CABINET

MONDAY 20 JULY 2015
10.00 AM

Bourges/Viersen Room - Town Hall
Contact – gemma.george@peterborough.gov.uk, 01733 452268

AGENDA

Circulation
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PETERBOROUGH CITY COUNCIL

MINUTES OF CABINET MEETING HELD 15 JUNE 2015

PRESENT:

Cabinet Members: Councillor Holdich (Chair), Councillor Fitzgerald, Councillor Hiller, Councillor Lamb, Councillor North, Councillor Scott, Councillor Seaton and Councillor Serluca.

Cabinet Advisors: Councillor Casey and Councillor Maqbool.

1. APOLOGIES FOR ABSENCE

Apologies for absence were received from Councillor Elsey.

2. DECLARATIONS OF INTEREST

There were no declarations of interest.

3. MINUTES OF THE CABINET MEETING HELD ON 7 APRIL 2015

The minutes of the meeting held on 7 April 2015 were agreed as a true and accurate record.

4. PETITIONS PRESENTED TO CABINET

Councillor Peach presented a petition on behalf of the residents of Broadway Gardens, which sought exploration into issues being faced with regards to noise pollution being created by Peterborough Regional College.

Councillor Casey presented a petition on behalf of the residents of Wild Lake, Orton Malbourne, which requested that more car parking spaces be created for the residents of Wild Lake, due to the current provision being less than adequate.

Councillor Holdich advised that the petitions would be presented to the relevant officers for response.

STRATEGIC DECISIONS

5. CUSTOMER STRATEGY

Cabinet received a report which followed the development of the Strategy as a result of the Customer Experience Programme being agreed within the Medium Term Financial Strategy.

The Council's Service Director, Adult Services and Communities, and the Social Inclusion Manager introduced the report highlighting the main issues contained within. The Strategy was the first draft and had been completed to ensure the customer was at the heart of all that the Council did. The Strategy supported the Council's intent to become a commissioning organisation and the Strategy would ensure all Council services adhered to the same principles. If approved, an action plan would be developed to ensure it was embedded across the organisation.

Cabinet debated the report and key points raised and responses to questions included:

- Customer experience was key and needed to be embedded across the Council;
- Not all residents had access to IT solutions. It was important to ensure that these individuals were not overlooked;
- All Partners and Contractors would follow the Council's Customer Strategy;
- Commissioners would need to understand the principles of the Strategy;
- There would not be a 'one size fits all' solution and the more vulnerable members of the public were addressed within the Strategy;
- The success of the Strategy would be measured on customer feedback and engagement through different partners and commissioners;
- If the Strategy was right, fewer people should be seen contacting customer services and officers for routine information;
- A digital solution would provide a 24/7 contact scenario for a number of areas within the Council;
- Training and staff development would be undertaken to ensure the high quality delivery of customer services. This should be at the heart of each staff member's appraisal and council reports as a standard;
- The 'My Peterborough App' was extremely useful. Ensuring people were aware of what support was available was a key part of the approach, and collaboration between services would be required in order to deliver a single outcome;
- The Council's Customer Charter and the Customer Strategy were linked, however the Customer Charter was more about individual service standards;
- Staff retention and recruitment was an important factor, particularly during busy times. There needed to be focus on this as well as on training;
- The Council's Complaints Procedure had always been historically difficult to navigate but from 1 July 2015 a new streamlined procedure was being introduced;
- The call centre had recently been through its annual customer service excellence accreditation and this had gone extremely well. Cabinet passed its congratulations on to those involved in passing the accreditation; and
- Peaks and troughs should be addressed by providing appropriate staff coverage.

Cabinet considered the report and **RESOLVED** to approve the proposed Customer Strategy.

REASONS FOR THE DECISION

The Strategy provided a framework for ensuring the Council's services were customer focused.

ALTERNATIVE OPTIONS CONSIDERED

The first option considered was to do nothing, however this may have led to the development of services and delivery of the Customer Experience Programme without an agreed strategic approach, and may not have enabled the most effective and beneficial process for customer service improvements to be achieved.

The second option considered was to delay developing the Strategy until the Customer Experience Programme had been completed. This was rejected because the development of the Strategy and the Customer Experience programme should not be mutually exclusive.

MONITORING ITEMS

6. BUDGET MONITORING REPORT FINAL OUTTURN 2014/15

Cabinet received a report as a monitoring item. The report was also to be submitted to Audit Committee on 29 June as part of the closure of accounts process.

The report provided Cabinet with the outturn financial position for both the Revenue Budget and Capital Programme for 2014/15, subject to any changes required in the finalisation of the detailed statutory statement of accounts.

The report also contained performance information on treasury management activities, payment of creditors and collection performance for debtors, local taxation and benefit overpayments.

Councillor Seaton introduced the report highlighting the main issues contained within. He further advised of the difficult financial challenges faced by the Council and the impacts upon the Budget. Work was due to commence on the next years' budget and the report demonstrated the strength of financial management that can tackled pressures faced.

Cabinet debated the report and key points raised and responses to questions included:

- The response to the pressures put on the budget over the year indicated the Council's resilience and ability to respond to such issues;
- Reduction in grant available for public health had been announced, the impact being around £663k to Peterborough, for which representation would be made to Government;
- Cabinet and Members would be briefed following that national budget on 8 July 2015; and
- Nominations for the Cross Party Budget Working Group would be sought.

Cabinet considered the report and **RESOLVED** to note:

1. The final outturn position for 2014/15 (subject to finalisation of the statutory statement of accounts) of a balanced position on the Council's revenue budget;

2. The final outturn spending of £108.8m under the Council's capital programme 2014/15;

3. The reserves position for the Council, including the use of £0.6m from reserves to support the budget in 2014/15, which was less than forecast as actions have reduced pressures;

4. The performance against the prudential indicators;

5. The performance on treasury management activities, payment of creditors, collection performance for debtors, local taxation and benefit overpayments; and

6. The forecast budget gap of over £10m for 2016/17 was expected to increase with the update of national expenditure plans, and that Cabinet may need to review 2015/16 plans in light of the Budget to be released on 8 July 2015 .

REASONS FOR THE DECISION

The report formed part of the closure of accounts and decision making framework culminating in the production of the Statement of Accounts and informs Cabinet of the final position.

ALTERNATIVE OPTIONS CONSIDERED

There were no alternative options considered or required.

7. OUTCOME OF PETITIONS

Cabinet received a report following the presentation of a petition to Full Council on 15 April 2015.

The purpose of the report was to update Cabinet on the progress being made in response to the petition, this being:

i) Parking along Nottingham Way.

Cabinet considered the report and **RESOLVED:**

To note the actions taken in respect of the petition presented to Council (as detailed below).

REASONS FOR THE DECISION

As the petition presented in the report had been dealt with by Cabinet Members or officers, it was appropriate that the action taken was reported to Cabinet, prior to it being included within the Executive's report to full Council.

ALTERNATIVE OPTIONS CONSIDERED

There were no alternative options considered.

Chairman
10.00pm – 10.55am

CABINET	AGENDA ITEM No. 5
20 JULY 2015	PUBLIC REPORT

Cabinet Member(s) responsible:	Councillor Peter Hiller, Cabinet Member for Growth, Planning, Housing and Economic Development	
Contact Officer(s):	Simon Machen, Corporate Director Growth and Regeneration	Tel. 453475
	Julia Chatterton, Flood and Water Management Officer	Tel. 452620

PETERBOROUGH FLOOD RISK MANAGEMENT STRATEGY

RECOMMENDATIONS	
FROM : Cabinet Member for Growth, Planning, Housing and Economic Development	**Deadline date :** N/A
That Cabinet recommends to Full Council that the Peterborough Flood Risk Management Strategy be adopted.	

1. ORIGIN OF REPORT

1.1 This report has been prepared in order to meet a statutory requirement for the Council to adopt a local flood risk management strategy. This follows public consultation on a draft strategy last year.

2. PURPOSE AND REASON FOR REPORT

2.1 The purpose of this report is to consult and seek agreement from Cabinet that the Peterborough Flood Risk Management Strategy (abbreviated to FMS in this report) be recommended for approval by Full Council.

2.2 This report is for Cabinet to consider under its Terms of Reference No. 3.2.1 to take collective responsibility for the delivery of all strategic Executive functions within the Council's Major Policy and Budget Framework and lead the Council's overall improvement programmes to deliver excellent services.

3. TIMESCALE

Is this a Statutory Plan?	Yes	If Yes, date for relevant Cabinet meeting	27th July 2015
Is this a Major Policy Item?	Yes	If Yes, date for relevant Council meeting	14th October 2015

4. PETERBOROUGH FLOOD RISK MANAGEMENT STRATEGY

Background to the FMS

4.1 The Flood and Water Management Act 2010 (FWMA 2010) makes Peterborough City Council a Lead Local Flood Authority with responsibility for co-ordinating the management of surface water flood risk (flooding from surface runoff, groundwater and ordinary watercourses). Lead Local Flood Authorities have a duty to develop, maintain, apply and monitor a 'local flood risk management strategy' which must specify:

- The level and types of flood risk in the area

- The flood management organisations and their responsibilities
- The functions these organisations carry out
- Objectives for managing the risk
- The measures proposed to achieve these objectives and how and when these are expected to be implemented
- The costs of the measures and how these will be paid for
- The benefits of the measures
- How the strategy contributes to the achievement of wider environmental objectives
- How and when the strategy will be reviewed.

4.2 The statutory minimum obligation for the FMS is to consider the types of flood risk for which Peterborough City Council is responsible. However the FMS has been developed as a partnership plan with all of the flood and water management organisations. The FMS therefore explains flood risk from all sources, not just those that the Council is responsible for. It includes actions from all partners to provide one document that can be a Peterborough resource for all organisations, Council officers and residents interested in finding out about flood risk. Apart from improved efficiency and co-operation this also provides benefits when applying for external funding as it is now imperative for organisations to demonstrate partnership support.

4.3 The FMS consists of a main report, an action plan and several appendices. Accompanying the FMS there is also a Strategic Environmental Assessment and an Equality Impact Assessment. The key issues for focus are:

- Understanding the Council's responsibilities (Chapter 1)
- Agreeing the objectives set (Chapter 5) as these steer the measures proposed.
- Understanding the most significant flood risks in Peterborough (Chapter 7)
- The need for all flood and water management organisations to financially contribute to schemes in order to unlock any Government funding (Chapter 9)
- The range and type of actions to be delivered and the costs of these (Chapter 10 and the accompanying action plan).

4.4 The FMS objectives are:

1. Improve awareness and understanding of flood risk and its management to ensure that the city council, partner organisations, stakeholders, residents, communities and businesses can make informed decisions and can take their own action to become more resilient to risk.
2. Establish efficient co-ordinated cross-partner approaches to flood and water management and to response and recovery, including sharing and seeking new resources together.
3. Reduce flood risk to prioritised areas and strategic infrastructure, ensuring that standards of protection elsewhere are maintained.
4. Improving the sustainability of Peterborough; ensuring an integrated catchment approach and proper consideration of the water environment and its benefits in new and existing urban and rural landscapes.

5. CONSULTATION

5.1 Extensive engagement with the public and partner organisations has taken place alongside and following the enactment of the FWMA 2010. The engagement included holding public flood awareness events and flood warden training, consulting on the now adopted Flood and Water Management Supplementary Planning Document, writing to Parish Councils, attending resident, neighbourhood and Scrutiny meetings, learning from flood incidents and working very closely with other flood management organisations to share understanding and shape the FMS. A list of the engagement events and consultations which have taken place is on page 2 of the FMS.

5.2 Following approval by Cabinet in September 2014, the FMS underwent a six-week public consultation period in November and December 2014. Comments were received from partner and statutory organisations and from flood wardens and residents. The comments received from this have been addressed within the FMS, as detailed in section 5.5 below.

5.3 The principal flood and water management authorities involved in developing this plan (the Environment Agency, the Internal Drainage Boards and Anglian Water) have supplied information and have had the opportunity to review the FMS as it has developed.

5.4 As business cases are worked up for the individual projects within the action plan more detailed consultation will be undertaken with communities, Ward and Parish Councillors.

Consultation Outcomes

5.5 Updates and/or amendments have been made to the document to cover the following areas:

- Throughout – Changes to Government policy on sustainable drainage; more references have been included to refer the reader to related external information and a range of general updates and amendments;
- Chapter 2 – Additional background on Peterborough's geology, hydrology and heritage (scheduled monuments);
- Chapter 7 - Details about Main River and Reservoir flooding; protection standards; improved diagrammatic explanation of how the Whittlesey/Nene Washes work; greater clarity on describing risk levels in Peterborough and an improved groundwater risk section;
- Chapter 8 - Additional quantitative data on climate change; and references to examples of vulnerable receptors in Peterborough such as designated wildlife sites;
- Action plan - Made easier to monitor; actions renumbered with a simpler system; priority column removed; progress of the actions updated; and amendments made to the included actions:
    - Additional actions: Encourage opportunities for woodland creation where these would bring flood risk benefits; public services co-operation agreement; groundwater evidence base
    - Removed actions: SuDS Approving Body, River Nene structure automation, Middle Nene WFD and flood risk management project
- Public summary - Improved separate public document.

Scrutiny

5.6 The Sustainable Growth and Environment Capital Scrutiny Committee considered this item prior to the public consultation in 2014. At their request they also received a written briefing in March 2015 notifying them of the changes that have been made post-consultation.

6. ANTICIPATED OUTCOMES

6.1 The following outcomes are anticipated:

I. That Cabinet will support the FMS and recommend it to Full Council for its approval and adoption.
II. If Cabinet approves the FMS, it will progress to the next available Full Council on 14th October 2015.

6.2 If the FMS is adopted, it will be published on our website. The main report of the FMS will be reviewed on a five year cycle, but progress with the action plan will be formally monitored and published on a yearly basis with updates made as required.

7. REASONS FOR RECOMMENDATIONS

7.1 The FMS will:

- Meet statutory requirements;
- Make Peterborough more resilient to flooding;
- Help to co-ordinate and attract investment into Peterborough for both flood risk management and wider environmental and amenity improvements;
- Aid the delivery of sustainable growth;
- Assist with the city's aspiration to create the UK's Environment Capital;
- Be a reference guide for Council officers, Flood Warden, Parish Council and communities who want to more know more about flood and water management.

8. ALTERNATIVE OPTIONS CONSIDERED

8.1 The Council is required to produce a 'local flood risk management strategy' in accordance with its duties as a Lead Local Flood Authority. It is therefore not an option to not produce a strategy. The only available alternative is to produce a document that covers only the sources of flooding that Peterborough City Council is responsible for. This option was rejected in favour of preparing a plan in partnership with all other flood risk management authorities, covering all sources of flood risk. The chosen option is believed to be more useful for the reader, more efficient to implement and more likely to enable Peterborough to attract partnership funding.

9. IMPLICATIONS

9.1 The FMS will have implications for all areas of Peterborough and anyone that is at risk of flooding.

9.2 Location
The impact of the FMS is city-wide.

9.3 Equality
An equality impact assessment has been undertaken and no significant equality impacts have been raised by the FMS. In future if the FMS is adopted and if individual schemes within the action plan are implemented, the equality impacts of these schemes will need to be fully considered through the design and consultation processes.

9.4 Legal
The Council must prepare an FMS and must follow due Regulations in its preparation in order to fulfil the requirements under the FWMA 2010. Business case approval will be required for each project and this will include a full review of any legal considerations.

9.5 Financial
The projects proposed in the action plan will need to have their own business cases developed and approved before delivery could take place. The same rule applies for the Council as for each project partner within their own organisation. At business case stage financial approval will be required.

9.6 The following Council budgets are currently funding the type of flood risk and water management related work that is included in the action plan: Resilience, Flood and Drainage, Highway Maintenance, Highways Salary budget, Strategic Planning and the Future Cities Demonstrator project (Peterborough DNA).

9.7 The action plan shows measures proposed by the Council to achieve its four objectives (Chapter 5 of the FMS). In order for the proposed measures to become deliverable actions each item on the action plan will need to be worked up in more detail and tested for deliverability and viability through the business case process. Implementation of the FMS does not require any additional Council revenue budgets. Delivery of the action plan in full would require either budgets to remain at their present value or outside funding to be

secured. The significant budgetary constraints that the Council faces are well noted and for this reason projects will have to be carefully prioritised based on the benefits. Funding will also be sought from a wide range of sources.

9.8 While the total cost of the ten year partnership action plan is notable the larger schemes making up most of these actions are Main River schemes proposed for Government funding. These will be led by the Environment Agency. In order for Government funding to be drawn down, local contributions from the Regional Flood and Coastal Committee, local authorities, communities and/or businesses are required for all schemes. The split of this contribution over several sources means, however, that direct contributions needed from the Council would be small compared to the total project costs and the benefits that would be delivered. Externally led schemes will still require a Council business case if a funding contribution is to be made. Those applying for Government funding will also be agreed and overseen by the Regional Flood and Coastal Committee on which the Council has Cabinet Member representation.

9.9 Currently the Council's flood and water management function has no capital budget. Depending on the designs of schemes and agreements over which organisation is to own the asset(s) produced, the Council may be unable to deliver a small number of the schemes without a small capital budget stream in future. However few Council capital schemes are currently proposed, and for any that are, or that come forward in future, alternatives sources of funding will be explored. One example is that projects that deliver growth benefits will apply for monies collected through the Planning Obligations Implementation Scheme (POIS) or Community Infrastructure Levy (CIL). The risk with regards to competition for these funds is noted.

9.10 Dependencies and Risks

Delivery of projects may be affected by the need to obtain planning consent; flood defence or ordinary watercourse land drainage consent, landowner permission, maintenance agreements, funding and partner approval as well as by updated information about the levels of risk (e.g. flood modelling) or about the constraints on a particular site (such as archaeology or ecology).

9.11 Environment Capital

The FMS is consistent with creating the UK's Environment Capital as the one of the strategy's aims is that delivery of flood risk management schemes also bring wider environmental benefits, such as improvements to water quality, biodiversity and public amenity. The FMS also considers the issues around Peterborough becoming more resilient to changes in climate and availability of water as a natural resource.

9.12 Cross-Service Implications

Preparation of the FMS has involved several teams within the Growth and Regeneration and Governance Directorates. Delivery will be principally lead by Growth and Regeneration but there will need to be close partnership working with the following teams from other Directorates: Resilience; Finance; Legal; Neighbourhoods; the Peterborough Highways Services Framework and the Strategic Resources/Serco framework. Consultation will continue with all relevant teams as projects within the action plan are worked up in more detail.

10. BACKGROUND DOCUMENTS

10.1 Flood and Water Management Act 2010

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PETERBOROUGH

FLOOD RISK MANAGEMENT STRATEGY (FMS)

Public Summary

Peterborough
Creating the UK's Environment Capital

PETERBOROUGH
CITY COUNCIL

Front cover image: Whittlesey Washes in use. Source: Peterborough City Council
This page: Werrington Brook. Source: Patricia Taylor

INTRODUCTION

What is the Peterborough Flood Risk Management Strategy (FMS)?

The FMS is Peterborough's strategy and action plan for the future of flood risk management. It explains the flood risk in Peterborough, who the responsible organisations and individuals are, how funding for flood risk management projects works and what actions are proposed to manage the risk.

It has been written by Peterborough City Council with input from the Environment Agency Anglian Water, North Level District Internal Drainage Board, Middle Level Commissioners, Welland and Deeping Internal Drainage Board, the Highways Agency and the Local Resilience Forum.

This document is a summary, provided to give an overview of the contents of the FMS. This document is also open to consultation.

Why is it being prepared?

Under the Flood Water Management Act 2010 Peterborough City Council is now a Lead Local Flood Authority (LLFA). This means that the city council is responsible for co-ordinating the management of flood risk from surface water, groundwater and ordinary watercourses. The Act brings many new powers and duties, one of which is the preparation of a local flood risk management strategy.

It has been agreed by the flood risk management authorities in Peterborough that the FMS will cover all sources of flood risk, not just those managed by the city council. This will enable better co-ordination of approaches and actions across organisations.

Aims

The aims of the Peterborough Flood Risk Management Strategy are:

a) To confirm and raise awareness of the risk and management of flooding in Peterborough

b) To set out a clear plan of actions to tackle local issues and opportunities

c) To take a comprehensive partnership approach to flood risk management, considering other elements of water and environmental management that are affected or can be improved

d) To co-ordinate the actions of the different water management authorities to ensure projects and schemes are as efficient as possible and that joint funding opportunities are sought.

River Nene at the Embankment. Source: Peterborough City Cou

WHO IS RESPONSIBLE FOR WHAT?

If the flooding is an emergency affecting safety please call 999.

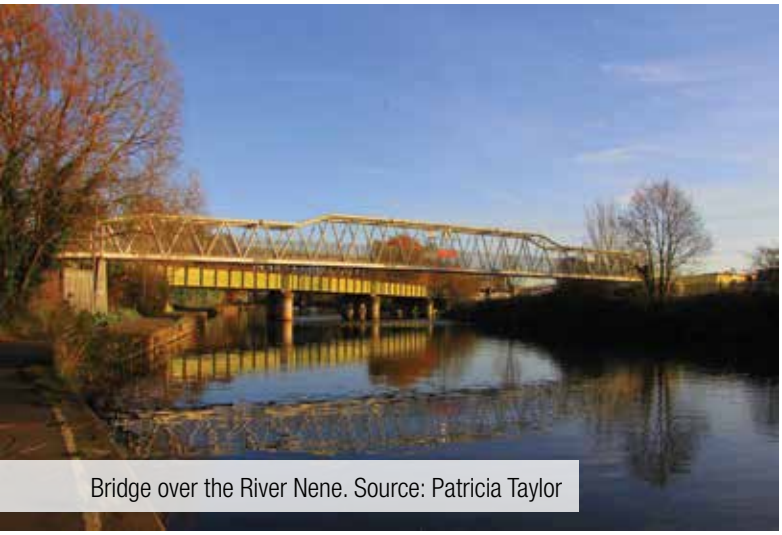
Organisation	Responsibility	Contact details
Peterborough City Council	Surface runoff from heavy rainfall (including highway drainage) Ordinary watercourses Groundwater	Tel: 01733 747474 Out of hours tel: 01733 864157 Email: watermanagement@peterborough.gov.uk
The Environment Agency	Main Rivers Tidal flooding Reservoirs	General tel: 03708 506506 Floodline: 0345 988 1188
Internal Drainage Boards	Managing the water levels in watercourses within Fen areas (the northern and eastern rural areas of Peterborough)	North Level District IDB Tel: 01733 270333 Email: eng@northlevelidb.org
		Welland and Deeping IDB Tel: 01775 725861 Email: info@wellandidb.org.uk
		Middle Level Commissioners Tel: 01354 653232 Email: admin@middlelevel.gov.uk
Highways England	Draining the major A roads in Peterborough	Tel: 0300 123 5000 Email: info@highwaysengland.co.uk
Anglian Water (as Peterborough's water company)	Sewers	Tel: 0800 771 881 Email: anglianwatercustomerservices@anglianwater.co.uk
Other utility companies	Electricity, gas, and communication networks	UK Power Networks (electricity) Tel: 0800 783 8838
		National Grid gas emergencies (gas) Tel: 0800 111 999
Property owners	Protection of your individual property from flooding	-
Riverside landowners	Ensuring the flow of water in watercourses on or adjoining your land	
Developers	Ensuring development has no negative impact on flood risk and wherever possible provides improvement	-

The full draft Peterborough Flood Risk Management Strategy can be viewed online at: http://www.peterborough.gov.uk/floodstrategy

WHAT FLOOD RISK DOES PETERBOROUGH FACE?

