensure that new development is neither at risk of flooding, nor increases the risk of flooding elsewhere.



2.2.3 Peterborough City Council is now a Lead Local Flood Authority, but it also maintains its previous role in managing highway drainage and a number of ordinary watercourses. The council wishes to ensure that appropriate planning policy is in place to assist with its new larger role in co-ordinating local flood risk management and ensuring sites of new development are appropriately drained.

### **Peterborough Water Cycle Study (2010)**

2.2.4 The detailed Water Cycle Study for Peterborough (2010) sets out a range of recommendations. Of these, we will provide guidance in this SPD on:

- Removal of surface water from combined sewers;
- Use of SuDS including the incorporation of green roofs, permeable pavements, swales and attenuation schemes;
- Rapid surface water discharge from sites adjacent to the River Nene to avoid peak fluvial levels coinciding with peak surface water run-off volumes. A smaller amount of on-site storage and treatment still may be required for example to remove the pollutants from the first flush, and to account for local constraints on surface water drainage systems and localised storm events.

2.2.5 The specific sewerage network options highlighted in the Study applied predominantly to the foul sewer system although these may have some impact where combined systems or cross connections are present.

2.2.6 The Water Cycle Study and appendices (document reference E079A and E079B) can be downloaded here:

[http://consult.peterborough.gov.uk/portal/planning/peterborough/cs/cssub/cs\\_s?tab=files](http://consult.peterborough.gov.uk/portal/planning/peterborough/cs/cssub/cs_s?tab=files)

### **Peterborough Level 2 Strategic Flood Risk Assessment**

2.2.7 A number of flood risk policies are recommended in the Peterborough Level 2 Strategic Flood Risk Assessment (SFRA) (2009 and amended in 2010), relating to both flood risk and surface water management. Recommendation 11 promotes the use of specific flood risk and surface water management 'policy units' to ensure that the cumulative impact on surface water drainage systems of development across the city is considered holistically by accounting for the local constraints, catchment response, flood risk, strategic opportunities and wider benefits. The SPD explains how the city council, as a planning authority, will apply the concept of 'policy units' to development proposals. It is envisaged that developers and all water management related partners should be able to use this guidance to ensure a consistent approach to flood risk management.

2.2.8 The policy units have evolved since publication of the SFRA through work undertaken on the Surface Water Management Plan for Peterborough.

2.2.9 The Level 2 SFRA and appendices (document reference E062B and E062C) can be downloaded from:

[http://consult.peterborough.gov.uk/portal/planning/peterborough/cs/cssub/cs\\_s?tab=files](http://consult.peterborough.gov.uk/portal/planning/peterborough/cs/cssub/cs_s?tab=files)

### **Peterborough Surface Water Management Plan (2011)**

2.2.10 Peterborough City Council has undertaken a Surface Water Management Plan (SWMP) Strategic and Intermediate Assessment in order to identify areas of surface water flood risk in Peterborough. Identification of risk areas enables appropriate management processes to be implemented to reduce local risk, raise local awareness and improve people's

preparation/preparedness for flooding. The SWMP builds on the Strategic Flood Risk Assessments, providing the vehicle for local water management organisations to work together to develop a shared understanding of local flood risk, including setting out priorities for action and maintenance needs.

### **Peterborough Preliminary Flood Risk Assessment (2011)**

- 2.2.11 The Peterborough Preliminary Flood Risk Assessment (PFRA) is a statutory document completed under the European Floods Directive. The PFRA process is aimed at providing a high level overview of flood risk from local flood sources, including surface runoff, groundwater, ordinary watercourses and public sewers. It is not concerned with flooding from main rivers or the sea.
- 2.2.12 Based on the evidence that was collected, the Peterborough PFRA report of June 2011 supports the national assessment that there is no 'Flood Risk Area' of national significance within Peterborough's administrative area.
- 2.2.13 Historic evidence shows that surface water flood events have not been numerous in Peterborough and are more often related to operational and local issues. On a local scale, however, risk does exist of very localised flooding and the council and its partners will continue to use the gathered information to best manage these risks.

### **Local Flood Risk Management Strategy**

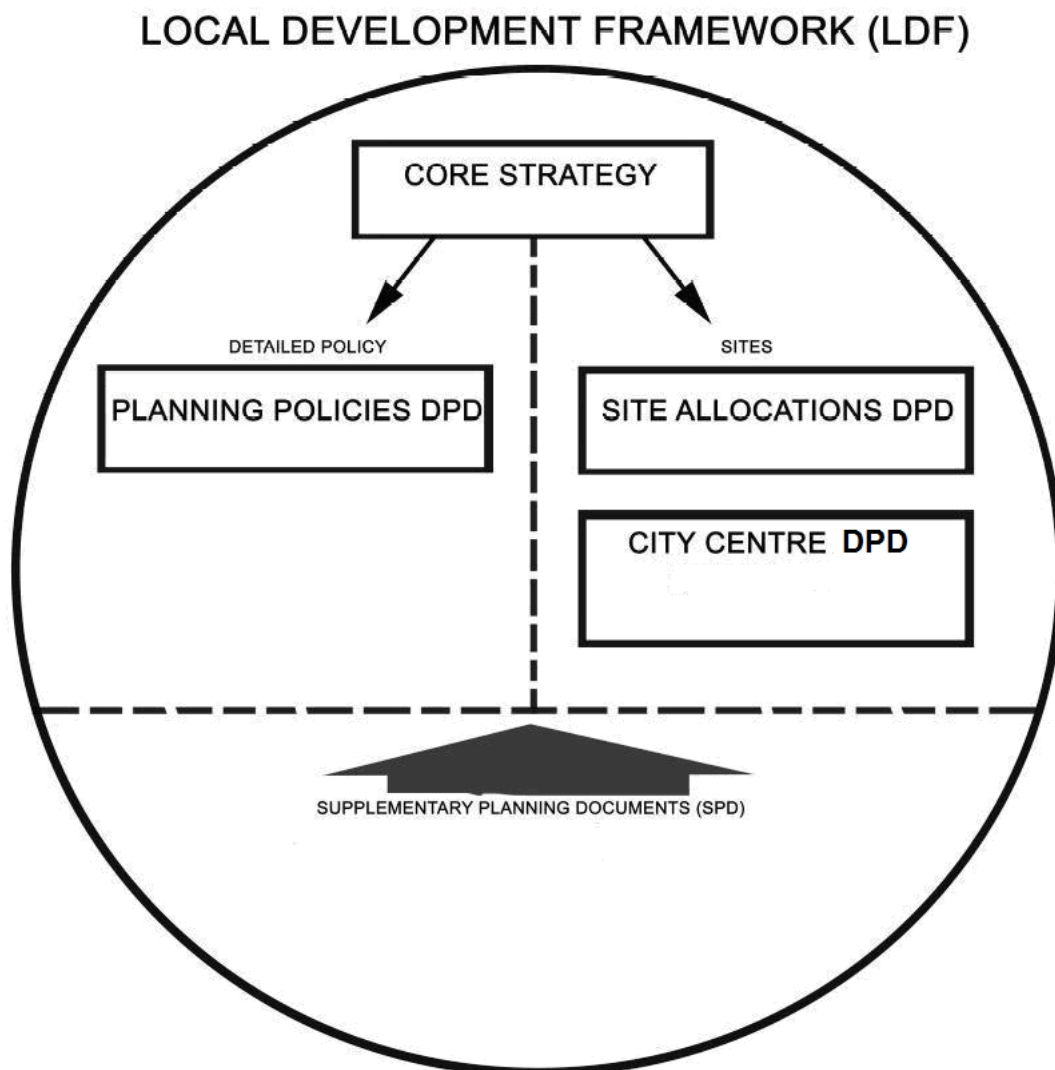
- 2.2.14 Peterborough City Council is starting work on developing its Local Flood Risk Management Strategy (as one of its other duties under the Flood and Water Management Act 2010). The strategy will cover intended management procedures for existing flood risk. It will touch on plans for new development but the detailed planning and development issues will be determined through this SPD. While the Local Flood Risk Management Strategy can be a material consideration in planning terms, the SPD will be a formal part of Peterborough's Local Development Framework governing local planning decisions and will therefore be more important to those involved in planning and development.