What different types of flood risk exist in Peterborough and how significant is the risk?

A variety of different sources of flood risk are relevant to Peterborough. Each risk is discussed below on the basis of flooding that could occur when the capacity of the system is exceeded.



Bridge over the River Nene. Source: Patricia Taylor

Main River
These are watercourses which have been designated as Main River by the Government due to their risk level. Peterborough has 17 Main Rivers listed in section 7.9.3 of the Peterborough Flood Risk Management Strategy. Some of these flow into the River Nene and some into the River Welland (both of which are Main Rivers themselves). Main Rivers can be tidal or non-tidal. In Peterborough the only tidal stretch of river is on the Nene downstream of the Dog in a Doublet sluice. The FMS rates the average risk of non-tidal Main River flooding in Peterborough as being high and the risk of tidal Main River flooding as low.

Combined Nene river and tidal event
This is the risk of a North Sea high tide occurring at the same time as a Main River event. When this occurs water is directed into the Nene (Whittlesey) Washes flood storage reservoir to prevent flooding of Peterborough. If the Washes ever reach capacity eg because both river levels and high tides are higher than normal for several days, the impact of flooding would be significant. Overall, the risk is described as high in the FMS.

Ordinary watercourse
Any ditch or watercourse not designated as Main River is known as an ordinary watercourse. Flooding generally occurs when local rainfall is significant enough that the watercourse flow overtops the banks. The FMS rates the risk from this type of flooding as low.

Groundwater
When water rises up from underlying rocks and emerges onto the surface of the ground this can cause groundwater flooding. Flooding tends to occur after long periods of sustained rainfall and in low lying areas where the water table is at a shallow depth. On average the FMS rates the risk from this type of flooding as medium.

Surface water
Flooding from surface water occurs when very intense rainfall causes surface water sewers and/or drainage ditches to become full and so water instead flows across the ground. Surface water flooding can be common but is generally very localised and so the overall average risk is low.

Foul sewers
There are not many locations in Peterborough classed as being at risk from foul flooding due to capacity issues. Therefore the FMS does not rate this risk. Any properties that are at risk in this way, are recorded by Anglian Water on a register called the DG5 register.

Overflowing surface water sewer. Source: Peterborough City Council

The Dog in a Doublet Sluice protects Peterborough against tidal flooding. Source: Peterborough City Council

Combined sewer
Combined sewers take both rainwater (surface water) and wastewater (foul water). The risk of flooding from these comes when very heavy rainfall reduces the capacity in the sewer. On average the FMS rates the risk from this type of flooding as high.

Internal Drainage Board pumped catchment
The Fen areas of Peterborough have a carefully managed pumped catchment which uses ordinary watercourses and diesel and electric pumps to manage the water levels. Very localised waterlogging and surface water flooding is possible over short time frames but with minimal impacts and hence the FMS rates the risk from this type of flooding as low. Large scale failure of the drainage board systems is of considerably lower probability and would have to coincide with significant Main River flooding elsewhere in Peterborough and the region.

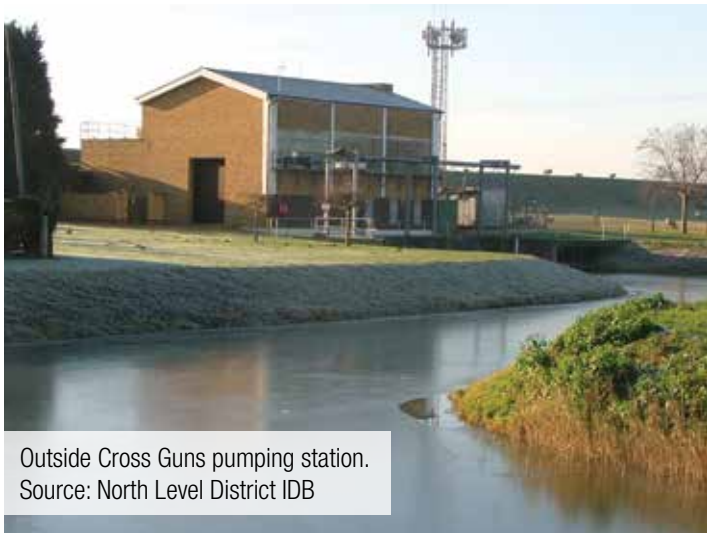
Reservoirs
The risk in Peterborough of flooding from reservoirs is considered low. This is because reservoirs are generally well designed, managed and monitored to reduce this risk and because the landscape means that any water escaping from the reservoir would spread far producing low flood depths.

Flooding can also occur due to operational issues. This could be because of blockages in the network eg from fat put down the drains, fly tipping or tree roots; from damage to pipes, eg from wear and tear or vandalism; or from the collapse of a pipe or river bank.

How can I find out about the risk in my local area?

Publicly available flood maps exist for Main River risk, for surface water risk and for the risk from reservoirs. To view these maps and discover the risk for your area please visit:

http://maps.environment-agency.gov.uk/wiyby



Outside Cross Guns pumping station. Source: North Level District IDB

Inside Cross Guns pumping station. Source: North Level District IDB

FLOOD WARNINGS

The Environment Agency provides a free flood warning service to properties mapped within the Environment Agency Main River flood zones. You can sign up to receive flood warnings by calling Floodline on **0345** 988 1188 or by signing up online.

To find out about flood alerts or warnings please visit the Environment Agency's flood website: http://apps.environment-agency.gov.uk/flood/31618.aspx

New text here

There is currently no warning system for surface water flooding but we recommend keeping an eye on the local weather forecast for heavy rainfall warnings.

HOW WILL THE RISKS BE MANAGED?

In order to manage the risks that Peterborough faces, the FMS includes an **Action Plan** of more than 50 actions to be implemented. This follows the successful delivery of a series of actions after the Flood and Water Management Act 2010 was first put in place. Appendix E lists the major actions completed so far.

In the **Action Plan** each action is listed with details about the lead organisation, timescales and costs. Actions are also measured against a set of objectives to ensure that these actions bring a range of different benefits to Peterborough.

Examples of the different types of actions in the FMS are provided below, set out by objective.

Objective 1 - Improve awareness and understanding of flood risk and its management, to ensure that everyone can make informed decisions and take their own action to become more resilient to risk.

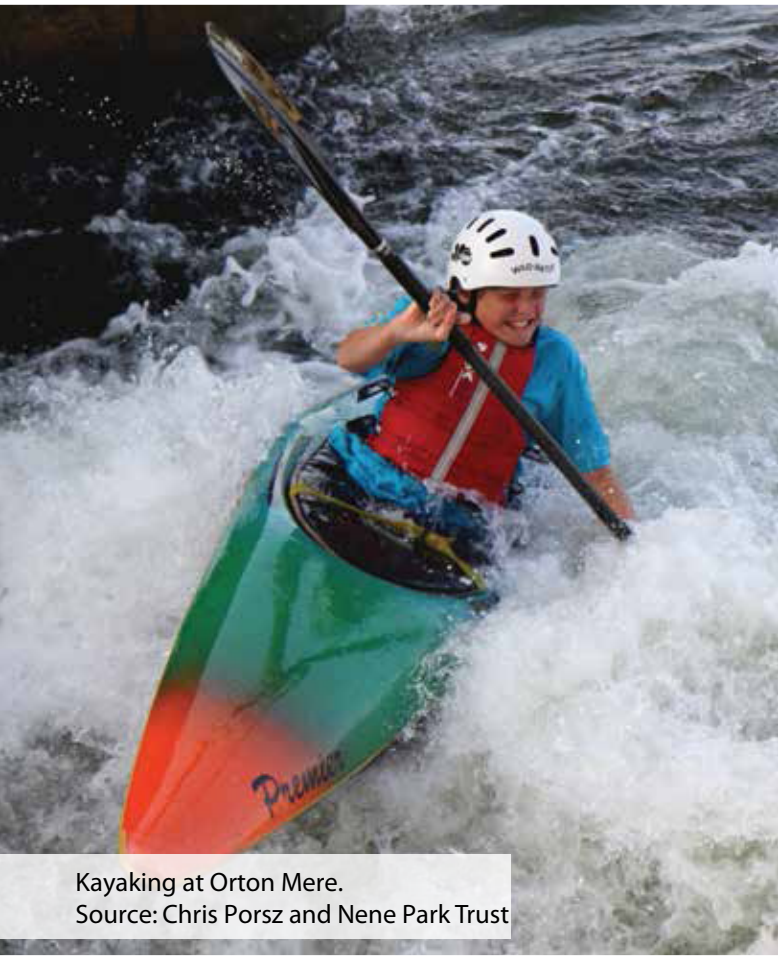
- Deliver targeted community engagement to raise awareness of flood risk
- Recruit more flood wardens
- Carry out further research into groundwater flood risk
- Undertake surveys of watercourses and sewers to improve our data
- Update the Strategic Flood Risk Assessment for new development
- Run Keep-it-Clear campaigns in areas experiencing sewer blockages
- Develop a severe weather recording system to enable analysis of the impacts of extreme weather events
- Install rain gauges around Peterborough to provide better rainfall data
- Deliver wider engagement campaigns to encourage community involvement in protecting watercourses and the environment.

Objective 2 - Establish efficient co-ordinated cross-partner approaches to flood and water management and response and recovery, including sharing and seeking new resources together.

- Maintain a register of important assets across Peterborough that affect flood risk
- Continue working together under the umbrella of the Peterborough Flood and Water Management Partnership to seek opportunities and resolve issues as they arise
- Work closely with other flood risk management organisations to find the most efficient ways of delivery services
- Update the Multi Agency Flood Plan for emergency response.

Objective 3 - Reduce flood risk to prioritised areas and strategic infrastructure, ensuring that standards of protection elsewhere are maintained .

- Continue to carry out maintenance of watercourses, pumps, sewers and other assets
- Improve the focus on surface water management through the planning process
- Work with the community within several wards to better understand the flood risk in those areas
- Reduce the risk from city centre combined sewers
- Brook Drain river and rail project
- Dogsthorpe flood alleviation project
- Paston Brook flood alleviation project - culvert improvements
- Whittlesey (Nene) Washes reservoir works to strengthen the south barrier bank
- Continue to engage with utility companies about infrastructure resilience projects
- Welland Flood Banks refurbishment scheme



Kayaking at Orton Mere.
Source: Chris Porsz and Nene Park Trust

Objective 4 - Improve the wider sustainability of Peterborough, ensuring an integrated catchment approach and proper consideration of the water environment and its benefits, in new and existing environments.

- Werrington Brook improvements programme – develop a programme of works to improve water quality, habitat and flood risk in the northern urban area of Peterborough. Will include business and community engagement, funding bids and channel works.
- Welland Flood Banks refurbishment scheme – combined scheme to ensure standards of flood protection are maintained in the Welland catchment and improve the river corridor habitat of Maxey Cut to make it more resilient to a changing climate.
- Prepare an Adaptation Plan to help Peterborough become more resilient to climate change and changes in natural resources.
- Review the Flood and Water Management Supplementary Planning Document in line with any future Local Plan reviews.
- Undertake a variety of actions within the city council to help deliver the sustainable water theme of the Environment Capital Action Plan.

For further information on actions please consult the **Action Plan** and Chapter 10 of the full FMS provides a description of the proposed projects and the full action plan table is included in Appendix F.

Enjoying the outdoors.
Source: Chris Porsz and Nene Park Trust

HOW IS IT FUNDED?

There are many different sources of funding contributing towards flood management actions proposed in Peterborough. The main sources are discussed below with a brief description of their applicability:

Government Grant in Aid - Will fund 45% of large capital schemes. It is essential that local contributions are also put forward to match fund.

Regional Flood and Coastal Committee Local Levy and IDB precepts - Can top up applications for government grant in aid or fund smaller schemes or preliminary studies. Counted as a local contribution.

Contributions from organisations such as Peterborough City Council, Anglian Water and the Internal Drainage Boards - Can fund or top up the funding for any type of project. The schemes have to be in the organisation's business plans in advance and internal business case approval will still be required. Counted as local contributions.

Development related funding such as Community Infrastructure Levy - Can fund or be used to top up funding for projects. Project must have benefits for new growth in Peterborough.

Community contribution - Financial contribution provided by a local business and/or community benefitting from the scheme.

In-kind funding eg in the form of hours spent maintaining a feature - Can be used as part match funding. Demonstrates support of a project by the organisation/community group proposing to contribute their time.

Staff time provided by all organisations - Officers carrying out research, data compilation, report writing or preparing funding applications etc.

WHAT HAPPENS NEXT

Monitoring and review

The FMS will be reviewed every 5 to 6 years but the **Action Plan** will be monitored and updated annually as projects evolve.

New text goes here.

WHAT CAN I DO TO HELP REDUCE FLOOD RISK?

- Prepare a personal flood plan yo protect yourself and your property. Guidance is available from: **https://www.gov.uk/prepare-for-a-flood/make-a-flood-plan**
- Keep your drains at home clear of fats, oils, greases, baby wipes and other 'unflushables' which can also cause flooding
- Become a flood warden - if you live in or near a flood risk area and would be happy alerting and supporting other residents when a warning is issued as well as being a central point of contact for the Environment Agency and the city council
- Help to keep local watercourses free of blockages which can cause flooding, for example, don't drop litter or tree cuttings into them
- Join a local community RiverCare group in Peterborough to get involved in caring for your local river. Find out more on the RiverCare website (part of the Keep Britain Tidy campaign): www.keepbritaintidy.org/rivercare/551

- Tell us what you know - if you live in the Peterborough area and have seen or experienced flooding in the past we would like to hear from you. We want to improve our records of historic flood events to help us better understand flood risk.

Late afternoon sunset along the Nene.
Source: Patricia Taylor

For further information you can:

Email: watermanagement@peterborough.gov.uk

Telephone: 01733 452650 , or

Write to: Flood and Water Management
Growth and Regeneration
Peterborough City Council
Town Hall, Bridge Street
Peterborough PE1 1HF


Cambridgeshire & Peterborough
999
Local Resilience Forum


middle level
commissioners


HIGHWAYS
AGENCY


in partnership with
Environment
Agency


NORTH LEVEL DISTRICT
INTERNAL DRAINAGE BOARD


Welland & Deepings
Internal Drainage Board


love every drop
anglianwater

ADDITIONAL TEXT TO BE INSERTED INTO THE PREVIOUS DRAFT DOCUMENT WHEN THIS MOCK UP IS FINALISED FOR PUBLICATION

PAGE 7 INSERTION

The following nationally standardised flood warning codes are used to alert communities to river flooding:

 FLOOD ALERT Meaning: **Flooding is possible. Be prepared.**	Flood Alerts are issued for locations that are at risk of flooding. Advice: • Remain vigilant. • Monitor local forecasts and water levels. • Be prepared to act on your personal or community flood plan. • Prepare flood kits of essential items.
 FLOOD WARNING Meaning: **Flooding is expected. Immediate action required.**	Flood warnings are issued to specific communities that are at risk from flooding or for specific stretches of coast and river. Advice: • Put flood protection equipment in place. • Move valuable belongings and pets upstairs.
 SEVERE FLOOD WARNING Meaning: **Severe flooding. Danger to life.**	Severe warnings are used in extreme conditions when flooding is posing significant risk to life or significant disruption to communities which could also cause risk to life. Advice: • Ensure you are in a safe place with a means of escape. • Be ready should you need to evacuate. • Co-operate with the emergency services. • Dial 999 if you are in immediate danger.
Flood Warnings no longer in force The Environment Agency issues a message to tell people that the flood threat has passed. Flood water could be around for several days so take care. Contact your insurance company as soon as possible if you have been flooded.	

PAGE 9 INSERTION - Under the heading 'Monitoring and review':

Each of the actions will need to be worked up in more detail and funding sources secured. The city council and their partner organisations will seek to develop projects by working with the local community to identify potential funding sources and the full range of benefits that can be achieved.

All actions have a number of dependencies and risk associated with them such as gaining business case approval, landowner permission, flood defence consent and/or planning permission.

Peterborough Flood Risk Management Strategy (FMS)

Peterborough Flood Risk Management Strategy

Flood Risk Management Strategy Production

This document has been prepared by Peterborough City Council (the Lead Local Flood Authority) with input from the Environment Agency, Anglian Water, North Level District Internal Drainage Board, Middle Level Commissioners, Welland and Deeping Internal Drainage Board, Highway England and the Local Resilience Forum.

This document has been prepared by collecting information over the last four years about flood risk in Peterborough and about the needs to build resilience against flooding. The following table sets out some of the major events that have contributed to the development of this strategy and the remaining stages required for finalisation and adoption.

Stage	Event	Date
Evidence gathering - significant community engagement	Continuous involvement of Flood and Water Management Partnership	2010 - 2014
	City Centre Flood Awareness Fair	September 2011
	Letters sent to all parish councils to invite them to nominate flood wardens	September 2011
	Issued community newsletter	Spring 2012
	Development of Flood and Water website for residents and developers	April 2012
	Thorpe Gate Residents meeting	April 2012
	Flood Awareness Fair – West Ward	February 2013
	Preparation of Flood and Water Management Supplementary Planning Document	December 2012 – December 2013
	Presentation to Scrutiny Commission for Rural Communities	March 2013
	Cambridgeshire Community Resilience Event	April 2013
	Peterborough Community Resilience Event	June 2013

	Association of Drainage Authorities Woking Demonstration Fair	July 2013
	Engagement as part of response to Main River flood incidents	November – December 2013, February 2014
	Engagement as part of response to surface water flooding incidents	August 2011, April - August 2012, Winter 2013/14, June 2014
Development	Consultation draft being developed	2014
Consultation draft published	Public consultation on the draft Flood Risk Management Strategy	November – December 2014
Revision	Comments assessed and incorporated wherever appropriate	January 2015 - June 2015
Partnership review	Involvement in significant changes as document is updated	February 2015
Adoption	Peterborough Flood Risk Management Strategy proposed for adoption by Peterborough City Council	July - October 2015
Implementation and monitoring		2015 – 2020
First review		2020

Associated documents

1. *FMS Action Plan*
2. *FMS Public Summary*
3. *Equality Impact Assessment*
4. *Strategic Environment Assessment of the Peterborough Flood Risk Management Strategy*, Peterborough City Council

Closely related documents

1. *Anglian River Basin Management Plan,* Environment Agency*:*

Further information

For all general queries about flood risk and water management visit the website at www.peterborough.gov.uk/water

OS Maps – Copyright Note

Contents

1. Introduction

1.1. Aims

1.1.1. The aims of the Peterborough Flood Risk Management Strategy are:

a) To confirm and raise awareness of the risk and management of flooding in Peterborough
b) To set out a clear plan of actions to tackle local issues and opportunities that is updated each year.
c) To take a holistic and cross-partner approach to flood risk management, considering other elements of water and environmental management that are affected or can be improved.
d) To co-ordinate partner actions to ensure projects and schemes are as efficient as possible and that joint funding opportunities are sought.

1.1. Requirement, review procedures and Peterborough's approach

Requirement

1.1.1. The Flood and Water Management Act 2010 (FWMA 2010) set out a significant change to responsibilities with regards to how flood risk is managed in England and Wales. Under the FWMA 2010, Peterborough City Council is a Lead Local Flood Authority (LLFA) with a responsibility for co-ordinating 'local flood risk' management. With this comes several other new duties and powers. Each of these is explained further in chapter 3.

1.1.2. Section 9 of the Act sets out the requirement for LLFAs to develop, maintain, apply and monitor a 'local flood risk management strategy'. The strategy must specify:

a) The flood risk in its area
b) The risk management authorities
c) The management functions carried out
d) Objectives for managing the risk
e) The actions to achieve the objectives
f) The costs of those actions and how they are to be paid for
g) The benefits of the actions
h) How and when the strategy will be reviewed
i) How the strategy contributes to the achievement of wider environmental objectives

1.1.3. The local flood risk management strategy for Peterborough is entitled the Peterborough Flood Risk Management Strategy and given the acronym FMS.

1.1.4. The Act requires the FMS to be consistent with the National Flood and Coastal Erosion Risk Management Strategy. Further details can be found in sections 3.3 and 3.4.

'Local' flood risk

1.1.5. In setting out the city council's statutory requirement for a local flood risk management strategy, the term 'local' is specifically defined in paragraph 9, section (2) of the FWMA 2010 as including the sources of flood risk listed below.:

a) ordinary watercourses
b) groundwater, and
c) surface runoff

1.1.6. These sources of risk are then explained in paragraph 1, section 6 of the FWMA 2010 as:

> (3) "Ordinary watercourse" means a watercourse that does not form part of a main river.
>
> (4) "Groundwater" means all water which is below the surface of the ground and in direct contact with the ground or subsoil.
>
> (5) "Surface runoff" means rainwater (including snow and other precipitation) which—
>
> (a) is on the surface of the ground (whether or not it is moving), and
>
> (b) has not entered a watercourse, drainage system or public sewer.
>
> (6) In subsection (5)(b)—
>
> (a) the reference to a watercourse includes a reference to a lake, pond or other area of water which flows into a watercourse, and
>
> (b) "drainage system" has the meaning given by paragraph 1 of Schedule 3.

Figure 1-1: Extract from section 6 of the FWMA 2010

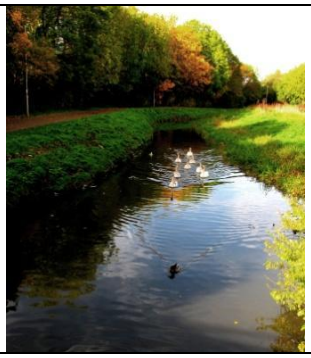
Peterborough City Council must co-ordinate management of flooding from:		
		
Surface runoff (often referred to as surface water)	**Ordinary watercourses**	**Groundwater**

Figure 1-2: Illustration of the sources of flood risk for which an LLFA has responsibilities

1.1.7. To clarify figure 1-1, responsibility for Main Rivers is not included in the city council's powers. A Main River is a watercourse shown on the statutory Main River map held by the Environment Agency and the Department of Environment, Food and Rural Affairs. This can include any structure or appliance for controlling or regulating the flow of water into, in or out of the channel. The Environment Agency has permissive powers to carry out works of maintenance and improvement on these rivers.

Peterborough's approach

1.1.8. To meet the regulations and Peterborough City Council's legal responsibilities, it would be acceptable if the FMS only dealt with this 'local' risk. However it is more appropriate for the FMS to be inclusive of all types of flood risk management. Seventeen of the watercourses in urban and rural areas of Peterborough are classified as Main River and present a notable risk to both homes and businesses. These would otherwise be excluded from the FMS. Flood risk from surface runoff, groundwater and ordinary watercourses may also interact with other sources of flooding including sewers and Main Rivers to worsen the impacts. It is important to consider the interaction of flooding from all sources to correctly assess the actual flood risk to a location. For example, since many ordinary watercourses and surface water sewers (taking rainwater) in the city ultimately flow into a Main River, when river water levels are very high, water will not be able to discharge and will instead overflow from the ordinary watercourses and the sewers.

1.1.9. Responsibility for different sources of flood risk sits with different organisations as discussed in chapter 6. However through working together with all of the water management organisations operating in Peterborough, the city council has produced a strategy that co-ordinates flood risk management, and which residents and businesses can use to find answers to the questions they wish to ask.