### 3. Flood and Water Management in Peterborough's Local Development Framework

- 3.0.1 Peterborough City Council's Local Development Framework (LDF) consists of an adopted Core Strategy Development Plan Document (February 2011) that sets the type and amount of development that will be accommodated in Peterborough up until 2026.
- 3.0.2 An emerging Planning Policies Development Plan Document provides detailed policy to assist in the determination of planning applications. The emerging Site Allocations and the City Centre Development Plan Documents identify sites for development that meet the vision of the Core Strategy.
- 3.0.3 All of the LDF documents can be supported by Supplementary Planning Documents that give detailed guidance on LDF policies, as shown in Figure 2.

Figure 2: Peterborough's Local Development Framework



- 3.0.4 This SPD provides detailed guidance to help implement policy CS22 of the adopted Core Strategy and policy PP14 of the pre submission version of the Planning Policies Development Plan Document. The two policies are as follows:

### **Core Strategy policy CS22 Flood Risk**

*“The allocation of sites for development and the granting or refusal of planning permission on such sites and any other site will be informed by:*

- *the Peterborough Level 1 SFRA (2008)\*;*
- *the Peterborough Level 2 SFRA (2009)\*;*
- *the sequential test and if necessary the exception test; and an appropriately detailed site specific flood risk assessment.*

*(\* Or any equivalent subsequent assessment)*

*Development in Flood Zones 2 and 3 will only be permitted following the successful completion of a sequential test, exception test if necessary, suitable demonstration of meeting an identified need, and through the submission of a site specific flood risk assessment demonstrating appropriate flood risk management measures and a positive approach to reducing flood risk overall.*

*No development will be permitted in rapid inundation zones, or areas not defended to an acceptable standard, other than in exceptional circumstances, unless the proposed development is classified as a water compatible use or essential infrastructure (subject to the exception test). In Zone 3a, residential development will only be permitted where the site consists of previously developed land.*

*All appropriate development should employ sustainable drainage systems (SuDS) to manage surface water run-off where technically feasible and appropriate to that part of the catchment. SuDS will be expected for all developments where run off or flash floods may threaten the integrity of any international or European site of nature conservation importance. Where such a threat exists and SuDS are not feasible, development will not be permitted. Long-term management and maintenance of SuDS should be agreed early on in the process. Economic constraints will not be accepted as a justification for non-inclusion of SuDS.*

*Where appropriate, development should help achieve the flood management goals from the River Nene and River Welland Catchment Flood Management Plans (CFMP).”*

### **Extract from Planning Policies Development Plan Document policy PP14 - The Landscaping and Biodiversity Implications of Development**

*“Planning permission for the development will only be granted if the proposal makes provision for:*

*(d) the protection and, where necessary and feasible, the enhancement of water quality and habitat of any aquatic environment in or adjoining the site. For riverside development, this includes the need to consider options for riverbank naturalisation (see Flood and Water Management SPD for further guidance).”*

## 4. Guidance on Main River Flooding to Assist Delivery of Core Strategy Policy CS22

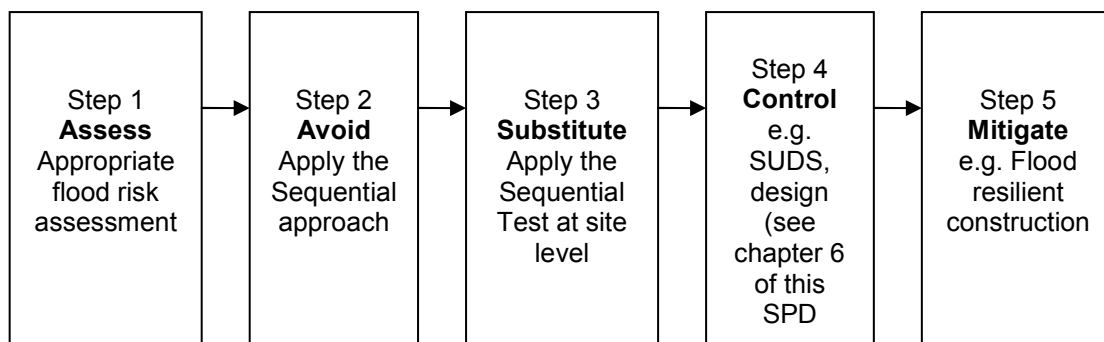
4.0.1 The aim of this chapter is to give advice on how new development in Peterborough can meet national guidance and the first three paragraphs of Core Strategy policy CS22 (see policy text in chapter 3), particularly relating to site selection. Guidance on sustainable drainage systems, which forms the other part of policy CS22, can be found in chapter 5.

4.0.2 The guidance in this chapter should be read in conjunction with national planning policy.

### 4.1 Assessing Flood Risk

4.1.1 Peterborough City Council recognises the importance of flood risk being appropriately assessed at all stages of the planning process including during the selection of development sites. In order to meet the requirements of Core Strategy Policy CS22, the overall management of flood risk in new development should be dealt with in the order shown in the following flood risk management hierarchy flowchart (Figure 3); and in accordance with the guidance set out in this chapter and in national planning policy.