1.1.10. The Government's National Flood and Coastal Erosion Risk Management Strategy sets out certain visions and aims for the FMS (section 3.3.3) which have been followed in the preparation of the FMS, as required by the FWMA 2010. Taking these as a starting point, the FMS aims to be more holistic than requirements set out. We have instead discussed all sources of flood risk relevant to Peterborough and set out how other water and environmental management issues and pieces of legislation affect flood risk management and taken these into consideration in the plan of action that the city council and its partners wishes to take forward.

1.1.11. It is inevitable that there will be competing demands across the Peterborough area as the differing landscapes and characteristics mean that the needs of each area will differ. The aim of the FMS is to bring all these flood risk management needs together and try to ascertain the overall priorities on which the city council and its partners will invest resources over the coming years.

Completing and reviewing the FMS

1.1.12. There is no statutory deadline for producing a local flood risk management strategy, nor is there a prescribed format or scope beyond the legislative requirements contained in the Act. Guidance notes have however been developed by the Local Government Association and Peterborough City Council has considered these in the production of the FMS.

1.1.13. Since the city council's role and expertise as an LLFA is still developing, it is likely that the FMS will need to be updated as new information comes forward. It is intended that the FMS will be formally updated every 5 years. It is hoped that future reviews will align with updates to a related but separate document, produced by the Environment Agency (EA), called the Anglian Flood Risk Management Plan.

Status in the planning system

1.1.14. As with any document, the FMS can be used as a material consideration in planning. In order to ensure that flood risk development policies have the required

weight in the planning system a separate Supplementary Planning Document (SPD) has been prepared that is part of the Peterborough planning policy framework. The Flood and Water Management SPD specifically covers elements of flood risk and drainage which are relevant to new development and is discussed briefly in section 3.5.5 and in more detail in section 10.6.

2. Peterborough Background

2.1.1. Peterborough is a unitary authority located in the East of England, approximately 125 kilometres (80 miles) north of London. It comprises a large urban area and 25 villages set in countryside extending over an area of approximately 344 square kilometres (see figure 2-1). The area borders the other Lead Local Flood Authorities of Rutland, Lincolnshire, Cambridgeshire and Northamptonshire County Councils. The total population of Peterborough is estimated as 183,631 (2011 Census).

2.1.2. Today Peterborough is an important modern regional centre, providing employment, shopping, health, education and leisure facilities for people across a wide catchment area. The city, however, has a long history of settlement with evidence of Bronze Age remains at Flag Fen, the nearby Roman town of Durobrivae and the Saxon settlement of Medehamstede. A Norman Cathedral still stands at the heart of Peterborough; a city which expanded in Victorian and Edwardian times as Peterborough developed as a significant railway town, and then experienced further rapid growth from 1967 under the New Towns programme. The legacy is a rich historic environment including designated and non-designated heritage assets. In terms of nationally designated assets Peterborough has 933 listed buildings, 29 conservation areas, 4 registered parks and gardens and 72 scheduled monuments. It is of particular relevance that many of Peterborough's scheduled monuments include, or are adjacent to, drainage assets. Sections of Car Dyke, a Romano-British canal, are scheduled monuments in their own right.

2.1.3. Peterborough is surrounded by contrasting countryside. This is illustrated in **Appendix A** by the national landscape area classifications that feature in Peterborough. To the west and north, the shallow river valleys of the Nene and Welland give way to an undulating limestone plateau, with a denser pattern of attractive stone villages. To the east of the City, the fen landscape is flat and open, with the villages of Eye and Thorney on islands of higher ground and a settlement pattern of dispersed hamlets and farms. This eastern area was originally marshy fen subject to periodic flooding. In the 17th century the Fens were drained to create a new landscape with rich soils well suited to agriculture and horticulture. Water levels in this landscape are now continually managed to reduce flood risk and to support strong economic communities of agriculture and horticulture, as well as to allow navigation and encourage important nature and tourism opportunities. **Appendix B** provides more detail about the wider Fens landscape and about the objectives for managing it.

2.1.4. Two different river catchments cover the majority of Peterborough; the Welland and the Nene. The Welland flows through Peterborough from its source in Hothorpe Hills, Northamptonshire to its mouth in the Wash. The River Welland itself forms the northern boundary of Peterborough but its catchment extends further south and includes the villages of Barnack, Ufford, Etton, Marholm, Glinton and Peakirk as well the northern part of Peterborough's urban area. The rivers making up the Peterborough Brooks form notable tributaries to the Welland. The greater part of Peterborough is within the River Nene catchment which includes tributaries such as Thorpe Meadows, Orton Dyke and Stanground Lode. The River Nene which is formed from three sources (the principal one being Arbury Hill in western Northamptonshire) and ultimately flows out to the Wash, divides Peterborough city centre in half as it passes through. For this reason the Nene historically provided a principal transport route for trade and for building materials such as those used to

construct the Cathedral and more recently the railways. The Nene and Welland Rivers have had their courses and floodplains altered significantly over time to aid such uses. Both are now managed for flood risk and navigation purposes by the Environment Agency. A small area in the southwest of Peterborough drains via the Whittlesey and District Internal Drainage Board District to the Old Bedford including Middle Level catchment. This area includes part of Stanground and the agricultural land to the east of the urban boundary. All three catchments are shown in figure 2-2.

2.1.5. Both the landscape and water environments of Peterborough contain rich biological diversity. Peterborough has three internationally designated sites; Barnack Hills and Holes Special Area of Conservation (SAC), Orton Pit SAC and the Nene Washes SAC (which covers sections of the River Nene and Morton's Leam). The whole of the Nene Washes is also a Special Protection Area (SPA), a Ramsar site and a Site of Special Scientific Interest (SSSI). In total there are 17 SSSIs, of which three are designated National Nature Reserves (Castor Hanglands, Bedford Purlieus and Barnack Hills & Holes); 107 County Wildlife Sites of value and five Local Nature Reserves. Twenty-nine areas of Peterborough have also been recorded as Conservation Areas, some in the city centre and some in outlying villages. The majority of these villages are located in the west and north-west of Peterborough. There are two country parks, a number of parklands and a 'Green Grid' of walking and cycling routes across the authority.

2.1.6. Peterborough has experienced and will continue to experience rapid growth requiring new housing, infrastructure and commercial/industrial development. Local planning policy makes provision for a net increase of at least 25,000 new homes and 20,000 new jobs between 2009 and 2026. As of 1st April 2014 there was an outstanding requirement of 21,309 homes. The spatial strategy provides for housing growth at a wide variety of places across the local authority area, but with a distinct emphasis on locations within and adjoining the urban area.

2.1.7. The city centre is a key area of focus for the city council to ensure that Peterborough remains to be a regional service centre. The city centre presents a wide range of constraints and opportunities linked to flood risk, but also linked to other elements such as the presence of a rich historic environment and the ecological diversity of many brownfield sites. Prime redevelopment opportunities exist along the Nene which would help improve the connection between the existing centre around Cathedral Square, the River itself and the communities south of the Nene. The River is an asset which would benefit from revitalisation, additional presence and environmental improvements. Housing growth, a clear route for ensuring investment in this area, comes with its own water related constraints to overcome, not least land contamination, flood risk from the river and the existence in many areas of combined sewers which can limit capacity for wastewater discharge.

2.1.8. It is against this background that the risks, challenges and opportunities related to local flooding have been considered and presented in the FMS.

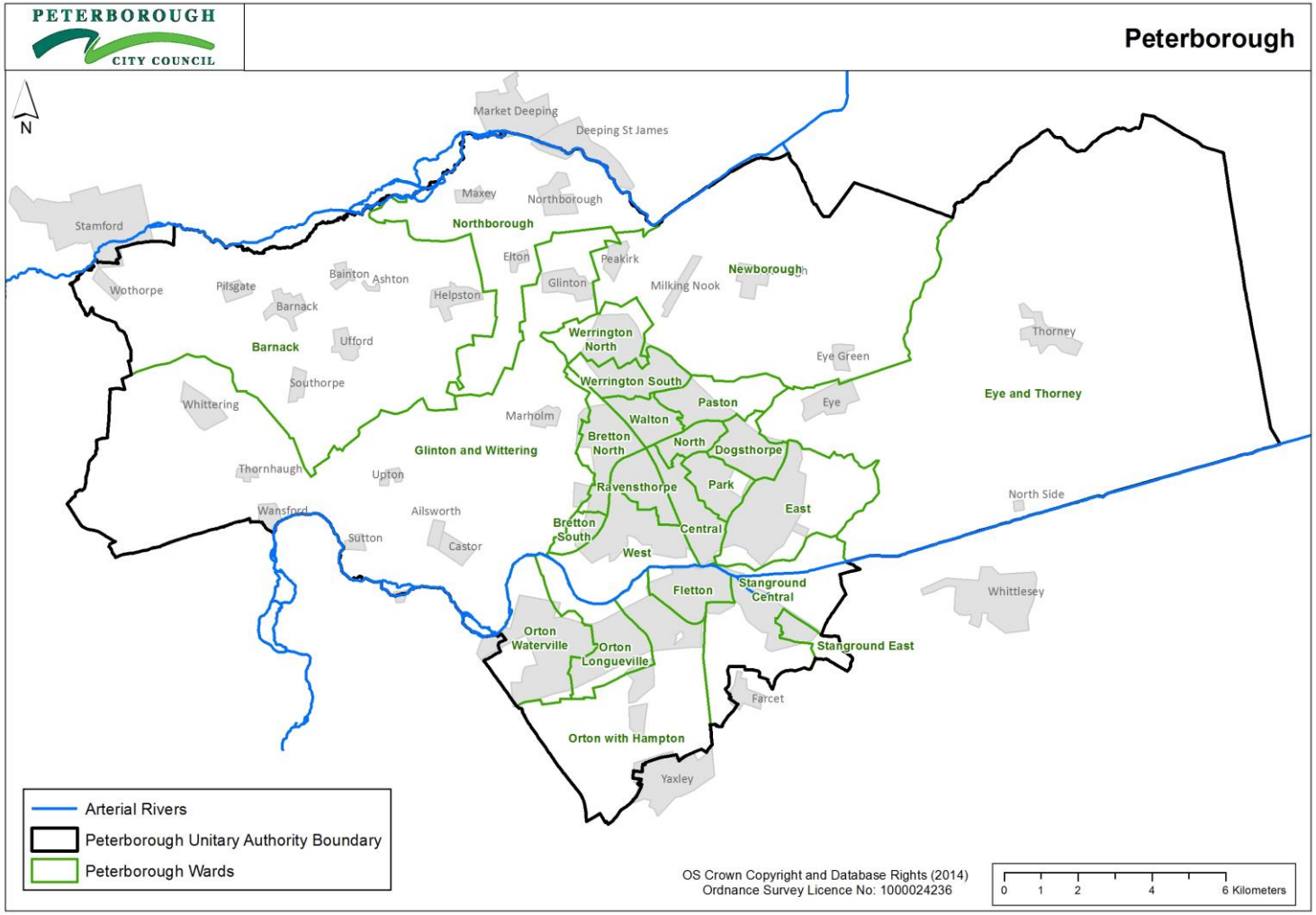


Figure 2-1: The area of Peterborough City Council (a unitary authority) with village and ward labels

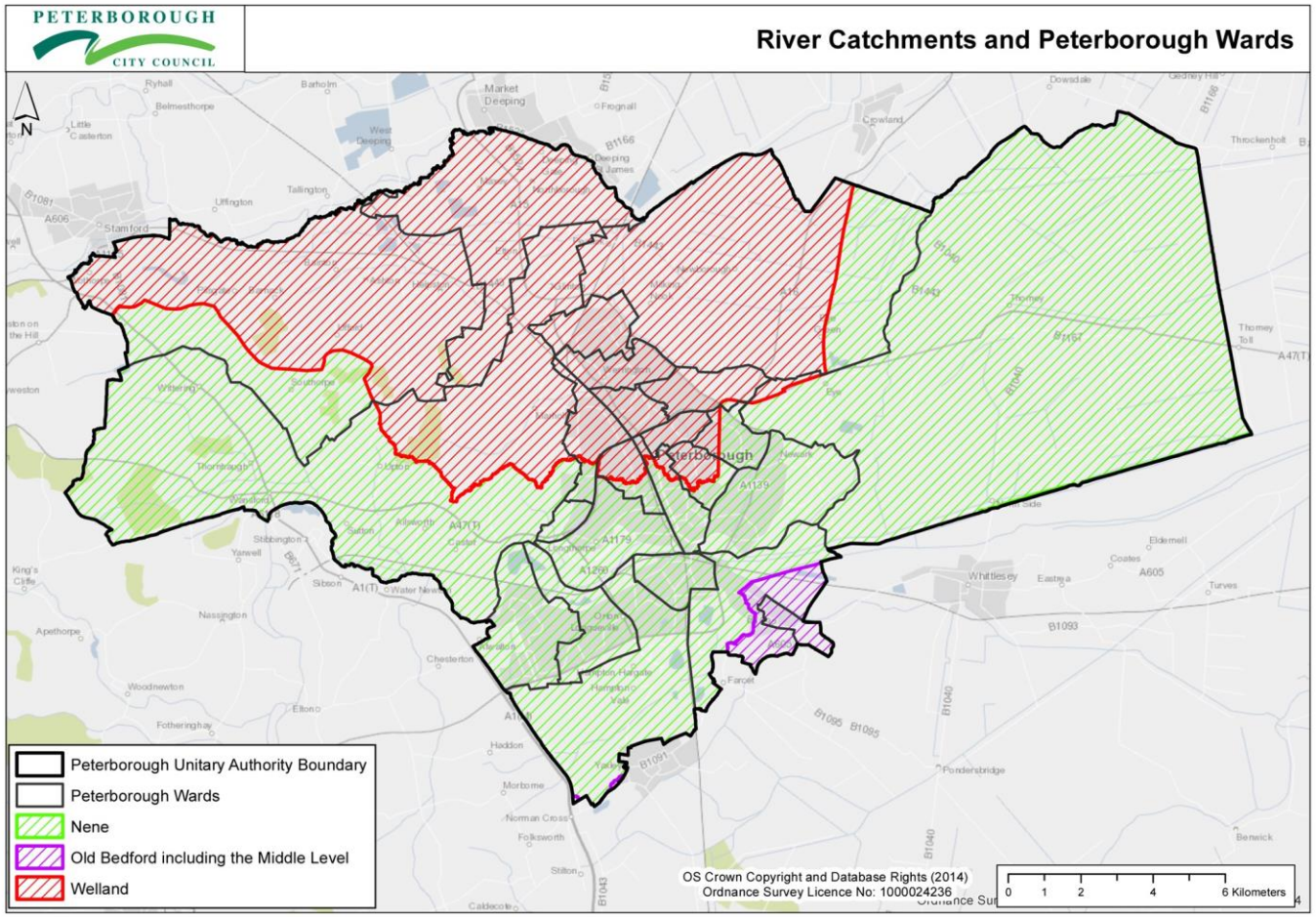


Figure 2.2: The river catchments and electoral wards in Peterborough

3. Policy, Legislation and Guidance

3.1. Links between legislation and guidance documents

3.1.1. Flood and water management in Peterborough is influenced by European, national and local policy and legislation as well as technical studies and local knowledge. Figure 3-1 below attempts to summarise the main different types of contributing document.

3.1.2. The key drivers for the production of the FMS are the FWMA 2010, the National Strategy, the Flood Risk Regulations 2009 and the Water Framework Directive. These are explained below alongside related policies and documents.

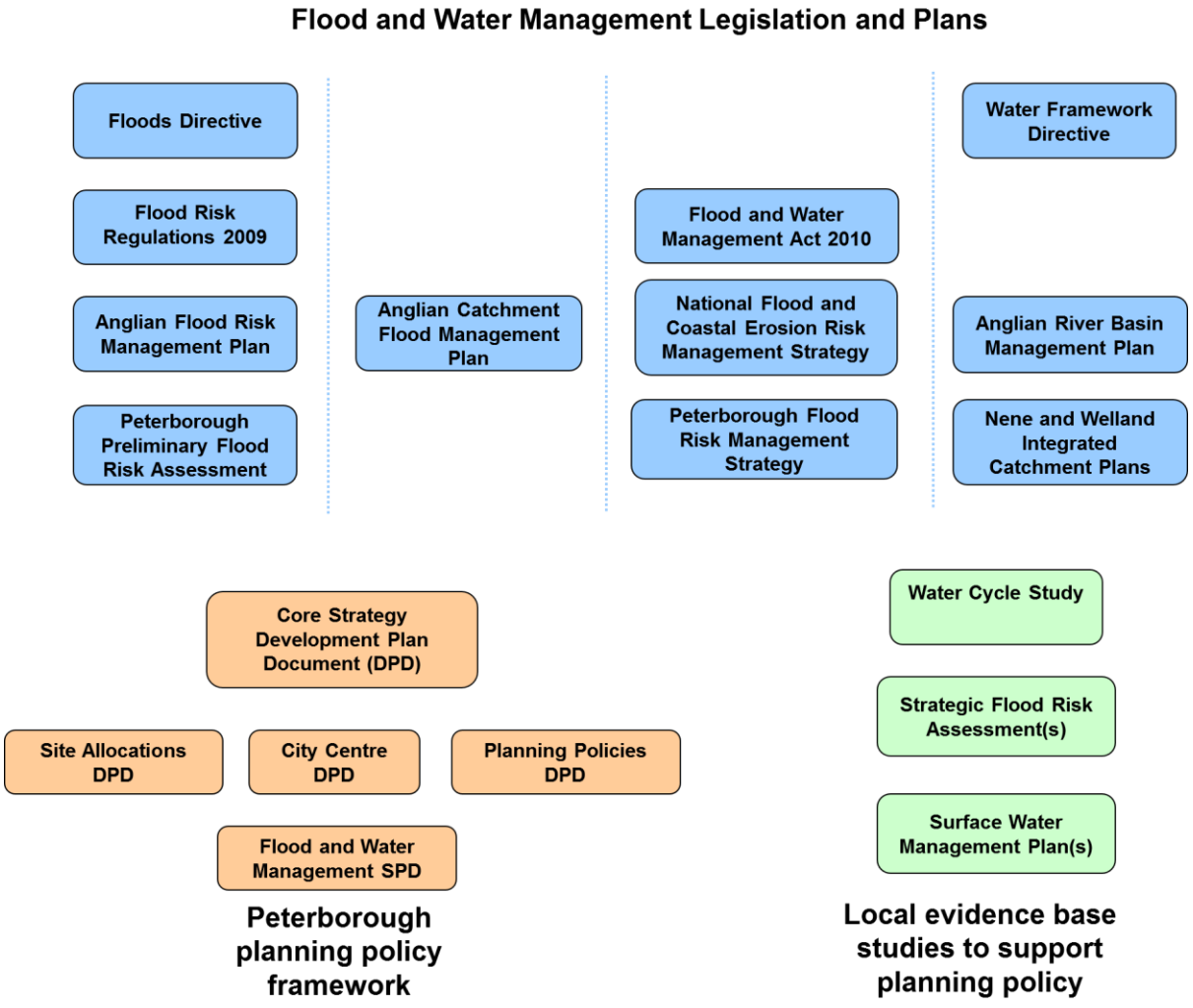


Figure 3-1: Legislation, strategies, policies and plans affecting flood risk management

3.2. European context

The Floods Directive

3.2.1. The EU Floods Directive - 2007/60/EC came into force due to a need for European Union countries (member states) to better understand and gather accurate data about the risks from surface water flooding. In the UK the Directive came into force via the Flood Risk Regulations 2009 which in turn sets the requirement for Preliminary Flood Risk Assessments (PFRA) and Flood Risk Management Plans to be produced. The Peterborough PFRA and the Anglian Flood Risk Management Plan are discussed below under the heading on local background.

The Water Framework Directive

3.2.2. The Water Framework Directive – 2000/60/EC (WFD) is a piece of EU legislation that came into force in December 2000 and was enacted into UK law in December 2003. The legislation requires member states to make plans to protect and improve the water environment. It applies to all surface freshwater bodies, including lakes, streams, rivers and canals as well as estuaries; groundwater; and coastal waters out to one mile from low water. There are four main aims of the WFD which are to:

a) improve and protect inland and coastal waters
b) promote sustainable use of water as a natural resource
c) create better habitats for wildlife that lives in and around water
d) create a better quality of life for everyone

3.2.3. The Directive requires European Union member states to:

a) prevent deterioration in the status of aquatic ecosystems, protect them and improve the condition of water for ecology
b) protect deterioration in the status of aquatic ecosystems, protect them and improve the condition of waters for ecology
c) aim to achieve a defined standard termed ‘good ecological status’ for all water bodies by 2015. If a water body has good ecological status it means that it has biological, chemical and structural characteristics similar to those expected under natural conditions. Where it is not possible to achieve this by 2015, and subject to criteria set out in the Directive, the aim is to achieve good ecological status by 2021 or 2027;
d) promote sustainable use of water as a natural resource;
e) conserve habitats and species that depend directly on water;
f) progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
g) progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants;
h) contribute to mitigating the effects of floods or droughts.
i) meet the requirements of the Water Framework Directive Protected Areas.

3.2.4. River Basin Management Plans produced by the Environment Agency (see section 3.4.6) detail the pressures facing the water environment and what actions need to be taken in order for the WFD to be met in each area.

3.3. National context

Flood and Water Management Act 2010

3.3.1. The FWMA 2010 takes forward some of the proposals in three water strategy documents previously published by the UK Government: Future Water, 2008; Making space for water, 2005 and the UK Government's response to Sir Michael Pitt's Review of the Summer 2007 Floods, 2008.

3.3.2. The FWMA 2010 makes many changes to the way that flood risk is managed in the UK. Some of the most significant changes are set out below:

i. Development of a national flood and coastal risk erosion management strategy and the need to act consistently with it.
ii. Giving the responsibility for co-ordinating management of flooding from surface runoff, ordinary watercourses and groundwater to lead local flood authorities (unitary and county councils)
iii. Development of local flood risk management strategies and the need to act consistently with these.
iv. The ability for risk management authorities to designate structures and features that affect flooding.
v. A strengthening of the need for landowners to gain consent to carry out works on or near a watercourse.
vi. New arrangements for reservoir safety based on risk rather than size of the reservoir.
vii. Updates to the Regional Flood Defence Committee to make them Regional Flood and Coastal Committees.
viii. A duty for authorities to co-operate and provide information.
ix. A requirement for authorities to contribute towards sustainable development when exercising their flood risk management functions.

3.3.3. The FWMA also contains an intention to establish a sustainable drainage systems approval body (SAB) to approve and adopt proposed sustainable drainage systems (SuDS) in new and re-developments. However this is now not expected to be brought into force. The Government have instead strengthened national planning policy to make more of the requirements for sustainable drainage systems to be used in developments (see section 3.3.10). This became applicable from April 2015.

Other Legislation

3.3.4. Table 3-1 below lists some of the other key legislation that drives water and flood risk management actions and the roles and responsibilities of different organisations:

Table 3-1: Other water related legislation

Acts	Subject Matter
Environment Act 1995	Establishment of the Environment Agency and transfer of powers from the National Rivers Authority (predecessor to the Agency)
Land Drainage Act 1991	The powers and responsibilities of local authorities, Internal Drainage Boards (IDBs) and riverside

	landowners.
Water Industry Act 1991	Supply of water and sewerage services
Water Resources Act 1991	The powers and responsibilities of the National River Authority
Water Act 1989	Establishment of water companies and of the National Rivers Authority (predecessor to the Environment Agency)
Highways Act 1980	Management and operation of the road network (including surface water drainage)

National Flood and Coastal Erosion Risk Management Strategy

3.3.5. Local flood risk management strategies must be consistent with the National Flood and Coastal Erosion Risk Management Strategy for England (the National Strategy) which was approved in July 2011 by Parliament. The National Strategy aims to ensure the risk of flooding and coastal erosion is properly managed by using the full range of options in a co-ordinated way. It order to deliver this it sets three objectives for communities, individual, voluntary groups and private and public sector organisations, and five objectives for Government to deliver. The former, which the FMS should deliver are set out below.

i. Manage the risk to people and their property.
ii. Facilitate decision-making and action at the appropriate level whether this is individual, community, local authority, river catchment, coastal cell or national.
iii. Achieve environmental, social and economic benefits, consistent with the principles of sustainable development.

3.3.6. The National Strategy highlights that flood management may mean that difficult decisions have to be taken on where risk management activities can and cannot be carried out at both national and local levels. These decisions and the processes by which they are taken should be based on a clear set of high-level guiding principles:

a) Community focus and partnership working
b) A catchment and coastal ‘cell’ based approach
c) Sustainability
d) Proportionate, risk-based approaches
e) Multiple benefits
f) Beneficiaries should be encouraged to invest in risk management

National Planning Policy Framework – flood risk

3.3.7. Section 10 of the National Planning Policy Framework (NPPF) sets out the government’s intention that planning should proactively help mitigation of, and adaption to, climate change including management of water and flood risk.

3.3.8. The NPPF aims to *"ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall."*

3.3.9. The NPPF states that both Local Plans and planning applications decisions should ensure that flood risk is not increased and that development should only be considered appropriate in flood risk areas where it can be demonstrated that:

a) a site specific flood risk assessment has been undertaken which follows the Sequential Test, and if required, the Exception Test; and
b) within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and
c) development is appropriately flood resilient and resistant, including safe access and escape routes where required; and
d) that any residual risk can be safely managed, including by emergency planning; and
e) the site gives priority to the use of sustainable drainage systems

3.3.10. Government has produced technical guidance to the NPPF which covers flood risk. This is a web-based resource titled *Planning Practice Guidance – Flood Risk and Coastal Change* which discusses how to select sites for development and the type of information that needs to be submitted with a planning application.[1]

3.3.11. Paragraphs 051 and 079-086 of the guide (updated March and April 2015 respectively) specifically explain the requirement for use of sustainable drainage systems (SuDS) in new and re-developments. The associated technical standards published by Defra set out the minimum requirements in terms of what is deemed to be reasonably practical.[2] To aid interpretation of the guidance and help developers to achieve the standards the Local Authority SuDS Officer Organisation (LASOO) has also developed a best practise guide.[3]

National Planning Policy Framework – other

3.3.12. The NPPF contains policy on many other factors other than flood risk that can affect the way that flood risk management is carried out. Examples which are very relevant to Peterborough's landscape are biodiversity and heritage policies. Section 11 (paragraphs 109 to 125) address the need to conserve and enhance the natural environment while section 12 (paragraphs 126 to 140) addresses the historic environment. The city council has more detailed policies in its Local Plan and while these are not detailed in this document, they will need to be considered for projects coming forward.

3.4. River basin and catchment focused flood risk and water management

3.4.1. Water doesn't flow according to political boundaries. Each river and its tributaries form a catchment area in which water is expected to ultimately flow into the named river. Understanding the management of flood risk across catchments is essential to ensure that flood risk is managed effectively without the creation of unintended downstream impacts. When larger catchments are grouped together this is known as a river basin. Peterborough is part of the Anglian River Basin District.

[1] Planning Practise Guide – Flood Risk and Coastal Change http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/ (2015)
[2] Non-statutory technical standards for sustainable drainage systems https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards (2015)
[3] Non-statutory technical standards for sustainable drainage systems – Best Practise Guidance (To be published during 2015)

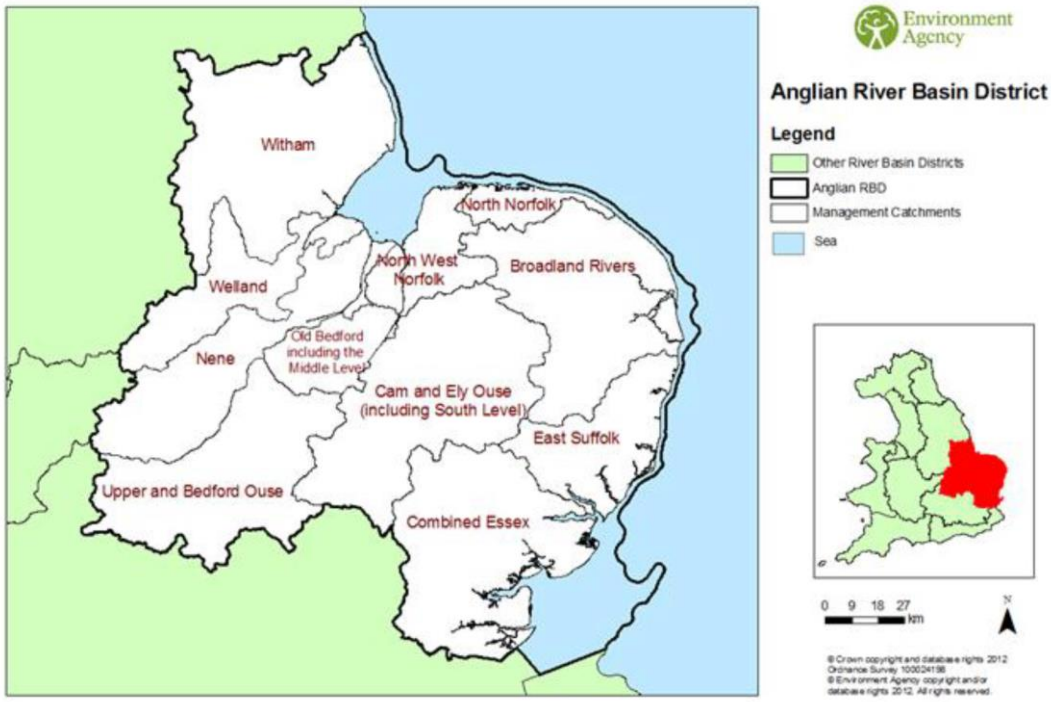


Figure 3-2: The Anglian River Basin District and its river catchments

Nene, Welland and Great Ouse Catchment Flood Risk Management Plans

3.4.2. In 2009 the Environment Agency completed Catchment Flood Management Plans (CFMPs) for each of Peterborough's river catchments. Within each river catchment areas were broken down for management's sake into policy units, where each unit represents similar types of flood risk in terms of the mechanisms of flooding, the level of risk and the type of receptor (people, environment etc). Each unit was assigned a policy to guide management in the area. The same policy covered all parts of Peterborough within the Nene, Welland and Great Ouse catchments:

Policy Four – Areas of low, moderate or high flood risk where we are already managing flood risk effectively but where we may need to take further actions to keep pace with climate change.

3.4.3. Since preparation of the CFMPs the Great Ouse Catchment has been split down into smaller catchments for easier management. These are known as Upper and Bedford Ouse, Cam and Ely Ouse (including the South Level), North West Norfolk, and Old Bedford (including the Middle Level). South east Peterborough falls into the latter of these named catchments.

Anglian Flood Risk Management Plan

3.4.4. The Flood Risk Regulations implement the Floods Directive, and require the preparation and publication of Flood Risk Management Plans (FRMPs) by December 2015. The Environment Agency must prepare FRMPs covering flooding from Main Rivers, the sea and reservoirs.[4] These will draw on the relevant CFMPs

[4] LLFAs in identified Flood Risk Areas must also prepare FRMPs but covering only 'local' sources of flooding. Peterborough is not part of a Flood Risk Area, so does not need to prepare a FRMP under

covering Peterborough, to develop the FRMP. The Anglian Flood Risk Management Plan will be a river basin district level plan which highlights flood risk across the district and identifies the types of measures which need to be undertaken. The plan will enable effective co-ordination across catchments and better co-ordination with river basin management planning in support of Defra's Catchment Based Approach[5]. The Environment Agency will use FRMPs to inform investment in flood risk management.

3.4.5. The Anglian FRMP is being prepared on very similar timescales to the FMS and hence the two are being written in alignment. The Anglian FRMP will include local flood risk management, on a voluntary basis, while the FMS will also include flooding from Main Rivers, the sea and reservoirs. The FMS will complement the Anglian FRMP and provide a more local context to flood risk management.

Anglian River Basin Management Plan

3.4.6. The Environment Agency also produces plans for each river basin district to cover other elements of water management, such as water resources and protection of the water environment. The Anglian River Basin Management Plan (Anglian RMBP) is being updated on the same timescales as the Anglian Flood Risk Management Plan.

3.4.7. One of the aims of the Anglian RBMP is to deliver the improvements required by the European Water Framework Directive (section 3.2.2). This Directive applies to all water bodies. Ensuring that flood risk management abides by the requirements is a key part of delivering the third objective of England's National Flood and Coastal Erosion Risk Management Strategy.

the Flood Risk Regulations. However it still needs to prepare a local flood risk management strategy under the FWMA 2010.

[5] https://www.gov.uk/government/publications/catchment-based-approach-improving-the-quality-of-our-water-environment

Nene and Welland integrated catchment management plans

3.4.8. Integrated catchment management plans have been developed for the non-tidal stretches of the Welland and the Nene to provide more detail on how the actions from the Anglian RBMP and Water Framework Directive can be delivered. These actions are joined by equally important actions to improve the watercourse and our enjoyment of it in a wider sense. For example this could be by improving amenity value for visitors, facilities for boaters and fisherman and bringing communities together to encourage them to help protect and maintain their local water environment.

3.4.9. The plan for the Welland, known as the Welland Improvement Plan was finalised in 2013 by the Welland Valley Partnership (see section 6.11) and brings together the work and aspirations of many people and organisations, setting an agenda for the actions needed to enhance the River. Delivery of the projects from the plan is underway and ones linked to Peterborough are referenced in Chapter 10 and the **Action Plan**.

3.4.10. The River Nene Regional Partnership (see section 6.12) co-ordinated the development of an integrated catchment management plan for the Nene which contains a significant number of Peterborough-based projects. Not all of these will be discussed in the FMS due to some being more about green infrastructure and less about flood risk. Projects identified in the River Nene plan aim to bring about as many different benefits as possible across the full scope of water management work. The Nene Catchment Partnership, hosted by the RNRP, will now look to co-ordinate delivery of the opportunities identified in the Nene Integrated Catchment Management Plan.

3.5. Local context

Peterborough Water Cycle Study (2010)

3.5.1. The detailed Water Cycle Study for Peterborough (2010) sets out a range of recommendations for growing Peterborough in a way that ensures the right water infrastructure can be in place to support development.

Peterborough Strategic Flood Risk Assessment(s)

3.5.2. A Strategic Flood Risk Assessment (SFRA) provides the essential information on flood risk, allowing local planning authorities to understand the risk across the authority area. SFRAs produced for Peterborough are available online on the city council's web library of water management documents[6]. The SFRA Level 2 provides breach and hazard mapping information for Peterborough that may be useful to developers in undertaking site specific flood risk assessments (FRAs).

Peterborough Preliminary Flood Risk Assessment (2011)

3.5.3. 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. The Peterborough PFRA report of June 2011 confirms (based on the evidence collected) that there is

[6] http://www.peterborough.gov.uk/waterdocuments

no 'Flood Risk Area' of national significance within Peterborough's administrative area. However, the PFRA recognises that there are areas of flood risk with local significance that need further exploration.

Peterborough Green Grid Strategy

3.5.4. The Green Grid Strategy draws up a framework and action plan for green space provision throughout the Peterborough area. The work was undertaken by a partnership formed from a number of environmental organisations alongside Peterborough City Council and Cambridgeshire County Council. The aim of the strategy is to ensure that Peterborough's growth goes hand in hand with the protection and provision of quality green infrastructure. The strategy's objectives relate to improving the quality of life within the region; contributing to sustainable water management, enhancing opportunities for visitors and tourism and delivering high quality sustainable development. A large number of the schemes put forward in the action plan relate to river corridor improvements which would benefit the water environment as well as the surrounding landscapes.

Local planning policy

3.5.5. The city council's local planning policy includes those documents listed in table 3-2. Relevant flood and water management policies are listed alongside.

Table 3-2: Peterborough planning policy documents

Policy document	Adoption date	Role	Flood and water management policies
Core Strategy Development Plan Document	2011	Sets the type and amount of development that will be accommodated in Peterborough up until 2026	CS12 – Infrastructure CS22 – Flood risk
Site Allocations Development Plan Document	2011	Identifies sites for development to meet the vision of the Core Strategy.	-
Planning Policies Development Plan Document	2012	Provides detailed policy to assist in the determination of planning applications.	PP16 – Landscaping and biodiversity implications of development PP20 – Development on land affected by contamination
City Centre Development Plan Document	Expected late 2014	Identifies sites for development and regeneration specifically within the city centre area.	Section 4.9
Flood and Water Management Supplementary Planning Document	2012	Provides detailed guidance about flood risk, drainage and how development can affect the water environment	Whole document

4. Delivering Wider Benefits

4.1. Introduction

4.1.1. The National Strategy requires the FMS to deliver environmental, social and economic benefits through taking an approach that is sustainable, uses community and partnership working, is catchment based and that delivers multiple benefits. This chapter explains why this is important and how we will ensure that this happens.

4.1.2. Delivering multiple benefits means that when a flood risk management scheme is designed, for example to protect homes, it should also bring forward other improvements. This could include, for example the creation of new green infrastructure such as riverside paths or recreational facilities, improved habitat for biodiversity or improvements in water quality. As well as improving social aspects and local facilities for Peterborough's communities, tourism can also be increased by the creation of new amenities or the protection of heritage assets such as historic buildings or monuments. Flood risk schemes can also bring very significant economic benefits in the form of enabling development in areas where it would not previously have been possible.

4.1.3. Another reason for delivering multiple benefits is the ability to attract different funding streams. Some funding streams will only fund projects that deliver environmental benefits and others want to see benefits in the form of new homes and businesses being built. Chapter 9 of this report explains the different funding streams used to finance projects.

Figure 4-1: Pond dipping education at Ferry Meadows, Peterborough.
Figure 4-2: Boating and cycle opportunities, Peterborough
Images courtesy of Chris Porsz and Nene Park Trust.

4.2. Benefits of improved green space and water environments

4.2.1. The provision of green space (green infrastructure) in and around urban areas is now widely recognised as being an important factor in creating places where people want to live and work. Green infrastructure, including integrated water environments, provides benefits to our physical and mental health, our quality of life, recreation and tourism, economic regeneration and house prices, flood risk and water quality management, and our ability to adapt to climate change and the

impacts of severe weather. Natural England provides a useful reference guide explaining and promoting green infrastructure and its benefits.[7]

River and canals and their banks are included within the definition of green infrastructure as well as many other forms of green spaces such as parks, gardens, play areas, allotments, cycle routes, woodland and churchyards.

4.2.2. The provision of green infrastructure is also directly related to flood risk because land that is not developed and has a permeable surface can act to both store water and allow it to infiltrate naturally into the ground. Since plants and permeable ground also filter water as it passes through them green infrastructure also provides significant water quality benefits. These elements form part of the intentions of sustainable drainage systems which are discussed in section (4.3).

4.2.3. Having an understanding of the benefits that green infrastructure and our environment as a whole can provide helps to ensure that any projects deliver as many benefits as possible for the local community. In Peterborough the Green Grid Strategy (discussed in section 3.5.4) sets out projects that the city would like to achieve. These projects have been compared with those in the FMS **Action Plan** and where projects overlap or are located near to each other, work will be undertaken to either bring the projects together or try to ensure that each helps to delivers the other's objectives

The Forestry Commission and Natural England have both carried out studies to calculate the quantitative benefits of green space[7][8]. An example from Natural England's 2014 report is provided below:

A single large tree can transpire 450 litres of water per day, making urban trees an effective way of reducing temperatures. Street trees and green roofs can reduce runoff by 50% in the immediate area.

4.3. Sustainable drainage systems (SuDS)

4.3.1. One method by which the city council encourages the achievement of multiple environmental benefits is through the use of sustainable drainage systems. These are a collection of techniques and components that manage surface water by taking into account water quantity (flooding), water quality (pollution) and amenity and biodiversity issues.

4.3.2. SuDS mimic nature and typically manage rainfall close to where it falls. The benefits of SuDS over traditional drainage methods are:

i. Management of runoff volumes and flow rates from hard surfaces, reducing the impact of urbanisation on flooding
ii. Reduction of pollution in the runoff and hence protection or enhancement of water quality
iii. Protection of natural flow regimes in watercourses
iv. Provision of habitat for wildlife

[7] Natural England. (2009). *Green Infrastructure Guidance.*
[8] Forestry Commission. (2012). *Research Report: Economic Benefits of Greenspace*
[9] Natural England. (2014). *Microeconomic Evidence for the Benefits of Investment in the Environment.*

v. Opportunities for evapotranspiration from vegetation and the surface (reduction in quantity of surface water)
vi. They can be designed to be sympathetic to the environment and the needs of the local community
vii. Good SuDS create better places to live, work and play through safer and more aesthetically pleasing communities with better access to green infrastructure provision.

4.3.3. Further information is available about the different types of SuDS components and what they can do from the city council's SuDS website[10].

4.3.4. Figure 4-3 illustrate an example of a swale being used for enjoyment by school children as part of wider use of open spaces (green infrastructure). A swale is a planted shallow SuDS feature which conveys water and also allows infiltration.

Figure 4-3: "Dancing in the swale – Red Hill School Worcester (Bob Bray, 2011)

4.4. The need for a catchment based approach

4.4.1. The water environment is affected by every activity that takes place on land as well as through our actions of abstracting, using and returning water to rivers, the sea and the ground. River catchments are the natural scale to consider this aspect of the environment as within this area activities will have interlinked impacts. Coordinated action is desirable not only when managing flood risk but also when trying to address the significant pressures placed on the water environment e.g. by diffuse pollution from agricultural and urban sources or the widespread, historical alteration of channel form.

4.4.2. The Government promotes a catchment based approach, encouraging community involvement and partnership working to deliver river improvement schemes. The Department for Food, the Environment and Rural Affairs (Defra) has set out its objectives for a catchment based approach as:

i. To deliver positive and sustained outcomes for the water environment by promoting a better understanding of the environment at a local level; and
ii. To encourage local collaboration and more transparent decision-making when both planning and delivering activities to improve the water environment.

[10] www.peterborough-suds.org.uk

4.4.3. Peterborough will endeavour to use this approach wherever possible when delivering flood risk schemes in order to create as many other benefits from the schemes as possible. Wherever appropriate, delivery of projects will be in partnership with or co-ordinated with the Welland Valley Partnership or River Nene Regional Park and their relevant catchment management plans (sections 3.4.8, 6.11 and 6.12).

4.5. Assessing and mitigating environmental impacts

As well as considering extra benefits that can be delivered it is crucial to consider what impacts or negative effects schemes could have and how these could be mitigated. In Peterborough the scope for flood risk management actions to impact on the environment is significant. The proposed actions in the **Action Plan** are intended to bring about improvements to and increased protection for Peterborough's landscapes and aquatic environments. However, with the requirements of the Water Framework Directive and the existence of a number of nationally and internationally designated biodiversity sites and a wide range of nationally significant heritage assets in the area, it is prudent to undertake thorough environmental assessment of any actions suggested. An example of a relevant consideration in Peterborough could be how a flood risk scheme or development affects the wider hydrology, especially if it is to take place in an area where heritage assets are currently preserved in a waterlogged and water dependent environment.

4.5.1. Therefore for the FMS, the Strategic Environmental Assessment (SEA) process is being followed in line with the requirements of the European Union Directive 2001/42/EC (SEA Directive). Assessment of whether the strategy and its actions meets the requirements of the Water Framework Directive assessment and the Habitats Regulations Assessment is also being undertaken and will be incorporated into the SEA.

4.5.2. The Environment Agency have also carried out SEA for the Anglian Flood Risk Management Plan (FRMP). This will consider cumulative impacts but will be undertaken at a high level with any very preliminary measures and actions (i.e. those recommending further study) scoped out. It has been agreed with the Environment Agency that the SEA for the FMS will not assess new Environment Agency-led schemes as these will be picked up by the FRMP SEA. The FMS SEA will however need to consider cumulative impacts with schemes that are already published in the Environment Agency's Medium Term Plan, such as those that were proposed in the CFMPs.

5. Objectives

5.1.1. The objectives of Peterborough's FMS are set out in table 5-1. The objectives were developed from a workshop with the Peterborough Flood and Water Management Partnership (section 6.8) where each organisation was asked what themes and outcomes they wanted to see delivered by the FMS. These objectives shape the content and intentions of the FMS.

5.1.2. The FMS is required to be consistent with the National Strategy. The alignment between the FMS objectives and the National Strategy objectives (section 3.3.3) and guiding principles (section 3.3.4) is therefore shown in table 5-1.

Table 5-1: Objectives and their consistency with the National Strategy.

FMS Objectives		Consistency with National Strategy objectives	To be delivered using National Strategy guiding principles
1	Improve **awareness and understanding** of flood risk and its management to ensure that the city council, partner organisations, stakeholders, residents, communities and businesses can make informed decisions and can take their own action to become more resilient to risk.	(i) Manage risk (ii) Facilitate decision-making and action at the appropriate level (iii) Environmental, social and economic benefits	a) Community and partnerships f) Beneficiaries encouraged to invest
2	Establish **efficient co-ordinated partnership approaches** to flood and water management and response and recovery, including sharing and seeking new resources together.	(i) Manage risk (ii) Facilitate decision-making and action at the appropriate level (iii) Environmental, social and economic benefits	a) Community and partnerships b) Catchment based approach c) Sustainability e) Multiple benefits
3	Reduce flood risk to prioritised areas and strategic infrastructure, ensuring that **standards of protection** elsewhere are maintained.	(i) Manage risk	c) Sustainability d) Proportionate and risk-based e) Beneficiaries encouraged to invest
4	Improving the wider **sustainability** of Peterborough; ensuring an integrated catchment approach and proper consideration of the water environment and its benefits in new and existing urban and rural landscapes.	(iii) Environmental, social and economic benefits	a) Community and partnerships b) Catchment based approach c) Sustainability d) Proportionate and risk-based e) Multiple benefits f) Beneficiaries encouraged to invest

5.1.3. In later chapters proposed actions and management approaches are related back to the FMS objectives to show how these will be met.

6. Roles and Responsibilities

6.1. Organisations involved in flood risk management

6.1.1. There are a number of different organisations, authorities and individuals involved in flood risk management in Peterborough. At the end of the chapter figure 6-1 provides a quick reference guide for some of the main flood related issues that may be experienced. The principal management organisations are also discussed in this chapter, setting out what their roles and responsibilities are. A brief paragraph is also included on where the organisation's funding comes from. Funding for flood risk management schemes in Peterborough is dealt with in more detail in Chapter 9.

6.1.2. The organisations discussed in sections 6.2 to 6.6 are defined by the FWMA 2010 as 'risk management authorities' (RMAs) with responsibilities relating to the FMS. These are set out in table 6-1. All RMAs must also act in a manner which is consistent with the National Strategy and guidance. The other organisations discussed in this chapter have no formal duty in these respects.