Figure 3: Flood risk management hierarchy



4.1.2 This SPD does not specifically cover mitigation measures (step 5). Developers should discuss designs with the Environment Agency and make use of the following guidance:

- Improving the flood performance of new buildings: flood resilient construction (<http://www.communities.gov.uk/publications/planningandbuilding/improvingflood>)
- Flood resilience and resistance for critical infrastructure (<http://www.ciria.org/service/knowledgebase/AM/ContentManagerNet/ContentDisplay.aspx?Section=knowledgebase&ContentID=15520>)

### 4.2 Flood Zones and Vulnerability Classification

4.2.1 Flood zones and vulnerable development classifications are defined below because they should be used for assessing flood risk of all sites. Zones refer to the probability of river and sea flooding, ignoring the presence of defences.

4.2.2 Flood zones are broken down into:

- Zone 1 – Low Probability
- Zone 2 - Medium Probability
- Zone 3a – High Probability

- Zone 3b – The functional flood plain

### **Zone 1 - Low Probability**

- 4.2.3 This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). All uses of land are appropriate in this zone.
- 4.2.4 In this zone, developers and the council should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques in accordance with Core Strategy policy CS22 (see chapter 5).

### **Zone 2 - Medium Probability**

- 4.2.5 This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.
- 4.2.6 In this zone, developers and the council should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques in accordance with Core Strategy policy CS22 (see chapter 5).

### **Zone 3a - High Probability**

- 4.2.7 This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- 4.2.8 The more vulnerable and essential infrastructure uses identified in Table 1 (and defined in Appendix A) should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.
- 4.2.9 In this zone, developers and the council should seek opportunities to:
- reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques;
  - relocate existing development to land in zones with a lower probability of flooding; and
  - create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

### **Zone 3b - The Functional Floodplain**

- 4.2.10 This zone comprises land where water has to flow or be stored in times of flood. The SFRA's identify areas of functional floodplain and its boundaries.
- 4.2.11 In this zone, developers and the council should seek opportunities to:
- reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; and
  - relocate existing development to land with a lower probability of flooding.
- 4.2.12 Table 1 summarises the types of development that can be compatible in the flood zones in Peterborough. This table does not show the application of the Sequential Test which guides

development to Flood Zone 1 first, then Flood Zone 2, and then Flood Zone 3; FRA requirements; or the policy aims for each Flood Zone.

Table 1: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood risk vulnerability classification	Essential infrastructure*	Water compatible*	Highly vulnerable*	More vulnerable*	Less vulnerable*
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test required	✓	✓
Zone 3a	Exception Test required	✓	x	Exception Test required	✓
Zone 3b 'functional flood plain'	Exception Test required	✓	x	x	x
Key: ✓= Development is appropriate      x = Development should not be permitted					
* See Appendix A for definitions					

### 4.3 Preparing a Planning Application for Sites in Areas of Flood Risk

4.3.1 Landowners have the primary responsibility for safeguarding their land and other property against natural hazards such as flooding. Individual property owners and users are also responsible for managing the drainage of their land in such a way as to prevent, as far as is reasonably practicable, adverse impacts on neighbouring land. Those proposing development are responsible for:

- demonstrating that it is consistent with Core Strategy CS22 flood risk and national guidance;
- providing a flood risk assessment demonstrating:
  - whether any proposed development is likely to be affected by current or future flooding from any source;
  - that the development will be safe and where possible reduces flood risk overall;
  - whether it will increase flood risk elsewhere; and
  - the measures proposed to deal with these effects and risks. Any necessary flood risk management measures should be sufficiently funded to ensure that the site can be developed and occupied safely throughout its proposed lifetime;
- designs which reduce flood risk to the development and elsewhere, by incorporating sustainable drainage systems (see chapter 5) and where necessary, flood resilience measures.
- identifying opportunities to reduce flood risk, enhance biodiversity and amenity, protect the historic environment and seek collective solutions to managing flood risk.

4.3.2 These matters can affect the value of land, the cost of developing it and the cost of its future management and use. They should be considered as early as possible in preparing development proposals.

- 4.3.3 The process for completing a planning application with Flood Risk Assessment is illustrated in Appendix B. Applicants will be expected to follow this process to meet the requirements of Core Strategy policy CS22. The process includes application of the sequential test and exception test, where necessary. Please see national planning policy for guidance on what they are and how to apply them.
- 4.3.4 In order to confirm whether your site requires a Flood Risk Assessment, please refer to national guidance or contact the council and/or the Environment Agency.

### **The Sequential Test**

- 4.3.5 The risk based Sequential Test should be applied at all stages of planning. The aim of the Test is to steer development to areas at the lowest probability of flooding. The following advice should be read in conjunction with any national guidance which is in force at the time of applying the Test.
- 4.3.6 The Flood Zones are the starting point for the sequential approach. Zones 2 and 3 are shown on the Environment Agency Flood Map with Flood Zone 1 being all the land falling outside Zones 2 and 3. These Flood Zones refer to the probability of sea and river flooding only, ignoring the presence of existing defences.
- 4.3.7 If your site is within Zone 2 or 3 and not allocated in the Site Allocations Development Plan Document or City Centre Development Plan Document, and therefore has not already been subject to a sequential test, you should follow the process as set out in Environment Agency's Standing Advice available at:  
<http://www.environmentagency.gov.uk/static/documents/Research/SequentialTestProcess.pdf>.

### **The Exception Test**

- 4.3.8 For the Exception Test to be passed:
- (a) it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared;
  - (b) the development should be on developable previously-developed land or, if it is not on previously developed land, that there are no reasonable alternative sites on developable previously-developed land; and
  - (c) a flood risk assessment must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

### **The Sequential Approach**

- 4.3.9 If a site is already allocated in the Site Allocations DPD or City Centre DPD or if it 'passes' the Sequential and Exception Tests, then a sequential approach to flood risk should be used in designing the site layout, locating development in the lowest areas of flood risk within the site.

## **4.4 Key Flood Risk Consultees**

- 4.4.1 The council recognises the importance of sharing expertise and information to be able to deliver effective and timely decisions. Flood risk should be factored into the earliest stages of applications and decisions.
- 4.4.2 The Environment Agency (EA) is a statutory consultee for planning applications. At the pre-application stage guidance from the EA will generally involve provision of relevant flood

risk information and advice, as well as comments on the scope of site-specific Flood Risk Assessments (FRA).

4.4.3 The Environment Agency has Standing Advice available on its website (<http://www.environmentagency.gov.uk/research/planning/82584.aspx>) including, which provides advice to developers and their agents on the types of application which will need to be accompanied by a FRA and guidance on householder and other minor extensions.

4.4.4 It is also advised that internal drainage boards (IDBs) are consulted in the process. IDBs have a high level of expertise in their local area and can be a very valuable source of information. Consult the map in appendix C to see the IDB catchment area your site falls within; and appendix D to see who you should consult. It is likely that the internal drainage boards will be consulted on the following (if in doubt, please contact the council's Flood and Water Management Officer):

- major developments in Flood Zone 1 that are within, or will drain into their Internal Drainage District;
- all non-householder developments in Flood Zones 2 and 3; and
- any applications that affect an Internal Drainage Board-controlled watercourse.