Table 6-1: Risk management authorities as defined by the FWMA 2010 and the legislation under which they carry out their flood risk management functions

Organisation	**Defined as an RMA** (FWMA 2010 section 6)	**Legislation under which flood risk management functions may be exercised** (FWMA 2010, section 4)	**Duty relating to the FMS** (FMW Act 2010 sections 9,11)
Peterborough City Council (as LLFA and a highways authority)	Yes	• FWMA 2010 • Flood Risk Regulations 2009 • Land Drainage Act 1991 • Highways Act 1980	• Develop, maintain, apply and monitor • Consult the other RMAs • Act in a manner consistent with the FMS and related guidance
The Environment Agency	Yes	• FWMA 2010 • Flood Risk Regulations 2009 • Water Resources Act 1991 • Land Drainage Act 1991	• Act in a manner consistent with the FMS and related guidance[11]
Internal Drainage Boards	Yes	• FWMA 2010 • Land Drainage Act 1991	
Highways England (as a highway authority)	Yes	• FWMA 2010 • Highways Act 1980	
Anglian Water (as water company)	Yes	• FWMA 2010 • Water Resources Act 1991 • Water Industry Act 1991	• Have regard to the FMS and guidance

[11] When delivering their flood risk management functions as defined by section 4 (2) of the FWMA 2010.

6.2. Peterborough City Council

As a Drainage Authority

6.2.1. Peterborough City Council has been a drainage authority for many years under the Land Drainage Act 1991. This gives the city council various powers relating to flood prevention, maintaining flows in watercourses and the making of byelaws[12]. In many cases the powers and duties given to the city council have now been superseded by the FWMA 2010.

As a Lead Local Flood Authority

6.2.2. Under the FWMA 2010 Peterborough City Council, along with other unitary and county councils, became a LLFA with responsibility for co-ordinating the management of flood risk from surface runoff, ordinary watercourses and groundwater. Under this Act the city council also has the following new responsibilities, as set out in table 6-2.

Table 6-2: The powers and duties given to LLFAs by the FWMA 2010

Change	Notes	Power or duty?	Paragraph of Act
Local Flood Risk Management Strategy	LLFAs are required to develop, maintain, apply and monitor a strategy for local flood risk management in its area.	Duty	9
Duty to co-operate	All relevant authorities must co-operate with other relevant authorities in the exercise of their flood and coastal risk erosion management functions.	Duty	13 and 14 (4)
Power to delegate	A RMA may arrange for another flood risk management function, except for delivery of the local flood risk management strategy, to be exercised on its behalf by another RMA or a navigation authority.	Power	13 (4)
Power to request information	An LLFA and the EA may request information in connection with their flood risk management functions	Power	14
Investigating flood incidents	LLFAs have a duty to investigate flooding incidents within their area, to the extent that the LLFA considers it necessary or appropriate	Duty	19
Asset Register	LLFAs have a duty to maintain a register of structures or features which are considered to have a significant effect on flood risk and records of details about those structures, including ownership and condition as a minimum. The register must be	Duty	21

[12] Peterborough City Council's byelaws are available at: https://www.peterborough.gov.uk/council/planning-and-development/flood-and-water-management/works-near-a-watercourse/

	available for inspection.		
Contribution towards sustainable development	In exercising a flood risk management function LLFAs, IDBs and Highways England must aim to make a contribution towards the achievement of sustainable development.	Duty	27
Designation powers	LLFAs, as well as the Environment Agency and Internal Drainage Boards, have powers to designate structures and features that affect flooding or coastal erosion in order to safeguard assets that are relied upon for flood or coastal erosion risk management.	Power	30 and Schedule 1
Works powers	LLFAs have powers to undertake works to manage flood risk from surface runoff, groundwater or ordinary watercourse.	Power	31 and Schedule 2, section 29. Amends Land Drainage Act 1991 section 14.
Consents for works to ordinary watercourses	Consent is required from the LLFA before works can be carried out on a watercourse that is not a Main River.	Duty	31 and Schedule 2, section 32 Amends Land Drainage Act 1991 section 23.
Overview and Scrutiny	Include arrangements to review and scrutinise the exercise by risk management authorities of flood risk management functions which affect the LLFAs area.	Duty	31 and Schedule 2, section 54. Amends section 21 of the Local Government Act 2000
Incidental flooding	LLFAs and IDBs can carry out works that cause incidental flooding or increases in the amount of water below the ground if the works satisfy four conditions. Condition 1 – work in interest of nature conservation, cultural heritage or people's enjoyment of the environment. 2 – Benefits outweigh harmful consequences. 3 – The EA have been consulted and if applicable agreed. 4 - Other local authorities affected and	Power	39

	owners and occupiers of land have been consulted.		
SuDS Approving Body (SAB)	This section of the Act, specifying that LLFAs would approve, adopt and maintain any new drainage systems, was not brought in to force. Table 6-3 details the Government's preferred alternative approach.	N/A	32 and Schedule 3

6.2.3. In April 2015 an amendment was made to the Town and Country Planning Act 1990 to bring in a planning related duty for LLFAs. This was done through issuing the Town and Country Planning (Development Management Procedure) (England) Order 2015.

Table 6-3: The duty given to LLFAs under changes to the Town and Country Planning Act

Change	Notes	Power or duty?	Paragraph of Act (as amended)
Statutory consultee for major development[13] applications	LLFAs are to be consulted, by planning authorities, on the management of surface water on major development sites (those of 10 dwellings or more; or equivalent non-residential or mixed development)	Duty	18 and Schedule 4

As a Planning Authority

6.2.4. Under the Town and Country Planning Act 1990 the city council, as a local planning authority (LPA) has a responsibility to ensure new developments are designed in a way that protects them from flooding and to ensure that the developments do not increase flooding downstream.

6.2.5. For the management of surface water the city council is specifically expected to ensure that sustainable drainage systems are put in place in major developments, be satisfied that proposed minimum standards are met and ensure that there are clear arrangements in place for ongoing maintenance over the lifetime of the development. This should be carried out through the use of local planning policies and decisions on planning applications.

6.2.6. Since the city council is also a Lead Local Flood Authority, and has been a Drainage Authority for some years, it has a drainage and flood risk team that can fulfil the new planning related requirements for LPAs and LLFAs.

As an Emergency Responder

6.2.7. Under the Civil Contingencies Act 2004 Peterborough City Council is a Category One Emergency Responder. The city council's role is principally about recovery after an event but the following actions are undertaken:

[13] Major development is development of 10 dwellings or more; equivalent non-residential or mixed development, as set out in Article 2(1) of the Town and Country Planning (Development Management Procedure) (England) Order 2010.

i. Informing and warning activities
ii. Co-operating with other emergency responders
iii. Providing rest centres
iv. Helping to rehabilitate people after an incident

As a Highways Authority

6.2.8. Under the Highways Act 1980 Peterborough City Council is classed as a Highway Authority and is responsible for the management of highways including drainage. The city council adopts and manages the majority of Peterborough's highways and footpaths although it is not technically the landowner for them. Some highways are privately owned and managed, and others (the A1 and A47) are managed by Highways England as part of the national network.

6.2.9. Highway drainage systems are for the primary purpose of accepting surface water runoff from roads and carriageways and the authority's duties include the need to minimise flooding to roads that could in turn lead to a breakdown of the network. Ensuring that the network can function as a whole is the priority; small scale flooding in specific locations may be less of an issue if there are alternative routes that traffic can take.

6.2.10. The design of highways and their drainage is now adapting to better fit with the drive for more sustainable drainage systems. When the city council adopts highways under S38 of the Highways Act 1990, it will now seek to also adopt SuDS to drain the highway.

Funding

6.2.11. Peterborough City Council's funding comes from a variety of places. Government provides the most significant input in terms of grants. Unlike in the past these funds are often now not ring-fenced for any specific purpose and have to be allocated according to need. The city council also collects a percentage of its income from Council Tax. Aside from these the city council can borrow funds, generate income from selling assets or submit project specific bids to Government agencies or other funding bodies.

6.3. Highways England

Formerly an executive agency of the Department of Transport, known as the Highways Agency, Highways England became a government-owned company on 1st April 2015. Highways England is responsible for operating, maintaining and improving the strategic road network in England on behalf of the Secretary of State. The network itself is owned by central government, is some 4,300 miles long and is made up of motorways and trunk roads (the most significant 'A' roads). In Peterborough Highways England manages the A1, A1M and A47, including some but not all slip roads.

6.3.1. Part of Highway England's role in managing the roads is a responsibility for managing the quality and quantity of road runoff that is collected within their network. Flood risk must not be increased by new road projects and discharges of water from the highway must not cause pollution to receiving water bodies. In line with this aim a Memorandum of Understanding with the Environment Agency has been developed to support the two organisations working together. More information about Highway England's approach is available on their website.

Funding

6.3.2. Highways England's funding continues to come from the Department for Transport but is now based on a 5 year business plan, thus providing greater flexibility than in previous years and going some way to addressing the restrictions of the previous yearly plan. This should lead to improvements in the way they work and, although there are no plans to do so at present, in the future there may be potential to attract outside funding.

6.4. Environment Agency

6.4.1. The Environment Agency is a non-departmental public body and has responsibilities for protecting and enhancing the environment as a whole (air, land and water), and contributing to the government's aim of achieving sustainable development in England and Wales.

6.4.2. Following the FMWA, the Environment Agency was given the strategic overview role for all types of flooding. This involves advising Government, supporting LLFAs with data and guidance and managing the allocation process for capital funding. In addition to this the Agency retains its existing responsibility for the management of flood risk from Main Rivers (see section 1.1.7 for full definition), the sea and reservoirs. This includes providing advice to planning authorities on development in areas of high flood risk. The Agency does not provide advice on other sources of flood risk as this is the responsibility of the Local Planning Authority.

6.4.3. For designated Main Rivers and any associated designated assets, the Environment Agency has permissive powers to carry out maintenance, improvement and flood defence works. User of the powers is determined on a risk based approach. This includes being responsible, through the flood defence consenting process, for controlling works by others which could affect Main Rivers or flood defences (section 10.6.15). The Environment Agency do not, however, generally own Main Rivers and the overall responsibility for maintenance of Main Rivers (as with any other watercourse) does lie with the landowner (see section 6.13 on riparian owners).

6.4.4. The Environment Agency is the lead organisation responsible for coastal flood risk management and erosion, including tidal flooding and also the enforcement authority for reservoirs in England and Wales that are designated high risk and hold more than 25,000 cubic metres of water. While the safety of reservoirs is the responsibility of the owner, the Environment Agency has responsibility for enforcing safety, maintaining a register of reservoirs and ensuring that flood plans are put in place.

6.4.5. Alongside Local Authorities and the Emergency Services the Environment Agency is a Category One Emergency Responder under the Civil Contingencies Act 2004. Their role includes providing coastal and river flood warnings and supporting other emergency responders in the event of flooding.

Funding

6.4.6. The Environment Agency is a national organisation with an annual operational budget of over a £1 billion. Its funding is split across many different areas of environmental work, but approximately half is spent on flood risk management. This includes the construction of new flood defences, the maintenance of the river system and existing flood defences together with the operation of a flood warnings

system and the management of the risk of coastal erosion. The vast majority of the funding for flood defence comes directly from the Department for the Environment, Food and Rural Affairs (Defra).

6.5. Internal Drainage Boards

6.5.1. Over forty percent of Peterborough's land area is classified as being part of the national Fens character area. This is an artificially drained landscape and is part of the wider area of the Fens which overlaps with the local authority boundaries of Lincolnshire County Council, Norfolk County Council, Cambridgeshire County Council and Suffolk County Council. See **Appendix B** for further information. Land drainage authorities called IDBs were established within the Fens because of the special water level and drainage management needs existing within the area. These land drainage authorities are autonomous public bodies.

6.5.2. Peterborough has four land drainage authorities of this type operating within its fenland area, three classified as independent IDBs and one classified as a Commissioners. Throughout the FMS the term Internal Drainage Board (IDB) is used to refer to all four of these organisations. **Appendix C** provides a map of the management area of each IDB within Peterborough's boundaries.

North Level District Internal Drainage Board (NLD IDB)

6.5.3. NLD IDB is a land drainage authority responsible for the drainage and evacuation of surplus water from 33,000 hectares of land. The NLD IDB Board is responsible for the improvement and maintenance of some 613 kilometres of drains within the area and for the operation of 12 pumping stations.

Welland and Deepings Internal Drainage Board (W&D IDB)

6.5.4. Welland and Deepings IDB is responsible for supervision over all aspects of land drainage within their district (other than Main River). They have regulatory powers in and adjacent to drainage systems and undertake improvements, maintenance and operation of their flood management assets. Their area extends to some 32,400 hectares and stretches from just north of Peterborough to south of Kirton near Boston.

Whittlesey and District Internal Drainage Board

6.5.5. This IDB is responsible for the drainage and evacuation of surplus water from over 8,300 hectares of land. The Board is managed by the Whittlesey Consortium of IDBs. Strategic functions such as responses to planning applications and liaison with local flood risk management strategies is carried out on behalf of Whittlesey and District IDB by the Middle Level Commissioners.

Middle Level Commissioners (MLC)

6.5.6. The Middle Level Commissioners are a statutory body with powers and duties under general and local legislation relating to flood risk management and navigation. The Commissioners maintain an arterial system of watercourses and associated apparatus. The Commissioners act as consultants for the Whittlesey and District IDB.

Funding

6.5.7. Each of the aforementioned drainage authorities is funded by rates paid by the landowners in their area. This can be broken down into Drainage Rates and Special Levies. Drainage rates are paid by agricultural landowners direct to the IDB based on the area of their property. Where land in the IDB's district is not in agricultural use, the owner instead pays their levy to Peterborough City Council as part of their Council Tax. The relevant amount is then separated out from the Council Tax and paid to each IDB. This is known as a Special Levy.

6.6. Anglian Water Services Ltd

6.6.1. Anglian Water (AW) is the water and sewerage undertaker for the Peterborough area and has a statutory obligation to supply water and wastewater services to its customers. AW currently has the responsibility to effectually drain their area and maintain their foul, surface and combined public sewers.

Funding

6.6.2. Funding for water companies comes principally from water bills that residents and businesses pay. Larger investment can also come from shareholders and investors. Ofwat (the Water Services Regulation Authority) agrees the cost of water bills for each water company as part of a regular five year review process called the Periodic Review process. Periodic Review 2014 is currently underway to set the management plan for water companies for the period 2015 to 2020, also known as Asset Management Plan period 6.

6.7. Local Resilience Forum

6.7.1. The Cambridgeshire and Peterborough Local Resilience Forum (CPLRF) is responsible for developing multi-agency emergency management arrangements in accordance with the Civil Contingency Act, 2004 within the County of Cambridgeshire. The CPLRF covers an area of over 2000 square miles and serves a combined population of approximately 805,000 people. Membership consists of five district councils, one unitary authority (Peterborough) and Cambridgeshire County Council.

6.7.2. The CPLRF have identified a number of risks with Cambridgeshire which they publish within the CPLRF Risk Register. The top risks for the county include severe weather, flooding events and pandemic influenza.

6.8. Peterborough Flood and Water Management Partnership

6.8.1. The primary partnership arrangement covering the Peterborough area is the Peterborough Flood and Water Management Partnership (the FloW Partnership). This was originally established in 2009 under the name Peterborough Flood Risk Partnership. Its members include the organisations in sections 6.2 to 6.7. The objectives of the FloW Partnership are:

a) Steer the production of the FMS, ensuring a holistic approach to all sources of flood risk, the different roles and aims of partners, local resilience management and the water environment.

b) Implement in partnership the action plan of the FMS to ensure we manage the risk of flooding, improve our sub catchment data and understanding, and enable our communities to be more resilient.
c) Enable and support delivery of projects within the Nene and Welland Integrated Catchment Plans.
d) Influence planning policy and guidance for developments on all water management issues including reviewing and support the development of local contributing reports and plans such as Strategic Flood Risk Assessments. This includes identification and exchange of appropriate data sets in support of any activity.
e) Support the implementation of sustainable development through the establishment and workings of the Sustainable Drainage Systems Approving Body.
f) Coordinate high-level management and maintenance of flood risk assets, features and structures to ensure effective flood risk management.
g) Promote the dissemination of information about flood risk, water efficiency or other relevant water topics to householders, businesses and other organisations.
h) Take advantage of partnership funding and financing opportunities including Section 106 agreements and Community Infrastructure Levy (when introduced), preparing bids to external sources, and making the most of match and in-kind funding;
i) Explore opportunities for collaborative research
j) Liaise with and support the preparation of emergency plans by the Local Resilience Forum to ensure that management of incidents such as drought and flooding can be handled appropriately

6.9. Anglian Northern Regional Flood and Coastal Committee

6.9.1. Section 23 of the FWMA 2010 required that previously existing Regional Flood Defence Committee were updated and re-launched as Regional Flood and Coastal Committees (RFCCs). The purpose of the RFCCs is to bring together members appointed by LLFAs and independent members with relevant experience to:

a) ensure there are coherent plans for identifying, communicating managing flood risk across catchments and shorelines;
b) promote the funding of schemes that benefit local communities and represents value for money
c) represent the whole of the Northern are regardless of local authority boundaries
d) provide a link between the Environment Agency, LLFAs, other risk management authorities and other relevant bodies
e) engage constructively with and offer advice to the Agency having developed its own view as to the flood and coastal risk erosion management needs within its region informed by local knowledge, contacts with other risk management authorities and engagement with risk management planning. This includes providing consent for the Agency's regional programme and agreeing changes to Local Levy rates.

6.10. Parish Councils and Volunteer Flood Wardens

6.10.1. Some parish councils and residents associations engage actively in flood risk management, appointing a local flood warden to be a main point of contact between the residents of their area, the city council and the Environment Agency. The extent

of their role is decided by the groups/individuals but often includes staying up to date with local flood risk management news; helping to gather a picture of flood risk in their area; raising awareness among their neighbours of risk and of what to do during an emergency and being the principal emergency contact during flood events.

Flood Warden case study

"As a Flood Warden I take on the responsibility of providing flood risk information to the local residents in my community. To keep up-to-date I attend meetings, events or training sessions with Peterborough City Council and the Environment Agency several times a year. I also monitor the river levels using both local measuring equipment that I helped to implement and the Agency's River Levels Online Service. I have used this knowledge to prepare a flood plan for the whole community so that we can be prepared before, during and after a flooding event. As the primary contact for our community, the city council send me regular updates during potential flood events and the Environment Agency has provided me with an emergency kit including supplies like a torch, fleece and blanket.

In 2013 I enjoyed organising a community 'Flood Awareness Fair' with a number of Peterborough's flood risk management organisations. This included arranging for property level protection companies to show their products and giving a presentation about local flood risk issues.

The greatest achievement during my time as a Flood Warden has been to get most of the properties in my community surveyed to determine their height in relation to the river level. This allowed us to calculate what level of risk the homes (rather than the gardens) were subject to. Doing this has made a real difference to the residents as we now have a Surveyor's Certificate which can be sent to insurance companies to try and get cheaper and more realistic household insurance quotations.

All of this has been made possible by the strong working relationship that I have with our local residents group, the city council and Environment Agency."

Tony Lambert, August 2014

6.11. Welland Valley Partnership

6.11.1. The Welland Valley Partnership was formed in 2011 in response to the Government's desire to set up 10 'pilot catchments' to work in partnership to improve rivers and bring about wider environmental and social benefits. The pilots were intended to *"provide a clear understanding of the issues in the catchment, involve local communities in decision making by sharing evidence, listening to their ideas, working out the priorities for action and seeking to deliver integrated actions that address local issues in a cost effective way and protect local resources" (Richard Benyon MP, the then Minister for Natural Environment and Fisheries).* Since the pilot completed, the partnership, which includes local authorities, businesses, charities and interest groups based around the River Welland catchment, has continued to attract new members and implement improvement schemes.

6.12. River Nene Regional Partnership

6.12.1. The River Nene Regional Partnership (RNRP) was originally established in 2004 to co-ordinate green infrastructure activities (planning, economic development, regeneration and leisure) in Northamptonshire and along the Nene. It is now an independent Community Interest Company which develops, enables and implement green infrastructure projects at a sub-regional level. The RNRP has produced the Nene Catchment Plan, an integrated management plan for the River Nene from its source to its tidal limit. This was also one of the Government's original ten catchment pilots.

6.13. Riverside landowners

6.13.1. A landowner with a water body (e.g. a lake or river) running through or alongside their property is known as a 'riparian owner' as they will own all or part of the water body in the absence of anything in their conveyancing documents to state otherwise. If a watercourse is the boundary to the land then a riparian owner will normally own, and therefore have maintenance responsibilities, up to the centre line of the watercourse.

6.13.2. Riparian owners' rights are modified by other duties to the community and to the environment, but in general riparian owners have rights to:

a) protect their property from flooding
b) protect their banks from erosion

6.13.3. In many cases consent is required from a relevant drainage authority (see section 10.6.15) for any works other than routine maintenance and cleansing (section 23 of the Land Drainage Act 1991) and from the Environment Agency for abstraction.

6.13.4. Riparian owner responsibilities include:

a) a duty to their upstream and downstream neighbours;
b) accepting water from an upstream neighbour and allowing it to transfer to a downstream neighbour;
c) not causing or perpetuating a nuisance, such as causing obstruction to the flow of water. It is important that access is preserved to the banks for maintenance and safety purposes through controlling vegetation and considering appropriate locations for fencing and access tracks;
d) ultimate responsibility in perpetuity for the water body.

6.13.5. The Environment Agency, Internal Drainage Boards and the Lead Local Flood Authority share certain powers under the Land Drainage Act 1991, for enforcing riparian responsibilities.

6.13.6. The comprehensive guidance document *Living on the Edge* has been prepared by the Environment Agency for riparian owners and can be found on the websites of both the Environment Agency and Peterborough City Council. Landowners with queries are encouraged to contact the Environment Agency, their local Internal Drainage Board or the city council.

Who to Contact Quick Reference Guide

If you notice flooding please report it as per this guide

#	Structure or feature where problem is arising	Responsible organisation
1	Utilities	Your gas, electricity or sewerage supplier
2	Surface water runoff and groundwater flooding	Peterborough City Council * or on major roads Highways England
3	Rural or farmland runoff, or overtopping from smaller watercourses	Peterborough City Council *, Internal Drainage Boards
4 & 5	Main River flooding and/or obstructions	Environment Agency
6	Sandbags	Builders merchant
7	Household protection	Property owner's responsibility but the Environment Agency and/or Peterborough City Council can provide advice.
8	Flood damage cover and claims	Your insurance company
9	Internal wastewater flooding	Anglian Water
10a	Ordinary watercourses in fenland areas	Internal Drainage Boards
10b	Ordinary watercourses not in fenland areas	Peterborough City Council

* Responsibility can vary between several partners so if you are unclear start by contacting Peterborough City Council.

Figure 6-1 and Table 6-4: A quick reference guide, not necessarily to who might be responsible for managing the flooding, but to which organisation is most likely to be able to help with flood related queries on specific subjects

7. The Risk to Peterborough

7.1. Introduction

7.1.1. This chapter looks at each type of flood risk that Peterborough is susceptible to and explains how the types of flooding differ, the broad distribution and level of risk in Peterborough and how to find out more. This chapter is predominantly concerned with flooding caused when the received rainfall or river flows exceeds the design capacity of the drainage and flood risk management systems.

7.1.2. As well as natural flood risk from weather systems flooding can happen anywhere due to operational issues such as blockages, bursting of pipes or failures of defences. It is harder to predict the likelihood, location and impacts of flooding caused by operational issues and these can only be prevented by appropriate maintenance of assets. Maintenance is discussed in chapter 10. It is important to note that flooding resulting from breaches or bursting of pipes can have a more significant impact than the gradual overtopping of watercourses or surcharging of sewers because the impacts can occur very suddenly, creating a flow of water at speed.