## **4.5 What is a Rapid Inundation Zone?**

4.5.1 In Peterborough the eastern part of the unitary authority is currently protected by defences along the River Nene. A rapid inundation zone is an area which is at risk of rapid flooding should a flood defence structure be breached or overtopped. The zones at highest risk of rapid inundation are typically located close behind the defences. For specific detail on whether or not a site is in this zone, please contact the Environment Agency.

4.5.2 When considering whether it is possible to design a new development, which is safe and which does not increase flood risk elsewhere, surface water management must also be considered. Guidance on this is provided in chapter 5.



## 5. Guidance on Surface Water Flooding and Sustainable Drainage Systems to assist delivery of Core Strategy Policy CS22

### 5.1 Introduction

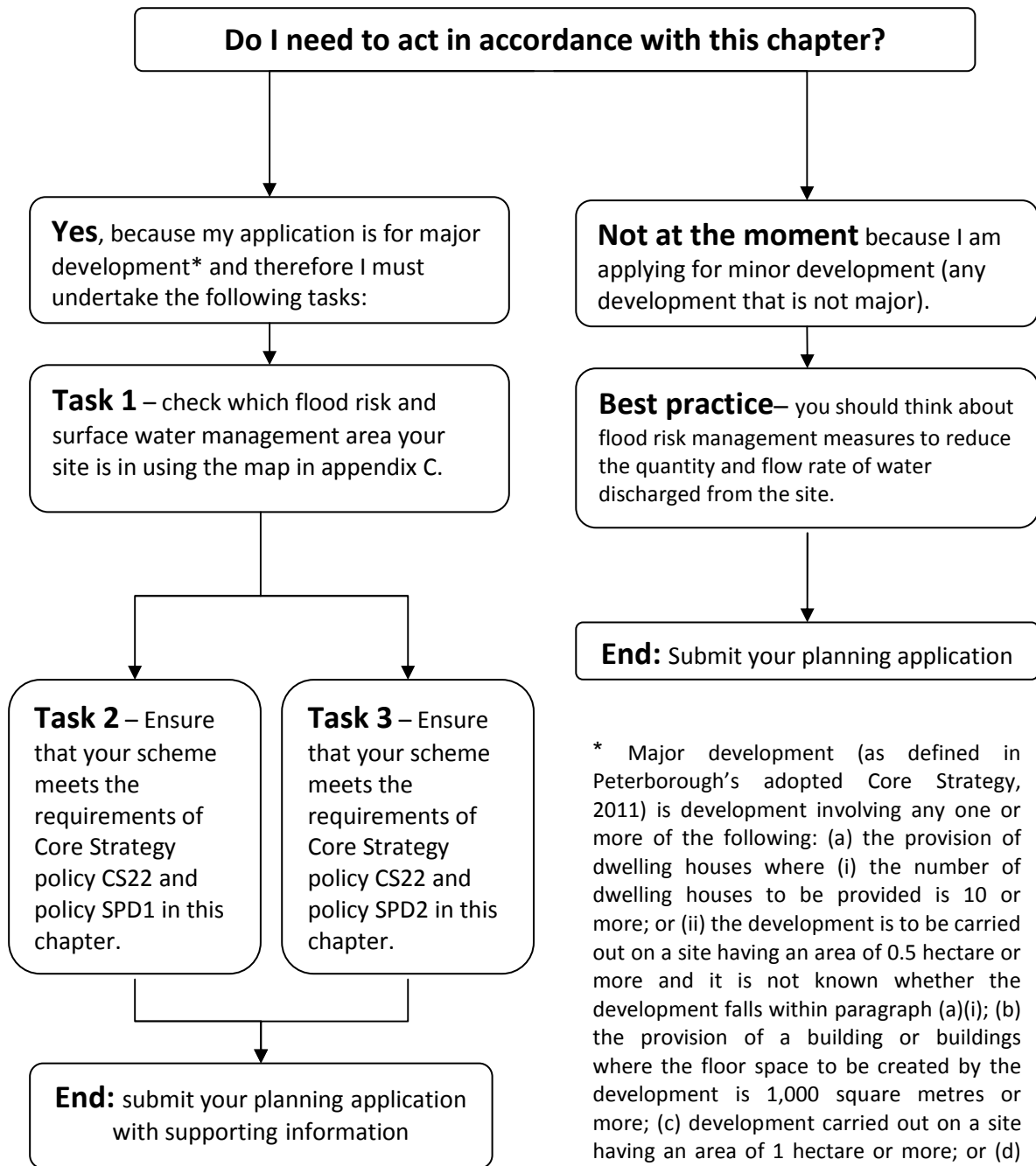
- 5.1.1 The expected increase in intense rainstorms (as a predicted result of climate change) and the nature of traditional drainage systems<sup>1</sup> means that the likelihood of surface water flooding will increase over time in Peterborough, with or without development. Any loss of permeable (porous) ground will potentially increase the risk. Therefore the city council encourages sustainable drainage for all scales of development.
- 5.1.2 The Flood and Water Management Act (2010) will create a significant change in the way that development comes forward. When fully enacted, it will put in place a system that allows developers to build sustainable drainage systems (SuDS) knowing that they can be adopted by the council in the same way that, for example, roads currently are. The Act sets out a system of approval whereby drainage strategies for sites should be submitted for review to a body known as the SuDS Approving Body (in Peterborough this will be the city council). If the system is approved, the council will then vet the construction of the SuDS as they are built, with a view to ultimately adopting a safe and fully functioning system. If approval is not given for the drainage strategy then development is not allowed to start on site, regardless of whether or not the site has planning permission.
- 5.1.3 The relevant sections of the Act are expected to be enacted during 2012 following the release by Defra of National Standards. SuDS Approving Bodies must use these Standards to determine whether drainage strategies meet requirements and, if they do, such systems should be approved. The Standards are expected to leave some design or process elements open to local interpretation. In order to ensure a smoother transition to this new process, it is therefore the city council's intention to use this SPD to explain any relevant local criteria or issues.
- 5.1.4 In the meantime it is acknowledged that there is a gap between the requirements of policy CS22, future Government guidance and council processes which need to be in place to enable an effective adoption system for SuDS. The intention of this chapter is therefore to develop a framework that can be used before the relevant provisions of the Act are brought into effect, but can also be easily supplemented for use afterwards. It is likely that updates will be made to this chapter over the coming years as Defra reveals more information about its intentions for the future of sustainable drainage systems.
- 5.1.5 It is expected that Defra will choose to phase the introduction of the requirement for different types of development to have SuDS approval, starting with larger developments first. In planning for this, the information in the following pages is currently aimed at major developments, as defined in Figure 4 below. The type of development to which the guidance in this chapter applies will change with Defra guidance, to gradually incorporate more and more types and sizes of development. Ultimately the Flood and Water Management Act intends for all development that has drainage implications to require SuDS approval. Construction that has 'drainage implications' is defined in the Flood and Water Management Act as: *"Anything done by way of, in connection with, or in preparation for, the creation of a building or other structure" that "will affect the ability of the land to absorb rainwater"*.