7.2. What is risk?

7.2.1. In order to understand flood risk the meaning of 'risk' needs to be clear. Risk is the likelihood of a hazard occurring multiplied by the impact of the hazard when it occurs.

Risk = Likelihood x Impact

7.2.2. With flooding it is normally the likelihood of it occurring which is discussed. This likelihood is stated in terms of **annual probability**. The most commonly discussed probabilities are shown in table 7-1 below:

Table 7-1: Common flood related probabilities

Annual probability	Annual probability as a fraction	Example
3.3%	1 / 30	The largest rainfall event for which surface water sewers are designed not to flood
1%	1 / 100	A common design standard for Main Rivers defences
0.5%	1 / 200	The largest flood event for which defences on the tidal Nene are designed to defend against
0.1%	1 / 1000	The largest flood event that the banks of the Whittlesey Washes Flood Storage Reservoir are designed to contain.

7.2.3. In the past the likelihood of flooding has been described using the term 'return period'. This is, however, no longer standard practise as it implied that a '1 in 100' flood event would only happen once every 100 years. The probability is actually a 1 in 100 chance of the event happening every year. It could happen twice in a year, or more often.

7.3. Standards of protection for defences

7.3.1. In this chapter you will also find mention of standards of protection of various flood defences. The standard of protection (SoP) of a drainage system or flood defence is the level up to which it is expected to provide protection against a flood event. For example, a flood defence could be designed and built to have an SoP of 1 in 100 (1%). This means that it would provide protection against flood events that have an annual occurrence of up to 1 in 100 (1%). If larger and lower probably flood events occur, these could overtop these defences.

7.4. Differing probabilities for river flood events and heavy rainfall events

7.4.1. A rainfall event of annual probability 1 in 100 (1%) will not necessarily cause a river flood event of annual probability 1 in 100 (1%). The complexity of different river catchments and landscapes means that the probabilities of rainfall events and river flooding are not comparable. For example rainfall landing in a catchment can flow overland into sewers or rivers or filter through the ground to join groundwater supplies.

7.5. Rating the different types of flood risk for Peterborough

7.5.1. The types of flooding described in this chapter are laid out in order of the organisations responsible for co-ordinating the management.

7.5.2. The risk from different types of flooding varies significantly across Peterborough depending on the landscape, the proximity to watercourses, the style of local drainage system and what would be impacted by the flooding. In order to give flood and water management organisations an overall perspective of flood risk in Peterborough, each type of flooding has been rated according to the likelihood of an event occurring in Peterborough and the expected impacts. This exercise was carried out with Peterborough's water management partners using a risk matrix calculation and professional judgement to identify the economic, environmental and social impacts. The results are set out in table 7-2.

7.5.3. **Appendix D** show the categories for likelihood, impact and risk that were used for this calculation. The likelihood categories have been developed based on the Environment Agency's classification bands for flood risk. The likelihood does take flood defences into consideration. Where the annual probability of flooding from a source spans more than one band, the highest likelihood band has been represented. With the impact score this was derived based on the highest scoring impact from the impact categories.

7.5.4. The following risk table and this chapter do not include flooding caused by operational issues such as breaching, bursting pipes or damaged defences.

7.5.5. The risk from foul-only sewers is also not included in the table below. This is because the likelihood of properties in Peterborough having foul capacity issues is very low and water companies treat the resolution of these issues as high priority.

Table 7-2: Risk matrix for Peterborough

FLOOD SOURCE & DETAILS	SOURCE OF FLOODING	**Sea** (coastal)	**Reservoir**	**Main river - tidal waters** (Nene only)	**Main river – non tidal**	**Combined Nene Event** (during Nene tide lock with Washes full)	**IDB drainage catchments**	**Ordinary watercourses (not in IDB areas)**	**Ground water**	**Surface runoff** (including overflow from gullies and surface water sewers)	**Combined sewers** (foul and surface water)	**Two or more sources** e.g. Main River and surface water runoff
	PAGE	39	39	40	42	55	49	50	53	51	54	55
	RESPONSIBLE AUTHORITY	EA	EA	EA	EA	EA, IDB	IDB	PCC	PCC	PCC and AW	AW, PCC	EA, PCC, AW, IDB
WARDS WHERE NOTABLE AREA OF RISK EXISTS FOR THE FLOODING SOURCE	Barnack		✓				✓	✓	✓	✓		✓
	Bretton North				✓			✓	✓	✓		✓
	Bretton South							✓		✓		✓
	Central		✓		✓	✓		✓	✓	✓	✓	✓
	Dogsthorpe							✓	✓	✓		✓
	East			✓	✓	✓		✓	✓	✓		✓
	Eye & Thorney		✓	✓	✓		✓		✓	✓		✓
	Fletton & Woodston		✓		✓			✓	✓	✓	✓	✓
	Glinton & Wittering		✓		✓	✓	✓	✓	✓	✓		✓
	Newborough		✓		✓		✓		✓	✓		✓
	North				✓				✓	✓		✓
	Northborough		✓		✓		✓		✓	✓		✓
	Orton Longueville		✓		✓	✓		✓	✓	✓		✓
	Orton Waterville		✓		✓	✓		✓	✓	✓		✓
	Orton with Hampton				✓			✓	✓	✓		✓
	Park							✓	✓	✓	✓	✓
	Paston				✓			✓	✓	✓		✓
	Ravensthorpe							✓	✓	✓		✓
	Stanground Central		✓		✓	✓		✓	✓	✓	✓	✓
	Stanground East							✓		✓		✓
	Walton				✓			✓	✓	✓		✓
	Werrington North				✓			✓	✓	✓		✓
	Werrington South				✓			✓	✓	✓		✓
	West				✓	✓		✓	✓	✓	✓	✓

FLOOD SOURCE & DETAILS	SOURCE OF FLOODING	**Sea** (coastal)	**Reservoir**	**Main River - tidal waters** (Nene only)	**Main River – non tidal**	**Combined Nene event** (during Nene tide lock with Washes full)	**IDB drainage catchments**	**Ordinary watercourse**	**Ground water**	**Surface runoff** (including overflow from gullies and surface water sewers)	**Combined sewers** (foul and surface water)	**Two or more sources** e.g. Main River and surface water runoff
	PAGE	39	39	40	42	55	49	50	53	51	54	55
	RESPONSIBLE AUTHORITY	EA	EA	EA	EA	EA, IDB	IDB	PCC	PCC	PCC and AW	AW, PCC	EA, PCC, AW, IDB
PETERBOROUGH-WIDE RISK MATRIX	**LIKELIHOOD OF EVENT OCCURING**	0	1	1	4	2	4	4	3	5	5	4
	IMPACT OF EVENT	N/A	5	2	3	5	1	1	2	1	2	3
	RISK	No risk (0)	Low (5)	Low (2)	High (12)	High (10)	Low (4)	Low (4)	Medium (6)	Low (5)	High (10)	High (12)

7.6. Coastal flooding

7.6.1. In the Anglian Region coastal flooding occurs particularly when storms in the North Sea coincide with spring tides, causing the overtopping of coastal sea defences. This occurred in 1953 in East Anglia as well as in 2013. While all of Peterborough's risk management authorities would give assistance during these events, Peterborough itself is not at risk from the coastal flooding.

7.7. Reservoir flooding

7.7.1. The likelihood of Peterborough flooding from large raised reservoirs (ones that hold over 25,000 cubic metres of water – equivalent to approximately ten Olympic sized swimming pools) is very low. Flooding would need to happen either from the reservoirs either being overtopped (gradual) or failing (catastrophic). The former is unlikely because the water level of large reservoirs is carefully managed and water can be transferred in and out through pipe and Main Rivers systems. The latter is unlikely because the Reservoirs Act requires that, regardless of the level at which a large reservoir might overtop, there must be no risk of catastrophic breach from in an event with an annual probability of occurrence of less than 1 in 10,000 (0.01%). All large reservoirs must be inspected and supervised by reservoir panel engineers. There has been no loss of life in the UK from reservoir flooding since 1925.

7.7.2. While flooding is very unlikely, if a reservoir dam did fail, a large volume of water would escape at once with little or no warning. Therefore to ensure that this can be planned for by emergency responders and those living near reservoirs, the Environment Agency produces a map show the extent of flooding that could occur if a reservoir failed. This map can be found on their website. The large reservoirs in and around Peterborough are listed in table 7-3:

7.7.3. There are other smaller reservoirs in Peterborough that are privately owned e.g. by farmers and landowners to provide water supply for irrigation. These are not subject to as stringent legislation.

Table 7-3: Large reservoirs in and around Peterborough

Reservoir	Type of reservoir	Bank name if relevant	Standard of Protection (SoP) against overtopping	Standard of protection against catastrophic breach
Whittlesey Washes / Nene Washes[14]	Flood storage	South Barrier Bank	Mainly 1 in 1000 (0.1 %) 1 in 10,000 (0.01%) near Eldernell	1 in 10,000 (0.01%)
Rutland Water	Water supply	-	1 in 10,000 (0.01 %)	1 in 10,000 (0.01%)
Burghley House Lake	Amenity	-	1 in 1000 (0.1 %)	1 in 10,000 (0.01%)
Eyebrook	Built to supply Corby steel works though	-	1 in 1000 (0.1 %)	1 in 10,000 (0.01%)

[14] This area of land is registered for its RAMSAR, SSSI and SPA environmental designations under the name 'Nene Washes' and hence the area is often referred to in Peterborough by this name. However the Environment Agency specifically refer to the flood storage reservoir as the Whittlesey Washes. This is to reduce confusion with the Nene Washlands in Northampton which also provides flood storage to the River Nene. The term Whittlesey Washes will be used throughout the FMS to enable consistency with the Agency's terminology.

Reservoir	Type of reservoir	Bank name if relevant	Standard of Protection (SoP) against overtopping	Standard of protection against catastrophic breach
	demand is now much reduced. Now trout fishery and nature reserve.			
Crowlands Cowbit Washes	Flood storage	-	1 in 1000 (0.1 %)	1 in 10,000 (0.01%)
Deene Lake	Private lake	-	1 in 1000 (0.1 %)	1 in 10,000 (0.01%)
Pitsford	Water supply	-	1 in 10,000 (0.01 %)	1 in 10,000 (0.01%)

Figure 7-1: Man fishing at Rutland Water reservoir. Source: Anglian Water.

7.8. Tidal Main River flooding

7.8.1. Peterborough is at risk from tidal flooding on the Nene. There are however measures in place to manage and minimise this risk. The Dog-in-a-Doublet sluice, shown in figures 7-2 and 7-3, provides a tidal limit, with the gates being closed at high tides to prevent water from entering Peterborough city centre from the downstream end of the Nene. East of the sluice either side of the tidal stretch of the River Nene the flood defences also have a standard of protection of 0.5% which means they protect against a flood event that has a probability of occurring of 1/200 in any one year.

7.8.2. The tidal limit on the River Welland is at Fulney Lock and the Marsh Road Sluice, downstream of Spalding. In Peterborough there is no risk of tidal flooding from the Welland.

Figure 7-2: Dog in the Doublet sluice during a very high tide.
Source: Peterborough City Council

Figure 7-3: Dog in the Doublet sluice when the tide is not so high.
Source: Environment Agency.

1947 Case Study
Source: Eye Peterborough, 2014 and Dr Mark Saunders, 1998.

The winter of 1947 was extremely cold with strong gales and heavy snowstorms. When temperatures rose in March the snow thawed quickly. The ground was still frozen so the snow melt could not infiltrate and instead ran towards streams and rivers. This coincided with the peak of a spring tide and the high water levels combined with very strong winds pounded flood defences. On 19th March 1947 the water level in the River Nene is reported as having been 2.4 metres above average at Town Bridge in Peterborough. At Wansford data from the Environment Agency and the Institute of Hydrology indicates that the flood flow peak was approximately 255 cubic metres per second.

A breach in the flood defences of Cowbit Washes north of Crowland occurred on 21st March. Water inundated the northern areas of Peterborough, reaching land north of Thorney and Eye Green.

Figures 7-4 (left): It looks like the photographer was standing on a causeway in the middle of a large lake but the view is actually looking south along Crowland Road. The road was previously under water. Credit: John Kemmery.
Figure 7-5 (right): The right-hand image is the same view in 2013. Credit: www.eyepeterborough.co.uk

Flooding occurred in many areas across Peterborough. Flood Zone 2, illustrated in the Environment Agency's Flood Map for Planning, is generally understood to closely follow the outline of flooding in Peterborough in 1947.

Since 1947 significant work has been carried out to upgrade defences in the Fens including the installation of more powerful pumps.

7.9. Main River flooding (non-tidal)

7.9.1. Certain watercourses in England have been historically designated by the Secretary of State for Environment, Food and Rural Affairs as 'Main Rivers'. This enmainment process is now carried out by the Environment Agency. A Main River is defined as a watercourse marked on a statutory Main River map held by the Department of Environment, Food and Rural Affairs and the Environment Agency. This can include any structure or appliance for controlling or regulating the flow of water into, in or out of the channel. En-mainment is carried out based on the flood risk importance of a river. The larger arterial watercourses are therefore normally designated but some smaller watercourses have also been included.

7.9.2. The Environment Agency does not own Main Rivers but has permissive powers to maintain and improve these rivers to manage flood risk. It is important to note that the ultimate responsibility for maintenance of any river sits with the landowner (see sections 6.4 and 6.13).

7.9.3. Peterborough has 17 Main Rivers, listed below by river catchment and illustrated in figure 7-6.

Welland Catchment

i. Brook Drain
ii. Car Dyke
iii. Folly River
iv. Marholm Brook (downstream of Belham Wood only)
v. Maxey Cut
vi. Paston Brook
vii. River Welland
viii. Werrington Brook

Nene Catchment

ix. Billing Brook
x. Castor Splash
xi. Fletton Spring
xii. Mortons Leam
xiii. Orton Dyke
xiv. Padholme Drain
xv. River Nene (Non-tidal from Northamptonshire into Peterborough up to the Dog-in-a-Doublet sluice. Tidal downstream from the sluice gate.)
xvi. Stanground Lode
xvii. Thorpe Meadows

7.9.4. Figures 7-7 and 7-8 provide Nene and Welland catchment-wide summaries of the risk to property from a Main River flood event with an annual probability of 1 in 100 (1%).

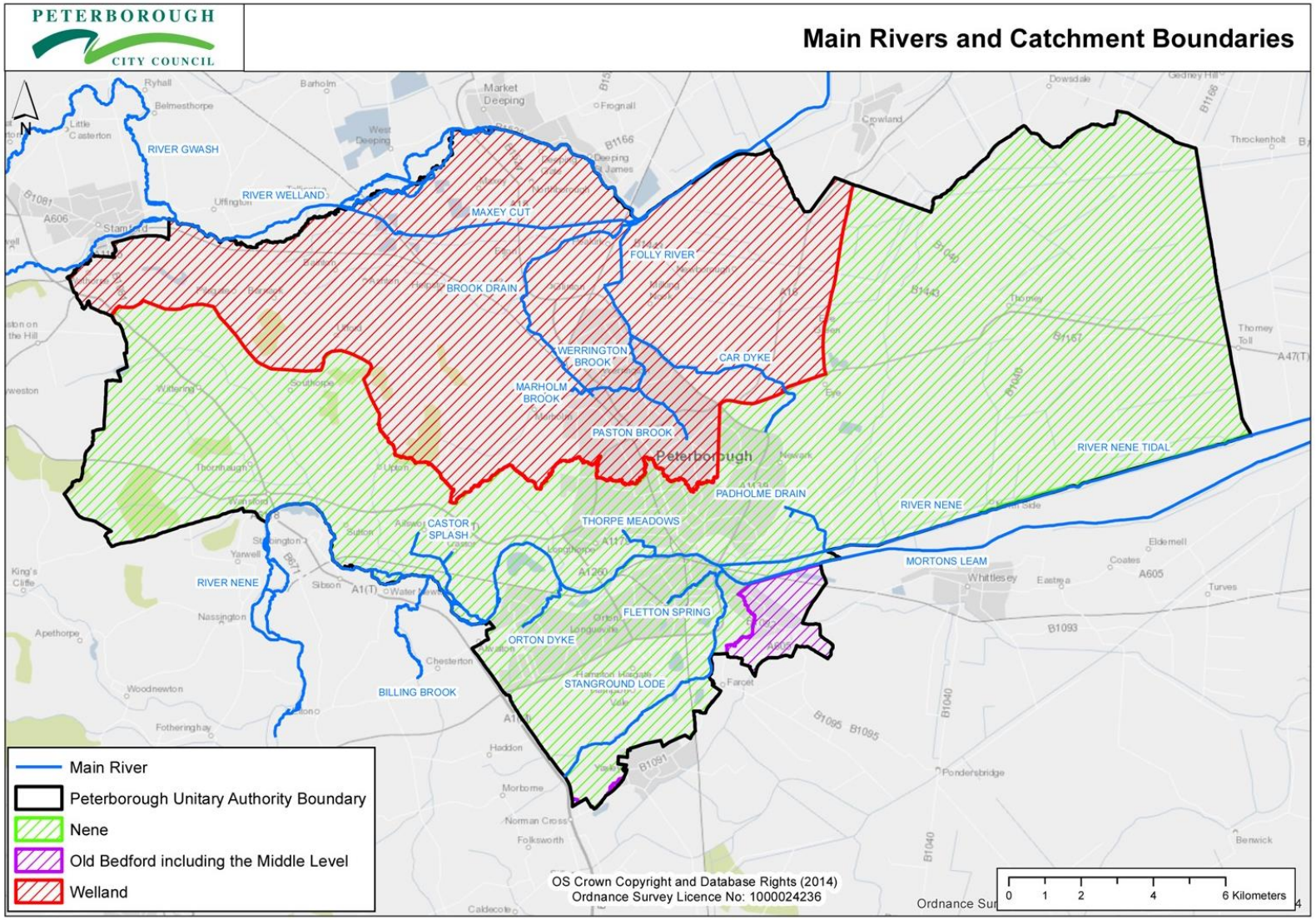


Figure 7-6: Main Rivers and catchment boundaries

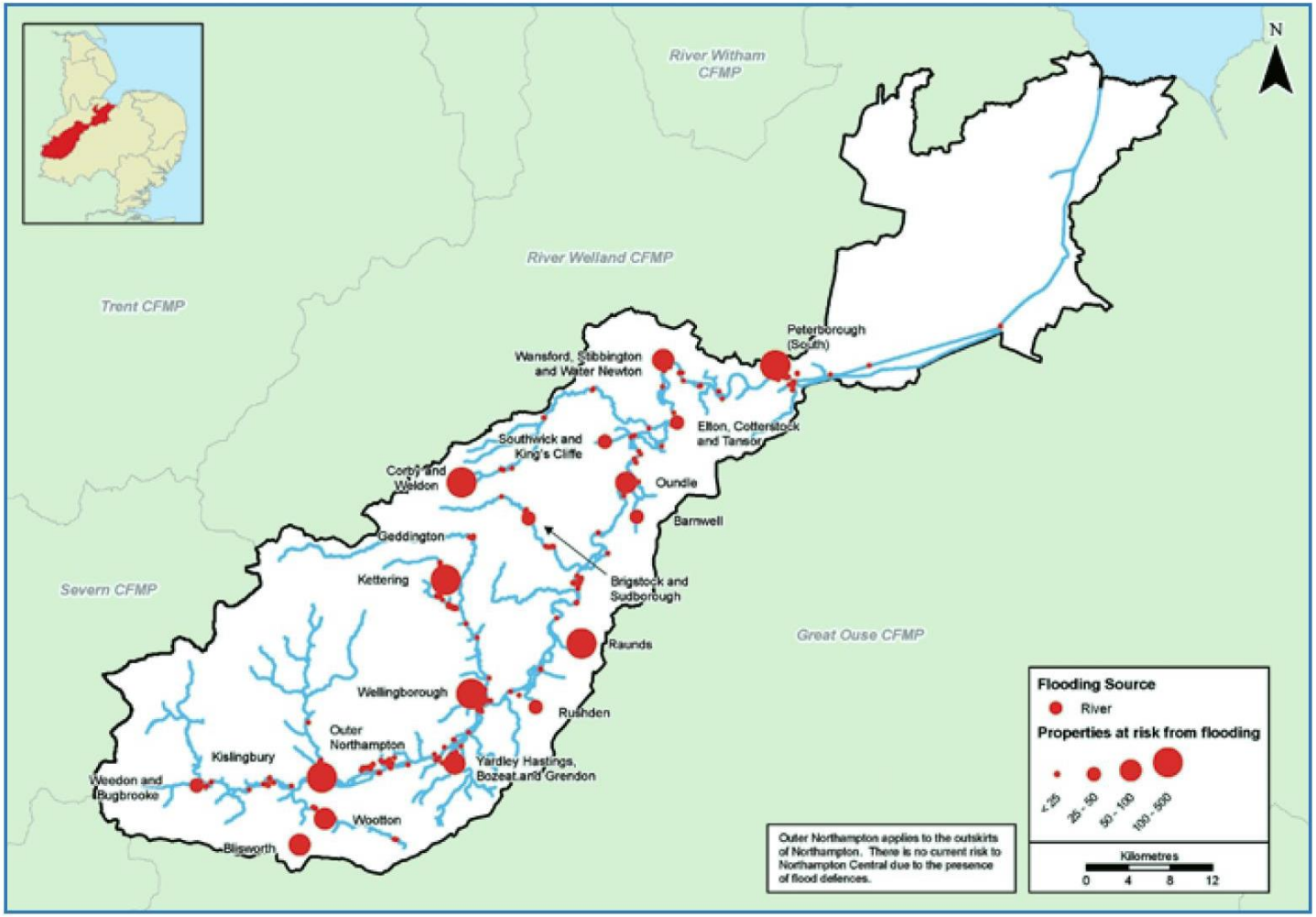


Figure 7-7: Map showing the extent and location of the Nene and, taking into account current flood defences, the areas with properties at risk of Main River flooding from a 1% probability river flood.