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<sup>1</sup> Public sewers are designed to cater for rainfall events of an annual probability of more than 33.3% (1 in 30). Larger, less common events are likely to result in surface run-off when the rainfall is very intense, as sewers cannot cope with those volumes of water in such a small period of time.

## 5.2 Application of Chapter 5

Figure 4: Application of chapter 5



## 5.3 Sustainable Drainage Systems

- 5.3.1 Sustainable drainage means managing rainwater (including snow and other precipitation) with the aim of<sup>2</sup>:
- (a) reducing damage from flooding;
  - (b) improving water quality;
  - (c) protecting and improving the environment;
  - (d) protecting health and safety; and
  - (e) ensuring the stability and durability of drainage systems.
- 5.3.2 The primary function of SuDS is to provide effective drainage. SuDS replicate as closely as possible the natural drainage of the site before development. This reduces the risk of flooding downstream of the development caused by the increased impermeable area of the new development, helps to replenish ground water and remove pollutants gathered during run-off, benefiting local wildlife. To achieve this, guidance<sup>3</sup> advises the use of a 'management or treatment train' (see Figure 5 below). SuDS schemes should be based on a hierarchy of methods. Different drainage techniques should be used in series to reduce pollution, flow rates and volumes.
- 5.3.3 Guidance recommends that the management of surface water runoff should use a combination of site specific and strategic SuDS measures, encouraging source control where possible to reduce flood risk and improve water quality.
- 5.3.4 The inclusion of green infrastructure in development is of huge benefit with regards to improving on site drainage due to the increased infiltration of water, as well as the possibility of creating flood storage areas. Likewise SuDS can also provide an amenity for the local community when incorporated as part of well designed green infrastructure. SuDS also provide opportunities to create wildlife habitats and improve local biodiversity.

Figure 5 – SuDS treatment train (source: Peterborough Surface Water Management Plan Strategic and Intermediate Assessment Report).



<sup>2</sup> Definition taken from Schedule 3 of the Flood and Water Management Act 2010.

<sup>3</sup> The SuDS Manual, Ciria, London 2007.

5.3.5 The type of provision required throughout the hierarchy of treatment will depend on which surface water management unit(s) the site falls within, as explained in policy SPD 1 in section 5.4 below.

5.3.6 Table 2 sets out types of SuDS and how they fit with the SuDS treatment train; how they store and remove water; their suitability to improve water quality; and the environmental benefits including aesthetics, amenity and ecology.

Table 2: Capability of different SuDS techniques (adapted from the CIRIA SUDS manual, table 1.7)

SuDS technique / component <sup>4</sup>	Management train suitability						Water quantity				Water quality	Environmental benefits		
	Prevention	Conveyance	Pre-treatment	Source control	Site control	Regional control	Conveyance	Detention	Infiltration	Water harvesting	Water quality improvements <sup>5</sup> processes	Aesthetics	Amenity	Ecology
Water butts, site layout & management	✓	•		✓			•	•	✓	•	•	•	•	
Permeable pavements	✓			✓	•			✓	✓	•	✓	•	•	•
Filter drain		✓		✓	•		✓	✓			✓			
Filter strips			✓	✓			•	•	•		✓	•	•	•
Swales		✓		✓	✓		✓	✓	•		✓	•	•	•
Ponds					✓	✓		✓	•	✓	✓	✓	✓	✓
Wetlands		•			✓	✓	•	✓		✓	✓	✓	✓	✓
Detention basin					✓	✓		✓			✓	•	•	•
Soakaways				✓					✓		✓			
Infiltration trenches		•		✓	✓		•	✓	✓		✓			
Infiltration basins					✓	✓		✓	✓		✓	•	•	•
Green roofs	✓		✓	✓				✓			✓	✓	•	✓

<sup>4</sup> See Appendix C for description of each type of SuDS component

<sup>5</sup> CIRIA, C697 - The SUDS manual, 2007

SuDS technique / component <sup>4</sup>	Management train suitability						Water quantity				Water quality	Environmental benefits		
	Prevention	Conveyance	Pre-treatment	Source control	Site control	Regional control	Conveyance	Detention	Infiltration	Water harvesting	Water quality improvements processes <sup>5</sup>	Aesthetics	Amenity	Ecology
Bioretention areas				✓	✓			✓	✓		✓	✓	✓	✓
Sand filters			✓		✓	•		✓	•		✓			
Silt removal devices			✓								✓			
Pipes, subsurface storage		✓			✓		✓	✓			•			

✓ = High/primary process    • = Some opportunities subject to design

5.3.7 For more details on water quality and pollutant removal mechanism in SuDS please refer to the CIRIA SUDS manual, section 1.3.4 and table 1.7, which can be downloaded from:

[http://www.ciria.org/service/AM/ContentManagerNet/Default.aspx?template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=19&ContentID=10559&TPPID=4334&AspNetFlag=1&Section=content\\_by\\_themes](http://www.ciria.org/service/AM/ContentManagerNet/Default.aspx?template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=19&ContentID=10559&TPPID=4334&AspNetFlag=1&Section=content_by_themes).

5.3.8 Appendix E provides an overview of what SuDS are and the types available and examples of best practice in Peterborough. In addition, detailed information on SuDS can also be found on the Environment Agency's website:

<http://www.environment-agency.gov.uk/business/sectors/36998.aspx>.

## 5.4 The Policies

### **Policy SPD 1 - Flood and Water Management Measures**

To meet the requirements of policies set out in Peterborough City Council's Local Development Framework, applications for major development should provide the relevant management measures (set out in appendix D) that correspond with the 'policy unit' in which the site falls (see map of policy units in appendix C).

For all sites, soakage tests to BRE365 (BRE [1991] *Digest 365 – Soakaway Design Building Research Establishment*) or equivalent standard must be carried out to help determine the scope for infiltration on site. For large sites, several such tests may be necessary to provide a reasonable understanding of possibilities for infiltration across the whole site. The results of the tests must accompany a planning application or, in the future, the drainage strategy submitted to the SuDS Approving Body.

Drainage strategies must accompany all applications to demonstrate clear consideration (in order) of options for discharge to ground and discharge to watercourse, before discharge to public sewers will be considered by the council (as the Local Planning Authority or, in future, as the SuDS Approving Body).

Where there are site constraints limiting the implementation of recommended management techniques, other SuDS options such as permeable paving, green roofs and rainwater harvesting tanks must be provided. If conventional piped drainage is proposed, adequate justification must be provided to show why no SuDS measures are deemed feasible. However, in accordance with the specific requirements in appendix D, SuDS should be provided on all developments where run-off or flash floods may threaten the integrity of any international or European site of nature conservation importance.

A drainage strategy and SuDS plan should be submitted with planning applications or, in the future, a SuDS application, to assess the implications of proposed development on the receiving environment and identify any infrastructure required to enable development. Applicants should consult the relevant stakeholders identified in the table in appendix B before and during the drainage strategy design process. Applicants with sites requiring a Flood Risk Assessment (FRA) are encouraged to submit their drainage strategy and SuDS designs at the same time as the FRA, preferably in one document.

- 5.4.1 The Checklist at Appendix F provides the basis for the information that needs to be submitted for any SuDS proposal, indicating at which stage information should be provided (Pre-application, Outline, full and reserved matters). Policy SPD 1 requires that the FRA and drainage strategy are submitted as an integrated document, in order to ensure that flood risk and drainage schemes are developed together. Site drainage is a key part of flood risk management.
- 5.4.2 It is important that the cumulative impact on surface water drainage systems of development across the city is considered holistically considering the local constraints, catchment response, flood risk, strategic opportunities and other wider benefits as opposed to assessing each case on a site by site basis.
- 5.4.3 The Surface Water Management Plan (SWMP) process confirms the benefits of clearly setting out the most appropriate approaches to flood risk and surface water management in Peterborough. The SWMP recommends that Peterborough be divided up into specific surface water management units that account for local conditions such as ground conditions, catchment response, proximity to major watercourses and localised drainage issues. The city council, as local planning authority, endorses this approach and gives such an approach a statutory bonus as part of this SPD. The types of measures required vary

across Peterborough, depending on the policy unit that a site is in. Each management unit is defined in Table 3 below. The map in appendix C shows the policy unit areas allowing the public, stakeholders and partners to see clearly which parts of Peterborough fall into which units.

Table 3: Description of the policy units

Policy Unit	Policy Unit Name	Description
1	Undefended Lower Nene Corridor	Fluvial Nene Flood Zone 3b, functional floodplain
2	Stanground Lode System	Surface water sewers catchment draining to the Stanground Lode
3	Padholme Catchment	Catchment to the east of Peterborough's urban area and as defined within the Padholme Catchment Strategy
4	Thorpe Meadows System	Catchment west of the railway line, draining south towards Thorpe Meadows and the River Nene
5	Fletton Spring System	Surface water sewers catchment draining to Fletton Spring
6	Orton Dyke System	Surface water sewers catchment draining to Orton Dyke
7	Peterborough Brooks Catchment	Surface water sewers catchment draining north to the Peterborough Brooks (Marholm Brook, Werrington Brook, Brook Drain) and ultimately into the Welland.
8	City Centre System Draining to the Nene	Combined and surface water sewers catchment in the City Centre and the urban area to the north draining into the River Nene
9	City Centre System Draining to the Car Dyke	Fengate area draining east into the non main Car Dyke
10	Nene South System	Combined and surface water sewers catchment south of the City Centre draining into the River Nene
11	Upper Nene	River Nene rural catchment upstream of Peterborough
12	Welland	Rural area of Wothorpe and Burghley Park
13	North Level District Internal Drainage Board	Catchment drained by the North Level District Internal Drainage Board
14	Welland and Deeping Internal Drainage Board	Catchment drained by the Welland and Deeping Internal Drainage Board
15	Middle Level Commissioners Internal Drainage Board	Catchment drained by the Middle Level Commissioners Internal Drainage Board
16	Whittlesey and District Internal Drainage Board	Catchment drained by the Whittlesey and District Internal Drainage Board

5.4.4 The partners outside the city council that should be consulted for pre-application discussions and which must be consulted for planning applications, are also listed for each unit in appendix D.

5.4.5 The policy units have been designed so that where an IDB catchment area overlaps with another policy area, the policies in the non IDB catchment prevail, on the understanding that the relevant IDB is consulted on any planning proposals falling within their area or impacting on systems which eventually outfall in their network.



- 5.4.6 Where a proposed development site overlaps two or more policy units, the applicant would need to consult the council to determine the best approach to drainage and flood risk management.

### **Padholme Catchment**

- 5.4.7 The Padholme Catchment Strategy (2004) was devised based on Local Plan allocations. The Strategy is currently under review to ensure that a clear and appropriate site discharge solution is agreed by all partners for the development proposed in the Core Strategy, Site Allocations and City Centre DPDs. Developers with non-allocated sites coming forward within the Padholme boundary should contact Peterborough City Council for advice. This SPD is as applicable to development proposed within the Padholme catchment as it is to any other area of the city.
- 5.4.8 The city council encourages all parties wishing to develop within this defined catchment to engage in early discussion with the council.

### ***Policy SPD 2 - Sustainable Drainage Design Principles***

**In addition to the requirements set out in Policy SPD1, the following will also be required to meet Policy CS22 of Peterborough's Core Strategy:**

- (a) The design of all schemes must follow the 'treatment train' approach as illustrated in figure 5 of this SPD; and**
- (b) All schemes must protect and enhance water quality by reducing the risk of diffuse pollution; and**
- (c) If the site is brownfield, options for use of SuDS must be demonstrated ahead of discharge to existing surface water sewer connections; and**
- (d) If the site is brownfield and in an area of combined sewers, it is expected that the site discharge to sewerage system will be at an absolute minimum. Alongside source control measures, sites will be expected to use infiltration measures including green roofs, on-site water re-use and recycling measures and consider discharge to watercourse before any discharge to sewers will be permitted.**
- (e) If the site is greenfield, the design of SuDS must take into account original greenfield drainage patterns and the rate of run-off must be no greater than the greenfield rate; and**
- (f) All SuDS schemes must be designed to ensure that the health and safety of people and animals is not put at risk. The environment created by SuDS must be a safe one. One of the council's key SuDS objectives is to move away from the use of barriers, and for the schemes to be inherently safe due to being shallow with very gradual slopes. A health and safety statement/risk assessment must be submitted with all schemes to demonstrate that this principal has been applied; and**
- (g) All SuDS schemes must create good quality spaces, have a positive impact on the landscape and where possible, provide amenity value for residents; and**
- (h) Biodiversity, wildlife and ecology must be taken into account. PCC recognises that not all types of SuDS provide wildlife and ecological benefits. However, the applicant is required to show that where practicable, the SuDS scheme has been designed to benefit biodiversity, wildlife and ecology; and**

## ***Policy SPD 2 – Sustainable Drainage Design Principles (Continued)***

- (i) Where possible, schemes should allow for connection to the Peterborough Green Grid; and
- (j) Applications for all new development must incorporate permeable areas into the scheme. This applies to all of the surface water management units; and
- (k) If an application site adjoins a watercourse, development must be set back from it to allow for access. It will also be expected that the development will drain to this watercourse subject to approval from the relevant water management authority; and
- (l) If an application site adjoins the River Nene, the council will consider allowing rapid discharge of surface water to the River where it can be demonstrated that this does not increase flood risk from it; and
- (m) Where applicable, previously culverted watercourses should be opened up to create more natural drainage and reduce the likelihood of bottlenecks that can occur and cause flooding in localised areas.