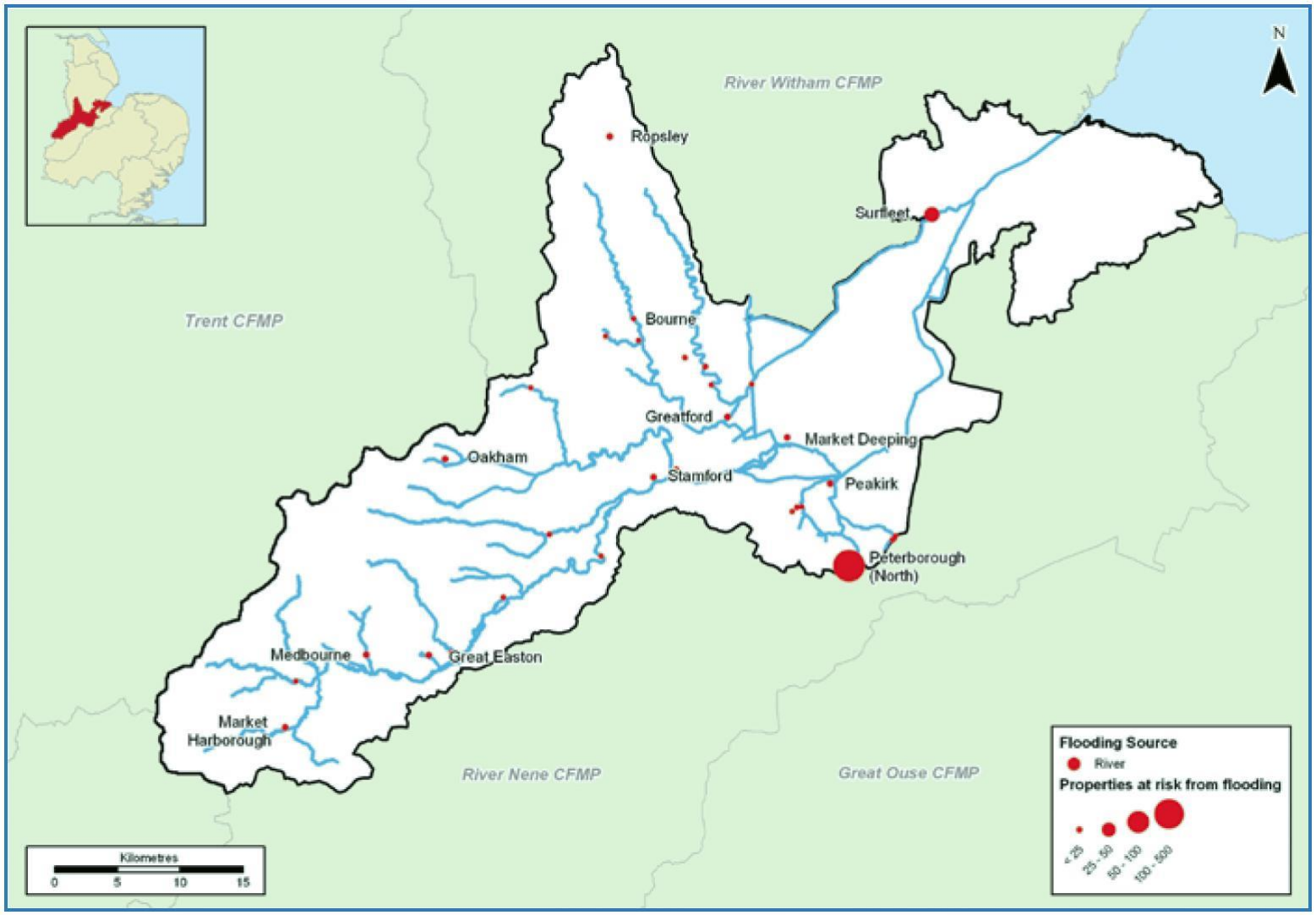


Figure 7-8: Map showing the extent and location of the Welland and, taking into account current flood defences, the areas with properties at risk of Main River flooding from a 1% probability river flood.

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7.9.5. Areas at risk of flooding from Main Rivers are usually those within a certain distance from the river, with risk reducing further from the channel. The area immediately next to a river where the river is expected to flood, or where it would flood if there were not defences, is called floodplain. The size of the floodplain depends on the size and flow of the river and the surrounding landscape.

7.9.6. For many of the watercourses in Peterborough the standard of protection they provide is given by the size and shape of the river, its banks and the level of maintenance undertaken. However some Main Rivers also benefit from formal flood defence structures. For example, alongside the Whittlesey Washes the River Nene has a design standard of protection (SoP) of 1 in 200 (0.5%) created by the formal flood defence embankments on either side of the river channel. Tables 7-4 and 7-5 below give the standard of protection for formal flood defences in Peterborough within the Nene and Welland catchments. This is based on information held within the National Flood and Coastal Defence Database.

Table 7-4: SoP for formal Main River defences within the Nene Catchment

Defence type	Watercourse	Standard of Protection (SoP)
Raised (man-made) river embankments	River Nene north bank: Fitzwilliam Bridge to Dog in a Doublet	1 in 100 (0.1%)
Raised (man-made) river embankments	River Nene Cradge Bank (southern bank): Fitzwilliam Bridge to Dog in a Doublet	1 in 100 (0.1%)
Sea defence (man-made) tidal embankments	River Nene both banks: Dog in a Doublet to Halls Farm	1 in 150 (0.67%)
Raised (man-made) embankment - designated reservoir embankment serving the Whittlesey Washes reservoir	South Barrier Bank	1 in 1000 (0.1 %)

Table 7-5: SoP for formal Main River defences within the Welland Catchment

Defence type	Watercourse (alphabetical order)	Standard of Protection (SoP)
Raised (man-made) river embankments	Car Dyke western bank: Werrington Bridge Road to opposite Hawkshead Way	1 in 50 (2%)
Raised (man-made) river embankments	Car Dyke eastern bank: Werrington Bridge Road to Whitepost Road	1 in 50 (2%)
Raised (man-made) river embankments	Folly River both banks: Peakirk Bridge to Peakirk pumping station	1 in 100 (1%)
Raised (man-made) river embankments	Maxey Cut north bank: Loham Sluice to confluence with River Welland	1 in 100 (1%)
Raised (man-made) river embankments	Maxey Cut south bank: Loham Sluice to Peakirk Viaduct	1 in 100 (1%)

7.9.7. In Peterborough when river levels in the Nene are high and exceed the discharge capacity of the Dog in a Doublet sluice, the Whittlesey Washes will begin to fill up.

This is possible even in low tide conditions (i.e. when the sluice gate is open). The Washes therefore provide Peterborough with flood protection from Main River flooding. Further information about the role of the Washes during high tides is available in section 7.16.

Find out about the risk of flooding in your area from Main Rivers

7.9.8. The Environment Agency produces two different maps that can be used when looking at flood risk from rivers and the sea. These maps include the risk of flooding from tidal events (section 7.8), Main Rivers and other watercourses with a catchment greater than 3km^2.

Flood Maps

To view the maps described below and the risk for your area please visit:
http://maps.environment-agency.gov.uk/

7.9.9. **Risk of Flooding from Rivers and the Sea map**- This map shows the actual risk of flooding on a scale of very low, low, medium and high as well as the flood extents. The map takes flood defences and management actions into account. However please note that flood defences can be overtopped or fail (e.g. conditions greater than the risk that the defence was designed for or if the defences are in poor condition). Therefore some areas behind defences are still shown as having a level of risk. The map uses the following risk bands:

i. High – each year there is a chance of flooding of greater than 1 in 30 (3.3%).
ii. Medium – each year there is a chance of flooding of between 1 in 30 (3.3% and 1 in 100 (1%)
iii. Low – each year there is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%)
iv. Very low – each year there is a chance of flooding less than 1 in 1000 (0.1%)

7.9.10. **Flood Map for Planning (Rivers and the Sea)** - This map is designed for use in the planning system when allocating development to appropriate sites and when assessing submitted applications. The map does not show the presence of defences because of the risk that these can fail or be overtopped and the need for development to consider lower risk areas where minimal flood risk management works are needed before considering higher risk development sites. The Flood Map for Planning shows the flood extents possible from a flood event of annual probability:

i. of up to a 1 in 100 (1%). This is often referred to as Flood Zone 3.
ii. of up to 1 in 1000 (0.1%). This is often referred to as Flood Zone 2.
iii. less than 1 in 1000 (0.1%). This is often referred to as Flood Zone 1 and is considered to be the area of lowest and minimal risk.

1998 Case Study
Source: Met Office, October 2012

At the start of Easter 1998 (8-10th April) a stationary band of heavy rain led to saturated ground and excessive surface water runoff. On Good Friday levels in the Nene were very high, with the flood flow peak at Wansford being approximately 200 cubic metres per second. 18 homes were flooded from the Nene in a variety of locations and many roads across Peterborough were flooded from surface water. Two days later on Easter Sunday 100 homes flooded from the Thorpe Meadows watercourse, a smaller Main River. This was due to the effect of significant local rainfall and surface water entering the watercourse from the Longthorpe catchment of Peterborough, and the watercourse not being able to discharge out into the River Nene. Since this event a flood defence wall has been installed to protect properties from overtopping of Thorpe Meadows watercourse.

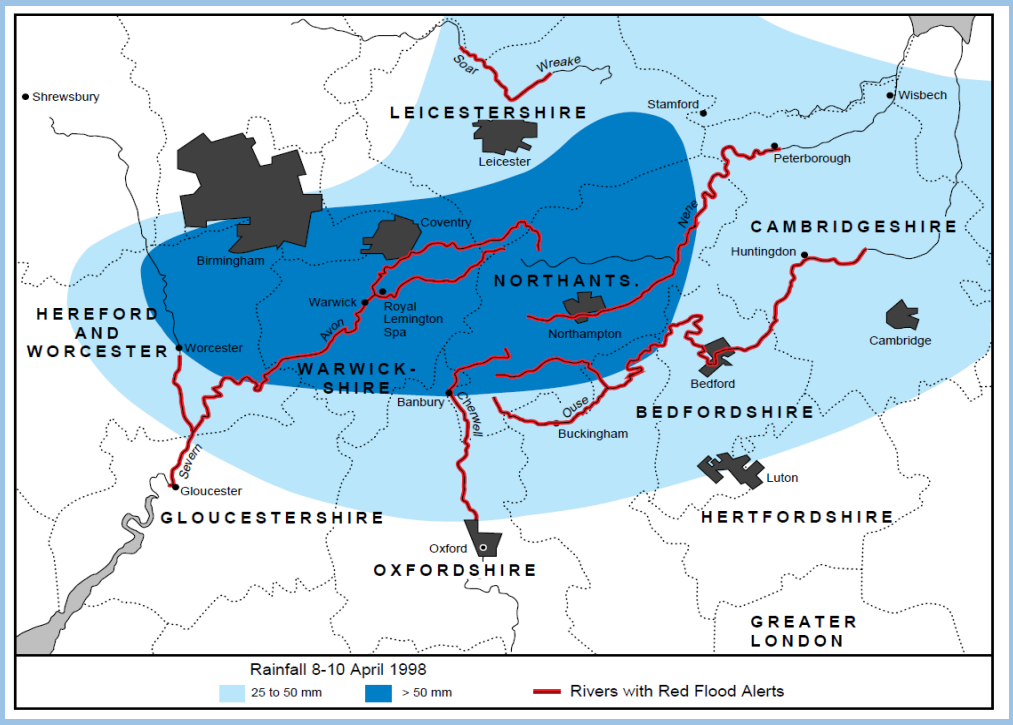


Figure 7-9: Map showing the contours of the heaviest rainfall for the three day period 8-10 April 1998, together with the rivers put on Red Flood Alert by the UK Environment Agency.. (Credit: Saunders, 1998).

7.10. The Fens and Internal Drainage Board watercourses

7.10.1. The Fens is a wide expanse of flat prime agricultural land, much of which is below sea level. In order to drain the land, water from Peterborough's fens is generally pumped via a large grid-like network of open watercourses (classed as ordinary watercourses) into the downstream tidal sections of the Nene and Welland, and from there out to sea. In most areas the gradient across the land to the watercourses is only 6 inches to 1 mile (1 centimetre to 106 metres) and hence water has to be pumped by large diesel and electric pumps within the network. These pumps are housed in pumping stations as shown within figures 7-10 and 7-11.

7.10.2. In drier months the role of an IDB can be more about managing water levels in the channels for irrigation or navigation, than about draining the land.

Figures 7-10 and 7-11: Cross Guns Pumping Station inside (left) and outside (right). Source: North Level District IDB

7.10.3. More detailed information about the wider area of the Fens covering Lincolnshire, Cambridgeshire Norfolk and Suffolk is included in **Appendix B**.

7.10.4. Protection for the Fens is effectively provided on three different levels; primary coastal defences (remembering that IDB districts extend much further towards the Wash than the boundary of Peterborough City Council); Main River defences and flood risk management assets e.g. on the Welland and Nene; and the network of IDB watercourses, pumping stations and other associated water level management structures. Therefore Peterborough's Fens effectively have three different levels of risk. In order of likelihood of occurrence these are:

a) the risk of individual ordinary watercourses overtopping. *Probability < 1 in 50 (2%) - event is not severe.*
b) the risk of Main River defences being locally overtopped. *Probability < 1 in 100 (1%);*
c) the risk of complete system failure due to an 'combined high tide and river flow event', where a spring tide in the North Sea coincides with intense rainfall in Peterborough and high river levels from upstream. *Probability < 1 in 200 (0.5%) - event is more severe*. This third type of flood risk event is discussed in section 7.16.

7.10.5. The standard of protection of the IDB systems, including the ordinary watercourses and related infrastructure is known to be at least 1 in 50 (2%) i.e. the watercourses are not expected to overtop in an event of lower probability than this. However given investment in the network in previous years it is believed that these systems actually has a higher standard of protection of approximately 1 in 75 (1.33%). Drainage district modelling is planned in order to confirm this.

7.10.6. The intensity of rainfall is more of a problem for IDB watercourses than the length of the rainfall period. For example in January 2014 Peterborough experienced four times the average expected monthly rainfall but this total was distributed over the whole month and the IDB pumps could continue to pump the water away. This increases the cost of the water level management (more pumps need to be used for longer) but is well within the capacity of the system. During a very heavy rainfall event all of the IDB pumps would need to be operating and if the intensity was greater than that of a 1 in 100 (1%) probability rain event the watercourses could be overtopped in some locations. This would cause localised flooding in some parts of

the district but is unlikely to cause a complete failure of the system as intense rainfall tends to be localised.

7.10.7. It should be noted that risk to power supplies is an important factor in protecting our fen areas as IDB systems depend on this. To increase their resilience they have both electric and diesel pumps and these are serviced regularly.

7.10.8. Due to the close linkages between Main River and ordinary watercourse flooding in the Fens, flood risk from IDB ordinary watercourses is included in the Environment Agency's Flood Maps for Rivers and the Sea described on page 45.

7.10.9. As mentioned in section 7.9 the Main Rivers protecting Peterborough's IDB districts have a 1 in 200 (0.5%) standard of protection.

7.11. Ordinary watercourse flooding

7.11.1. Ordinary watercourses include every river, stream, ditch, drain, cut, dike/dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a Main River. Ordinary watercourse flooding can be caused when intense or long duration rainfall drains to the channel and results in water levels overtopping of the banks of the channel on to surrounding land.

7.11.2. In Peterborough there are three types of ordinary watercourse:

i. Those owned by principally agricultural landowners in the Fens and managed as part of the IDB network.
ii. Those owned and managed by private landowners. The exact number of these drains present is not recorded. This is in part due to the broad definition of what a watercourse can be.
iii. Those where maintenance is undertaken by Peterborough City Council. This could be either because the city council is the landowner (these watercourses are known as CRA Dykes[15]) or where there is a private landowner but due to the associated flood risk, the city council historically agreed to take on management (these watercourses are known as Parish Dykes). In total the city council has 55 ordinary watercourses under its management.

7.11.3. Flood risk from IDB ordinary watercourses in the Fens is covered in the previous section (section 7.10).

7.11.4. No extensive detailed modelling of the risk level from ordinary watercourse types ii-iii has been undertaken. It is noted above that complete maps of type ii so not exist. As a first step the action plan includes an action to do further mapping of ordinary watercourses and this is also discussed further within chapter 10.

7.11.5. The city council has no records of flooding of properties caused by ordinary watercourses on its own land. Flooding from Parish Dykes has occurred, for example from Racecourse Drain in Fengate. In the past flooding has occurred from watercourses that were classed at the time as ordinary watercourse. These watercourses were then referred to as critical ordinary watercourses and in 2004/5

[15] CRA Dykes are drainage ditches within Community Related Asset (CRA) land. CRA land refers to tranches of land transferred from the Development Corporation, when it closed, to Peterborough City Council. The majority of CRA land forms verges between the highway and other land uses.

were enmained due to the level of risk. This applies to Brook Drain, Marholm Brook and Thorpe Meadows.

7.12. Surface runoff / surface water

7.12.1. Peterborough is susceptible to flooding from surface water runoff. This generally results from very intense rainfall exceeding the capacity of local drainage networks (whether sewers, ordinary watercourses or other drainage features such as lakes) and therefore flowing across the ground. Peterborough has also experienced flooding in these two opposing situations:

i. Sudden or high volumes of melting snow cause surface runoff which exceeds the capacity of the local drainage system. If the ground is frozen then minimal water can infiltrate naturally in these conditions which can make surface water flooding worse.
ii. The ground is very hard and dry from lack of rainfall (e.g. in drought periods). This also makes the ground solid and reduces the ability of rainwater to infiltrate, creating more runoff.

> The term **surface water** is normally used in relation to surface runoff, particularly with regards to the naming of **surface water sewers** that take rainwater from roofs and highways.
>
> These sewers (also sometimes called storm water sewers) do not take water to be treated, but to local watercourses. It is therefore important that contaminants that need treating are not put down drains in the highway or drains at the bottom of household or commercial downpipes.

7.12.2. Flooding from surface runoff tends to be localised due to the fact that the most intense rainfall within a storm is often itself localised. The existence on the ground of structures or land heights that may channel water into certain locations also adds to this. Whatever the source, surface runoff will tend to flow towards low spots where it collects. Flooding can occur both to land or property which lies in the flow path of the water or to property situated in the low spot where the water finally collects. While flooding tends to be localised the actual risk is fairly well spread across Peterborough indicating that surface water flooding can happen almost anywhere.

7.12.3. In practise if heavy rainfall is particularly intense or occurs for long periods of time it can be difficult to differentiate it from other sources of flooding. Heavy rainfall can quite quickly cause flooding from surface water sewers, from ordinary watercourse flooding or from groundwater if the groundwater in the catchment is quick to respond. Ultimately full surface water sewers and ordinary watercourses can lead to increased levels in the Main Rivers and flooding from this source.

7.12.4. It is quite common for parts of Peterborough to experience small scale flooding of highways, footpaths and private gardens from surface runoff, as surface water sewers (sometimes called storm water sewers) are only designed with a standard of protection of 1 in 30 (3.3%). The number of homes that have flooded from surface runoff in the past is relatively low but we know from recent events that the risk exists and both new development and existing maintenance practises need to take this risk into consideration.

7.12.5. Figure 7-12 illustrates how the existing highway drainage system in Peterborough functions. Highway gullies owned by Peterborough City Council feed into surface water sewers currently owned by Anglian Water. As the increased future impacts of heavier rainfall and severe weather are better understood, the use of sustainable drainage systems (introduced in chapter 4) needs to become more common to make Peterborough more resilient.

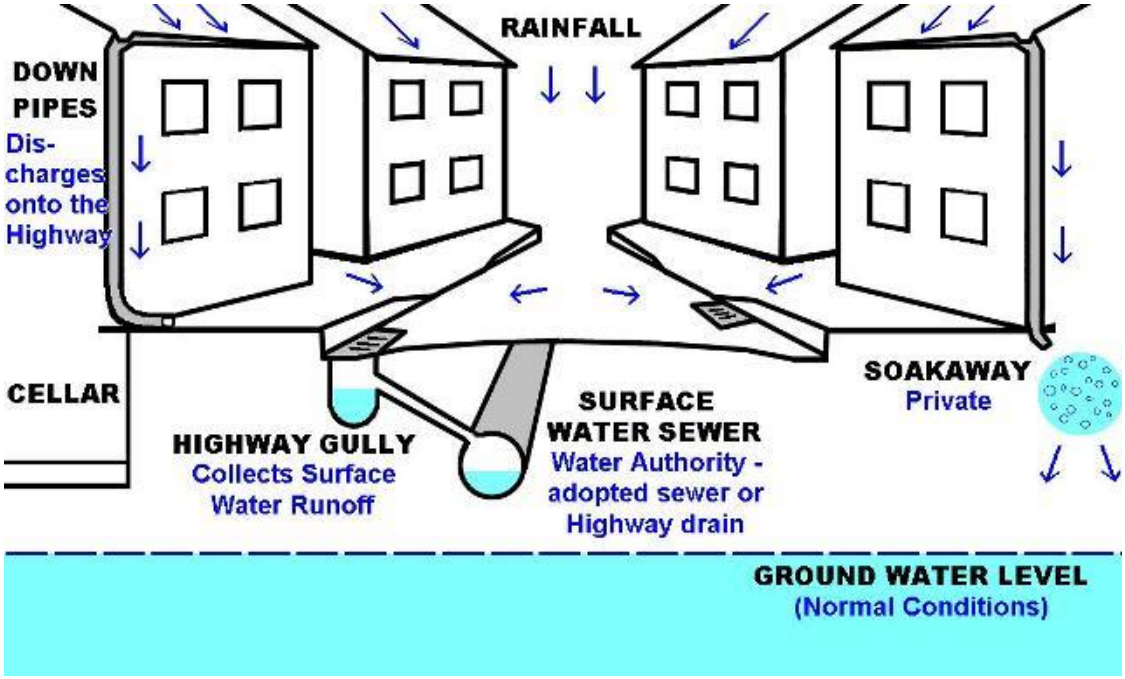


Figure 7-12: Illustration of how the highway drainage and surface water networks function.

7.12.6. Approaches to manage surface water that take account of water quantity (flooding), water quality (pollution) and amenity issues are collectively referred to as sustainable drainage systems (SuDS). SuDS mimic nature and typically manage rainfall close to where it falls. They are technically regarded as a sequence of management practises, control structures and designs to efficiently and sustainably drain surface water.

7.12.7. Peterborough City Council's SuDS website is available at www.peterborough-suds.org.uk. This site aims to provide comprehensive information for developers and others needing to consider site drainage in Peterborough. Supplementary information is also available from the website of susdrain, the community for sustainable drainage.[16]

7.12.8. The localised nature of thunderstorms with intense downpours makes it very difficult to accurately forecast and provide warnings for surface water flooding. Rain totals experienced even in neighbouring wards can vary significantly. Since water follows flow routes based on land heights and runs towards low spots, properties in one part of a street may well be affected while those further along the street may be fine. The city council recommends that communities and businesses check their risk level online and keep abreast of weather forecasts and weather warnings issued by

[16] www.susdrain.org.

the Met Office to give them as much notice as possible. To find out about the surface water risk in your area see box below.

Flood Maps

To view these maps and the risk for your area please go to:
http://maps.environment-agency.gov.uk/wiyby

7.12.9. The FWM Act 2010 defines flooding from surface runoff as that generated from rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving), and has not yet entered a watercourse, drainage system or public sewer. This coincides with the type of flooding shown by the Environment Agency's Risk of Flooding from Surface Water maps.

7.12.10. **Risk of Flooding from Surface Water map**- This map shows the risk of surface water flooding and includes information on depth and velocity of water. The map does not take thresholds heights of individual properties into account and therefore cannot be used to identify properties that will flood from surface water. It can only give an indication of the broad areas at risk.

7.12.11. The map uses the following risk bands:

i. High – each year there is a chance of flooding of greater than 1 in 30 (3.3%).
ii. Medium – each year there is a chance of flooding of between 1 in 30 (3.3% and 1 in 100 (1%)
iii. Low – each year there is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%)
iv. Very low – each year there is a chance of flooding less than 1 in 1000 (0.1%)

7.12.12. Table 7-6 below shows other ways to explain the main risk categories used for the mapping:

Table 7-6: Understanding the main risk categories shown on the Risk of Flooding from Surface Water map

Level of risk	Chance of flooding in any given year (1 year)	Chance of flooding in a typical mortgage (30 years)	Chance of flooding in a lifetime (80 years)
High	Greater than 1 in 30 (3.3%)	Greater than 2 in 3 (64%)	Greater than 14 in 15 (94%)
Medium	Between 1 in 30 (3.3%) and 1 in 100 (1%)	Between 2 in 3 (64%) and 1 in 4 (26%)	Between 14 in 15 (94%) and 1 in 2 (55%)
Low	Between 1 in 100 (1%) and 1 in 1000 (0.1%)	Between 1 in 4 (26%) and 1 in 34 (3%)	Between 1 in 2 (55%) and 1 in 13 (8%)
Very Low	Less than 1 in 1000 (0.1%)	Less than 1 in 34 (3%)	Less than 1 in 13 (8%)

7.13. Groundwater flooding

7.13.1. Groundwater flooding tends to occur after long periods of sustained rainfall where infiltration into the ground raises the level of the water table and/or cause springs to have greater flow. Low-lying areas, where the water table is more likely to be at shallow depth, can be most at risk. Groundwater flooding is particularly associated with limestone and chalk soils which contain layers of water-bearing rock, clay or sand as these tend to contain major aquifers. To the west of Peterborough, the Nassaburgh limestone contains a number of aquifers and related springs.