5.4.10 The layout and design of SuDS and other flood risk management measures must be considered at the beginning of the development process using the design principles set out in this document. A key element to successful SuDS is integrating the design into the development master plan/site layout at an early stage, whilst also considering how SuDS will be maintained. Good SuDS design also requires early and effective consultation with all parties that are involved in the approval process including the city council, the Environment Agency and the relevant stakeholders identified in the table in appendix D.

## **5.5 Related Drainage Measures**

### **Rapid Discharge**

5.5.1 Rapid discharge to the River Nene is a method that might be appropriate from riverside sites (as shown in the management measures table in appendix D), although source control is likely to still be required. It is recognised that for riverside sites slowing down the discharge of water to the River Nene through the normally required attenuation measures might not be the best thing for wider flood risk management. In the event of large river flows coming down the River Nene from storms in Northampton, it might be better if Peterborough's surface water is removed from the system before these higher flows arrive. Peterborough City Council is willing to consider this as an option for riverside sites subject to the developer undertaking modelling to justify that flood risk from the River Nene will not be increased under certain rainfall conditions if rapid discharge is allowed. If developers wish to pursue this route they should jointly contact the council's Flood and Water Management Officer and the Environment Agency to allow discussion about modelling work required.

### **Removal of Surface Water from Combined Sewers**

5.5.2 This measure applies to brownfield redevelopment sites where surface water has historically drained into combined surface water and foul sewers. Appendix G provides a map of the location of combined sewers in Peterborough.

5.5.3 Where sewers take rain water as well as foul, this puts significant pressure on the network in the event of heavy downpours. In an environment where urbanisation has increased the

amount of surface run-off entering the sewers, the risk of both foul and surface water flooding is increased as capacity in the system is reduced. The long term aim of the council and the local water company is therefore to reduce, as much as possible, the amount of surface water discharging to combined sewers (leaving these to transport just foul water from existing and future developments).

- 5.5.4 Applicants will be expected to provide SuDS appropriate to the policy unit to ensure that surface water run off from the new development drains as sustainably as possible. Where it can be demonstrated that infiltration to the ground is not possible, green roofs and water recycling measures will be expected in order to reduce the quantity of surface water.

## **5.6 Permeable Paving**

- 5.6.1 If an area of proposed hard standing at the front of a dwelling house exceeds 5 square metres, it is required to be permeable (made of porous materials) or provision made to direct run-off water from the hard surface to a permeable or porous area or surface within the curtilage of the dwelling (part F of the General Permitted Development Order [http://www.legislation.gov.uk/ukxi/2008/2362/pdfs/ukxi\\_20082362\\_en.pdf](http://www.legislation.gov.uk/ukxi/2008/2362/pdfs/ukxi_20082362_en.pdf))
- 5.6.2 Under Parts 8, 32, 41 and 42 of the 2010 amendments to the General Permitted Development Order, it is possible for Warehouses/Industrial, Schools, Offices and Shops/Retail to implement certain floor areas of hard standing without planning permission. Please refer to the 2010 amendments: <http://www.legislation.gov.uk/ukxi/2010/654/contents/made>.

## **5.7 Current submission requirements in Peterborough<sup>6</sup>**

- 5.7.1 The Council requires planning applications for major development to be accompanied by a drainage strategy following the checklist in appendix F. If a Flood Risk Assessment (FRA) is required, it is encouraged that the drainage strategy be prepared and submitted at the same time. Developers are also strongly encouraged to include the drainage strategy as part of the FRA. Due to the close links between the two, this approach will reduce the time required for partners to review these elements of the application.
- 5.7.2 Major development not requiring a FRA must still submit a drainage strategy.

## **5.8 Adoption**

- 5.8.1 Once the Flood and Water Management Act is enacted Peterborough City Council will adopt SuDS built in accordance with National Standards and approved by the SuDS Approval Body. The council is actively working to put effective systems in place ready for the change in legislation. In the meantime the council recognises the difficult situation developers are in with adoption of SuDS.
- 5.8.2 The responsibility for the future maintenance of drainage systems lies with the developer and hence it is likely that management companies will need to be established. The council is however keen to support developers in finding alternative adoption arrangements. Where site discharge can flow to Internal Drainage Board systems this is supported by the council. The water and sewerage provider in Peterborough will also consider adoption of certain systems and developers may wish to enter discussions on this matter<sup>7</sup>.

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<sup>6</sup> These will be updated once the SuDS Approval Body (SAB) process becomes law as the SuDS approval process will run alongside but effectively be separate from the planning process.

<sup>7</sup> <http://www.anglianwater.co.uk/developers/sewer-connection/suds.aspx>

5.8.3 The council and all of Peterborough's flood risk management partners encourage early discussion, preferably at pre-application stage, with any potential drainage partners. This will ensure that a suitable drainage system is agreed without abortive work or avoidable delays to the planning process.

## 6. Guidance on Water Quality, Aquatic Habitats and River Naturalisation to assist delivery of Policy PP14

6.0.1 This section provides guidance to assist implementation of point (d) of policy PP14 -The Landscaping and Biodiversity Implications of Development (see chapter 3 for the policy text).

### 6.1 The Water Framework Directive in Peterborough

6.1.1 Part d) of policy PP14 is effectively driven by the Water Framework Directive (WFD). This European Directive came into force in December 2000 and was enacted into UK law in December 2003. The WFD uses river basin districts as a base for managing the water environment and its ecological potential. Different water bodies, defined as groups of watercourses within each river basin, are categorised based on four elements which together determine the overall ecological potential of the specific water environment:

- Biology
- Chemical water quality
- Physical structure
- Water quantity

6.1.2 The WFD requires Member States to achieve 'good ecological status' in all surface freshwater bodies by 2015. **The Directive therefore also sets out the need for there to be 'no deterioration' in the ecological potential of the water environment.** Any modifications or measures which would put a water body at risk of failure to meet WFD are unlikely to be permitted.

6.1.3 The majority of watercourses in Peterborough are not in their natural state. Modifications such as channel straightening or dredging have taken place over centuries for reasons such as transport, urbanisation, land drainage and flood defence. These have resulted in reductions in the ecological potential of the region's watercourses.

6.1.4 Where rivers still serve these important purposes, channels cannot just be returned to a more natural state. There are, however, actions that can be taken to mitigate against the detrimental impacts that these changes have on the ecology of the watercourses.

6.1.5 Table 4 shows the 2009 status of the local water bodies.

6.1.6 Most development near a river or watercourse will have the potential to impact on the water quality and, in turn, on the biodiversity of the water body.

*Table 4 A summary of the classification of water bodies within Peterborough.*

Water Body Group	Status	2009 Ecological Quality	2009 Chemical Quality	2015 Predicted Ecological Quality	2015 Predicted Chemical Quality
Folly River	Heavily Modified	Moderate Potential	Does Not Require Assessment	Moderate Potential	Does Not Require Assessment
Maxeys Cut	Heavily Modified	Moderate Potential	Does Not Require Assessment	Moderate Potential	Does Not Require Assessment

<b>Water Body Group</b>	<b>Status</b>	<b>2009 Ecological Quality</b>	<b>2009 Chemical Quality</b>	<b>2015 Predicted Ecological Quality</b>	<b>2015 Predicted Chemical Quality</b>
Nene	Heavily Modified	Moderate Potential	Fail	Moderate Potential	Fail
Stanground Lode	Heavily Modified	Moderate Potential	Good	Moderate Potential	Good
Old River Nene	Heavily Modified	Good Potential	Does Not Require Assessment	Good Potential	Does Not Require Assessment
Welland	Artificial	Moderate Potential	Good	Moderate Potential	Good
Brook Drain	Heavily Modified	Moderate Potential	Does Not Require Assessment	Moderate Potential	Does Not Require Assessment

## **6.2 What Factors Influence the WFD Status of Rivers?**

6.2.1 The following factors can influence the WFD status of rivers:

- **New development (housing, employment, retail etc.)** – for example through factors such as water supply, demand, abstraction; wastewater discharge; site drainage; and location of development.
- **Highway provision** – in considering how highways interact with the water bodies. Can pollutants enter the river where roads cross watercourses, and do the highways eventually drain to a watercourse, for example?
- **Minerals and waste planning** - contamination from works and restoration of land.
- **Tourism, recreation and navigation** – for example, the effects of uses on the river and whether changes have been made to the river for these uses; potential for contamination; how aesthetically pleasing the environment is.
- **Community engagement** – how people and businesses interact with their rivers and voluntary action to improve habitats.

6.2.2 The council is keen that local policy supports the implementation of the European Directive and that development in Peterborough does not compromise (but in fact aids) achievement of WFD requirements. The following section gives further guidance on how new development can do this.

## **6.3 How does new development influence the WFD status of rivers in Peterborough?**

### **Water supply, demand, abstraction & wastewater discharge**

6.3.1 Issues of water supply, demand, abstraction and wastewater discharge are normally dealt with by the Environment Agency dealing directly with the local water company or industrial

organisations. However, should the water supply or wastewater discharge needs of any future development be likely to cause deterioration in WFD status, local authorities and developers will need to take this into consideration.

### **Site drainage and sustainable drainage systems**

- 6.3.2 Improving the quality of discharge from sites is one of the key aims of sustainable drainage systems. There are known surface water sewer outfalls to the following main rivers in Peterborough; the Brook Drain; Werrington Brook; River Nene; and Stanground Lode. Consequently any changes to contributions to the network upstream of these outfalls should take due account of the WFD targets. In the long term, drainage related issues will be dealt with by the SuDs Approving Body (SAB) as part of Defra's intended SuDS approval process which will run alongside the planning process. This may therefore become a SAB issue in future, rather than strictly a planning issue.

### **Development location**

- 6.3.3 Riverside development is likely to want to make the most of the river to enhance the aesthetics of the location. When landscaping measures are carried out these should be co-ordinated with the Environment Agency so that methods also provide ecological benefits or to help facilitate a locally desired partner project. Part d) of policy PP14 in the Planning Policies DPD seeks to encourage river naturalisation using measures such as those listed in Appendix H. These methods are examples of those currently used (where appropriate to individual sites) by the Environment Agency to improve the ecological potential of Main Rivers.



## 7. Implementation and Monitoring

7.0.1 Those that will help to deliver this SPD and put flood risk and water management policies into action are:

- Peterborough City Council
- Applicants and their agents
- The Environment Agency
- Anglian Water
- North Level District Internal Drainage Board
- Middle Level Commissioners
- Welland and Deeping Internal Drainage Board
- Whittlesey and District Internal Drainage Board

7.0.2 Appropriate indicators and targets have been identified to monitor the effectiveness of Core Strategy policy CS22 and Planning Policies policy PP14, which are set out in Table 5 below. An additional indicator has been developed on surface water flows into sewers. The results of annual monitoring will identify which policies are succeeding, and which need revising or replacing because they are not achieving the intended effect.

*Table 5: Indicators and targets for policies CS22 and PP14*

Indicator	Target
Number of brownfield development reducing surface water flows into sewers.	All developments should seek a reduction of surface water discharge into public sewer and incorporate SuDS.
Number of planning permissions granted contrary to the advice of the Environment Agency on flood risk and water quality grounds.	No planning permissions granted contrary to the advice of the Environment Agency.
Percentage of new dwellings in flood risk zones 2, 3a and 3b.	None in 3b.
The number of new dwellings on Greenfield sites in flood risk zones 3a and 3b.	None.
Number of permissions that are contrary to the SuDS guidance contained in this SPD.	None.

## 8. Glossary

**Amenity** - a general term used to describe the tangible and intangible benefits or features associated with a property or location that contribute to its character, comfort, convenience or attractiveness.

**Biodiversity** – all species of life on earth including plants and animals and the ecosystem of which they are all part.

**Defra** – Department for Environment, Food and Rural Affairs

**Greenfield land** – land which has not been developed before, other than for agriculture or forestry buildings or buildings associated with parks, recreation grounds and allotments.

**Green Infrastructure** – a network of protected sites, nature reserves, green spaces, waterways and greenway linkages (including parks, sports grounds, cemeteries, school grounds, allotments, commons, historic parks and gardens and woodland). It offers opportunities to provide for a number of functions, including recreation and wildlife as well as landscape enhancement.

**Local Development Framework** - the collective term for the whole package of planning documents which are produced by a local planning authority to provide the planning framework for its area.

**Ordinary Water Course** - An Ordinary Watercourse is defined as any watercourse not identified as a Main River on maps held by the Environment Agency and Defra. Main Rivers are watercourses designated as such on Main River maps (held by the Environment Agency) and are generally the larger arterial watercourses.

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