7.13.2. Flooding from groundwater can also result from rivers being in flood over land that is very permeable as groundwater levels have a natural tendency to balance out other water levels across the area. The floodplains of the Nene and Welland contain permeable alluvial deposits of sand and gravels and hence this can be applicable here.

7.13.3. Groundwater flooding relates to the movement of water through the soils and bedrock and is different to land being waterlogged. Clay, for example, can become easily waterlogged after long periods of rain. The water is held in the soil which becomes boggy and new rainfall is unable to drain away and instead becomes surface water runoff as discussed in section 5.7. A large area of Peterborough has clay–based soil. However, in chalk, sands and gravels water can actually move through the soils due to the gaps between soil particles. This means that water can flow under the surface of the ground and hence springs and/or flooding can occur in areas not directly next to a river or a distance from where the heaviest rainfall has fallen.

7.13.4. The city council has allocated a proposed action in the action plan to understanding more about groundwater risk in Peterborough. With there being no publically available flood maps, local historical groundwater flood information being limited, and the city council only gaining a responsibility for managing this type of risk in 2010, it is an area where the city council would benefit from greater knowledge.

7.14. Sewer Flooding

7.14.1. Peterborough has three different types of sewers: surface water sewers, foul sewers and combined sewers. Surface water runoff caused by surface water sewers reaching their capacity is dealt with in section 7.12. This section discusses the risk from foul sewers which carry wastewater from homes and businesses (e.g. from washing machines and toilets) and the risk from combined sewers which carry both foul water and rainwater.

Combined sewer flooding

7.14.2. Combined sewers are generally associated with having the greatest risk of flooding within the wastewater network; during intense rainfall events large quantities of rainwater can take up the capacity in the sewers. This can cause foul water to back up from manholes or inside homes e.g. from toilets. Much of Peterborough's existing city centre, the old hospital and station quarter and Central Ward contain combined sewers and this risk should be borne in mind when opportunities arise to make these areas more resilient for the future.

Foul flooding

7.14.3. There are not many locations in Peterborough which are classified as being at risk from foul flooding due to a lack of capacity in the network. This is because resolving foul flooding is a key priority for water and sewerage companies. Anglian Water is obliged to report to Ofwat where there are properties at risk of internal flooding due to hydraulic incapacity in the system. This is known as the DG5 register. The location of properties in Peterborough on the DG5 register is not discussed within the FMS due to very localised nature of this flooding; the implications for the property itself and because the register changes regularly as issues are resolved or in some cases as new problem areas are discovered. Foul flooding is therefore not covered by the risk matrix in table 7-2.

7.14.4. Peterborough has also experienced foul flooding due to operational issues. Since these events can happen anywhere no specific levels of risk are formally associated with different parts of Peterborough. There are two main operational issues that the area suffers from:

a) Blockages in the network which prevent pumping stations from working and hence can create significant risk to properties on the same network as the blockage. Blockages are often caused by fats, oils and greases which are put down the drains at home and at work. The sewer system is not designed to be able to cope with these materials which act to clog up the pipes and removal is generally expensive.

b) Surface water infiltrating into the foul system (for which it is not designed) and caused capacity issues and surcharging. Most foul systems are not vacuum sealed and hence rainwater can get into them through structures like manholes. However it is when very large volumes appear in the network that this causes flood risk and investigation is needed into how the water is getting there.

Notes about the foul network

Foul water sewers carry used water from sinks, baths, showers, toilets, dishwashers and washing machines.

These sewers take water to be treated at sewage treatment works. Discharge containing chemicals should go into the foul network and not into surface water sewers as described in section 7.12. Detergents from car washes or oil leaks from cars are two examples of contaminants that often end up going into surface water sewers (and therefore untreated into rivers) when they would ideally go into the foul network.

The ‘waste’ from sewage treatment works is very often recycled into products for use in industrial and agricultural processes. For this reason you may hear Anglian Water refer to sewage treatment works as *water recycling plants.*

7.15. Impacts of Main Rivers water levels on other sources of flooding

7.15.1. Water levels in Main Rivers can easily impact upon flooding from other sources. Most ordinary watercourses, smaller Main Rivers and sewers flow or outfall into

another river. If the larger river is full then the smaller watercourse or sewer will not be able to discharge freely and may back up. This is often called flood locking and can cause flooding higher up the network potentially quite far from a Main River.

7.16. Combined high tides and river flows

7.16.1. As described in section, when high tides occur in Peterborough the Dog-in-a-Doublet sluice is closed to prevent tidal waters flooding homes, businesses and land. When a high tide occurs at the same time as a high river flow on the River Nene the closure of the sluice gates means that water from the Nene cannot escape out to sea. For this reason water from the Nene is channelled into the Whittlesey Washes flood storage reservoir via Stanground Sluice. When the tide begins to go out and river levels have reduced the stored water is released back into the Nene downstream at Rings End. This is demonstrated in figure 7-13 below.

7.16.2. The original design capacity of the Washes is 1 in 200 (0.5%) as shown in figure 7-14. The existence of the North Bank embankment and the South Barrier Bank means that flood water would not be expected to overtop onto surrounding land north or south of the Washes until around a 1 in 1000 (0.1%) probability flood water level was reached. Overtopping would only occur if the wind creates waves on the Washes, rather than because the water level in the Washes is higher than the bank. It is important to note, however that by the time this happened large areas of Peterborough, both along the Nene, around Stanground sluice and else, would already be flooded.

7.16.3. In theory there could also be a risk of breach from the South Barrier Bank from flood events of annual probability between 0.5% and 0.1%. Breaches can take place when defences are weakened e.g. by continued severe weather or by the actions of humans (insufficient maintenance) or animals (burrowing). Significant works are currently being led by the Environment Agency along this bank to ensure that the probability and impact of such a breach is minimised.

7.16.4. The worst case situation for Peterborough is one where very intense local rainfall, coincides with maximum flow in the Nene for several days and a North Sea spring tidal surge occurs meaning that the Dog in a Doublet has to be closed often. This is because the chances of the Washes reaching its design capacity (0.5%) is increased and once this happens there is an increased risk that water will start to overtop the Nene in various places through Peterborough.

7.16.5. Significant local rainfall amounts would also mean that ordinary watercourses and sewers are likely to be unable to discharge into Main Rivers and hence surface water flooding will occur around low points, manholes, and where ordinary watercourses overtop.

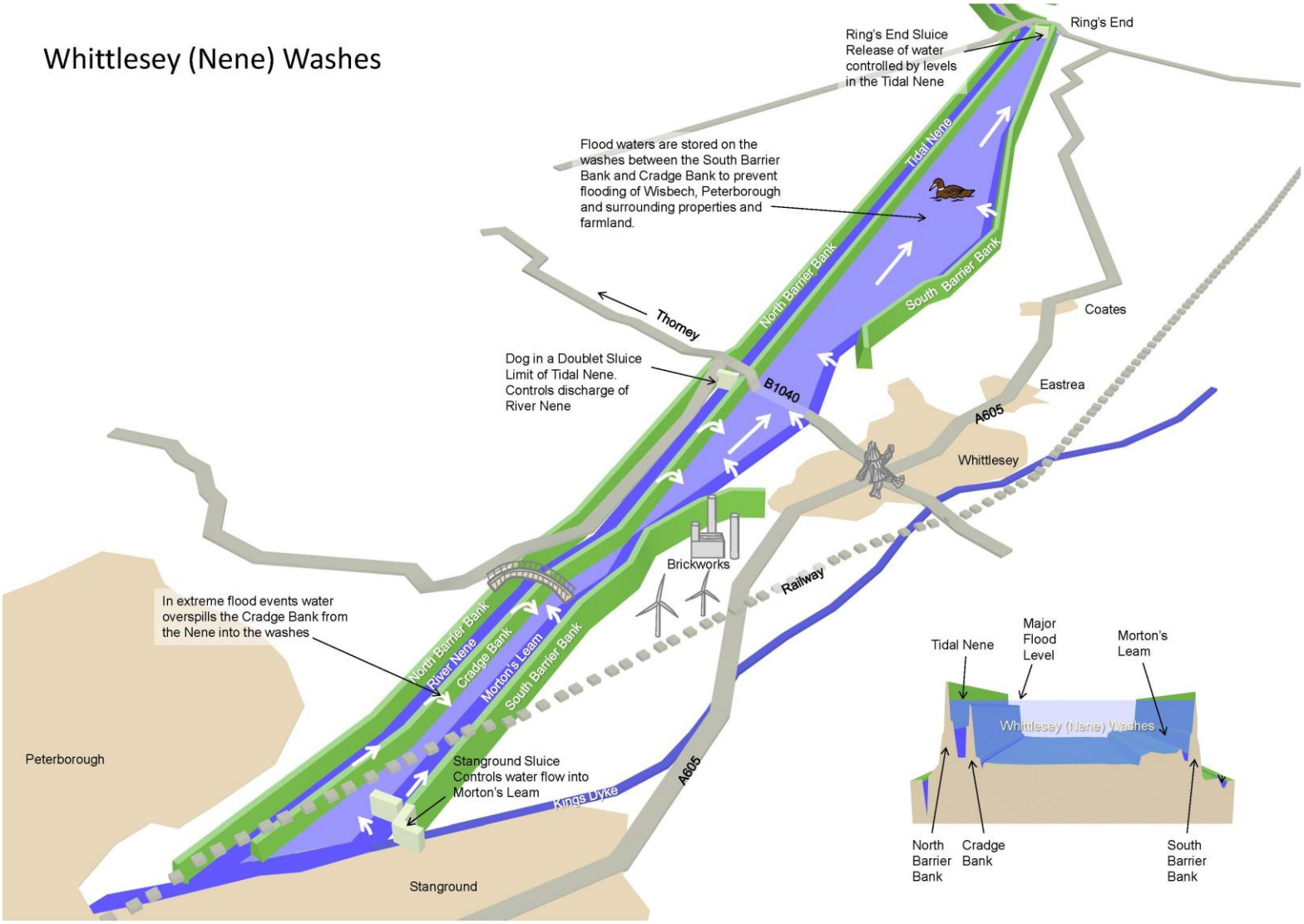


Figure 7-13: Diagram of the operation of the Washes. Formally water enters the Washes at Stanground Sluice via Morton's Leam and leaves at Rings End Sluice. When water levels in the Nene are very high water can also overtop the Cradge Bank into the Washes.

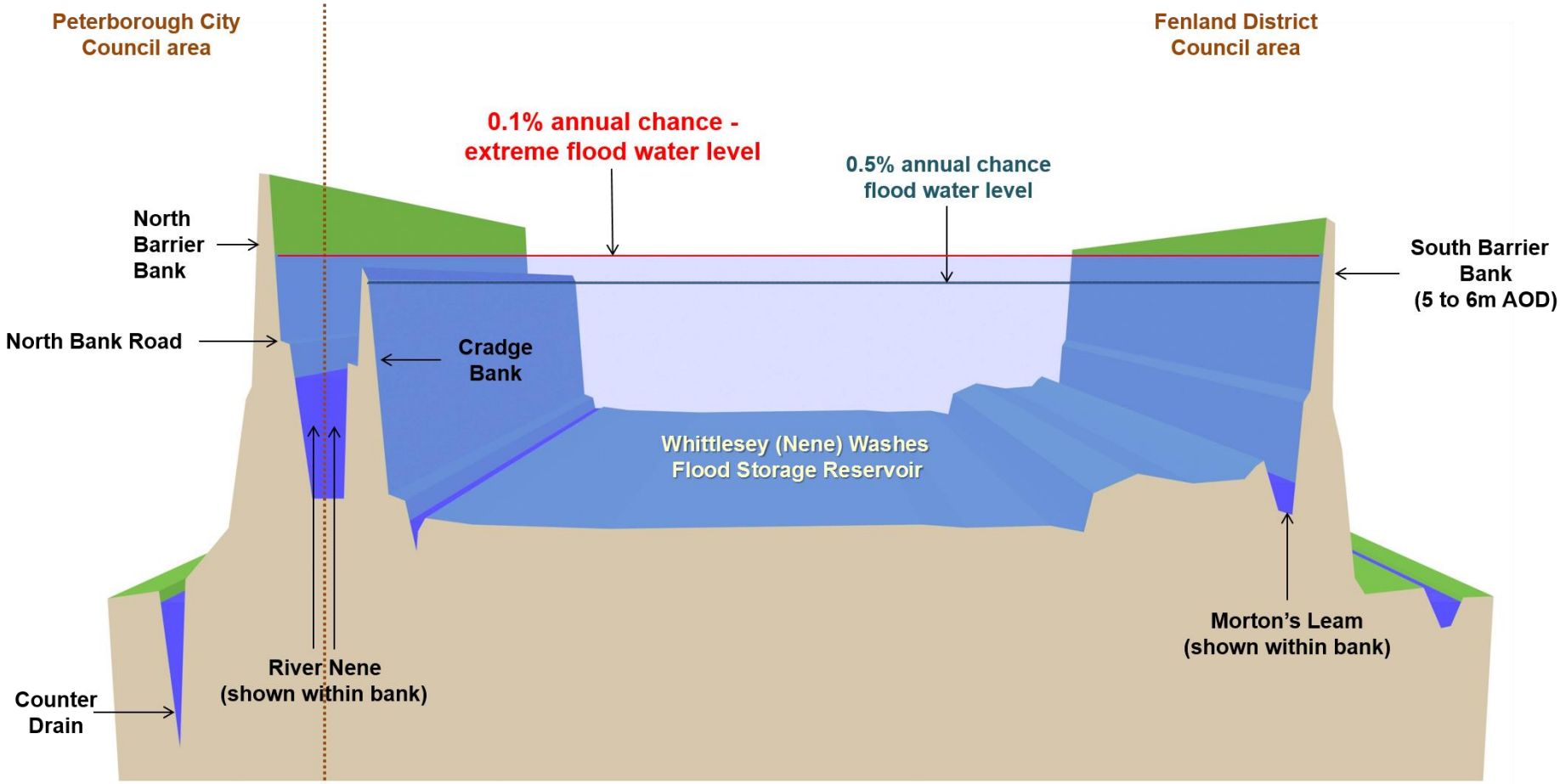


Figure 7-14: Diagram explaining the Whittlesey (Nene) Washes

Worst case impact on IDB systems

7.16.6. IDB systems are a secondary defence. While section 7-10 discusses the local risks of flooding from IDB systems, the large scale failure of an IDB system depends on the overtopping or failure of its primary defences; the Main Rivers defences of the Nene or Welland. The situation on the Nene discussed in section 7.16 is that which could lead to the overwhelming of IDB systems. Intense local rainfall puts pressure on IDB systems and combined with overtopping from Main Rivers this could weaken an otherwise robust system. IDBs have several pumps they can use depending on demand and in such an event all pumps would be in use trying to remove water from the land as quickly as possible. In effect a circular motion could be created where water spills onto their land as quickly as they can pump it off.

7.16.7. It is this kind of event, potentially combined with the power outages that can occur during flooding, that would cause the large scale failure of the IDB systems and result in the widespread flood extents that are shown on the Environment Agency's Flood Map for Planning. This map shows the extent of flooding without considering defences and hence returns the Fens to an area of periodic flooding as would have been the case prior to the formal drainage of them in the 17th Century.

7.17. Flooding related to operational issues

7.17.1. Although flooding is usually caused by heavy or long duration rainfall, it can be easily made much worse by the presence of operational issues. The following are counted as operational issues:

c) Flytipping – large waste items e.g. tyres, sofas etc.
d) Littering – smaller items.
e) Plant and tree roots growing into piped systems and reducing the capacity.
f) Damaged pipes from wear and tear, vandalism, or movement of the ground.
g) Collapse of banks of a watercourse e.g. gradually over time (lack of maintenance) or suddenly due to ground instability or movement.

7.17.2. Since it can never be known exactly when such issues may occur, flooding from a watercourse could be caused after less rainfall than would be expected for a more natural flood event. The FMS cannot provide details of the risk of operational issues occurring, but it does give details of the approach which is taken to minimise this type of event in Peterborough e.g. regular maintenance. Maintenance is covered in chapter 10.

7.18. Summary

7.18.1. Peterborough is at risk from many different types of flooding. Main river, the larger combined tidal and river events and flooding from combined sewers are the types that present the greatest risk on average across the City. However, surface water, groundwater and sewer flooding can still have devastating effects within localised areas. Further efforts to promote an understanding of surface water flood risk are included with the action plan and discussed in chapter 10. Flood risk from groundwater and ordinary watercourses are the least well understood types and are areas proposed for further investigation in future. The likelihood of flooding from reservoirs is so low that even with widespread consequences the overall risk remains small. Peterborough's fenland areas are carefully managed. Very localised waterlogging and surface water flooding is possible over short time frames but with minimal impacts. However large scale failure of the drainage board systems is of

considerably lower probability and would have to coincide with significant flooding elsewhere in Peterborough and the region. Flooding from operational issues in any part of Peterborough's watercourse or sewer network is impossible to model and map, but remains a risk for Peterborough and is identified as an area of work for Peterborough's water management authorities.

7.19. In the future

7.19.1. It is expected that, without significant national scale intervention, flood risk from all sources will increase in the future. This is due to factors such as urban creep and climate change.

Urban creep

7.19.2. Over time the following noticeable development-related trends have an impact on flood risk. Where site runoff has not been controlled these can cause an increase in surface water flooding:

a) an increase of hard paving being laid over grassed areas
b) in-fill developments and extensions being added to existing buildings

8. Climate Change Implications for Flood Risk

8.1. Context

8.1.1. Flood risk management projects, like many other projects relating to the built environment and future risk, need to consider the resilience of the chosen measures over the long term. Any projects applying for Government flood defence funding must therefore incorporate the impacts of changing risk and adaptation methods.[17] This includes adapting to a changing climate and using advice based on clear scientific evidence about the scale and impacts of global climate change.

8.1.2. Over the past century around the United Kingdom we have seen sea level rise and more of our winter rain falling in intense wet spells. Seasonal rainfall is highly variable. It seems to have decreased in summer and increased in winter, although winter amounts have only changed a little in the last 50 years. Some of the changes might reflect natural variation; however the broad trends are in line with projections from climate models.

8.1.3. Greenhouse gas (GHG) levels in the atmosphere are likely to cause higher winter rainfall in future. Past GHG emissions mean some climate change is inevitable in the next 20-30 years. Lower emissions could reduce the amount of climate change further into the future, but changes are still projected at least as far ahead as the 2080s.

8.1.4. Figure 8-1 below shows the expected temperature changes related to three different future scenarios for greenhouse gas emissions as set out by the Intergovernmental Panel on Climate Change (IPCC) and the United Kingdom climate projections.

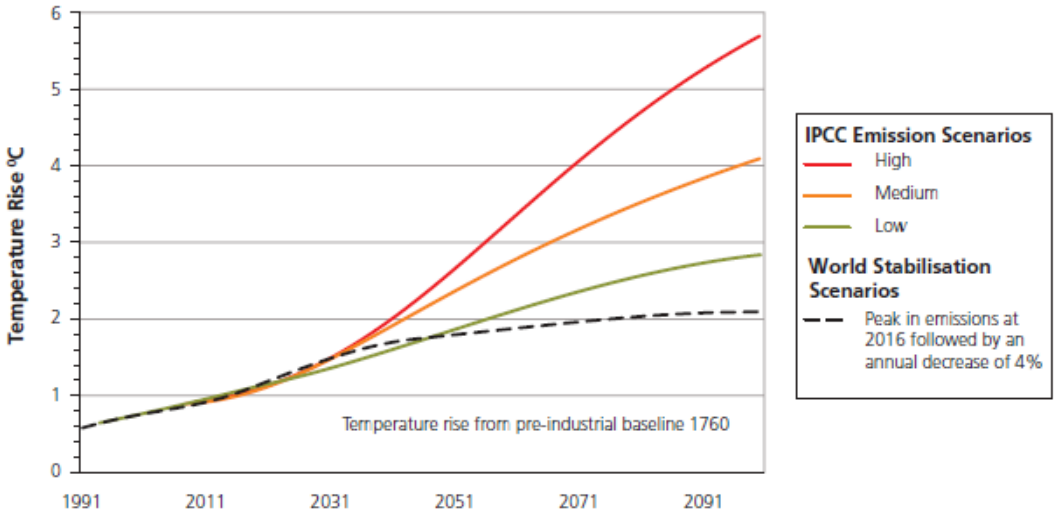


Figure 8-1: Temperature rise expected based on different emissions scenarios.

8.1.5. There is enough confidence in large scale climate models to say that Peterborough must plan for the implications of climate change. There is more uncertainty at a

[17] Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities, Environment Agency

local scale but model results can still help us plan to adapt. For example rain storms are likely to become more intense, even if it isn't known exactly where or when. By the 2080s, the latest United Kingdom climate projections[18] are that there could be around three times as many days in winter with heavy rainfall (defined as more than 25mm in a day). It is plausible that the amount of rain in extreme storms (with a 1 in 5 annual chance, or rarer) could increase locally by 40%.

8.1.6. Between 1961 and 2006 UKCIP reports that the Anglian Region experienced:

i. An annual daily mean temperature increase of 1.4-1.8C
ii. An average increase in annual precipitation of 9%

8.2. Key projections for the Anglian River Basin District

8.2.1. The Environment Agency's Flood Risk Standing Advice on climate change allowances for planners sets out allowances that must be applied to flood risk assessments to account for climate change. The recommended allowances for net sea level rise since 1990, peak rainfall intensity and peak river flow are set out below in table 8-1.

Table 8-1: Allowances and sensitivities to be applied for climate change (Environment Agency, 2013)

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Sea level rise for the East of England (mm per year)[19]	4.0	8.5	12.0	15
National peak rainfall intensity[20]	+5%	+10%	+20%	+30%
National peak river flow	+10%	+20%		

8.3. Implications for flood risk

8.3.1. Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability.

a) *River and groundwater flooding* - Wetter winters and more rain falling overall during wet spells may increase river levels and also ensure that groundwater levels are kept high.
b) *Surface water flooding* – Increased intensity of rainfall may cause more surface runoff and more areas of ponding water. In turn the excess of water

[18] UK Climate Projections 2009 (UKCP09) tool is a climate analysis tool, which funded by Defra, features the most comprehensive climate projections this country has. It provides information designed to help those needing to plan how they will adapt to a changing climate.
[19] You can derive sea level rise up to 2025 by applying the 4mm per year back to the 1990 level. You can derive sea level rise from 2026 to 2055 by adding the number of years on from 2025 to 2055.
[20] You can derive peak rainfall by multiplying the rainfall measurement (in mm per hour) by the relevant percentage so if there is a 10mm per hour rain event for the 2025 to 2055 period this would be 11mm per hour and for the 2055 to 2085 period this would be 12 mm per hour.

would put pressure on small watercourses, highway drains and on surface water, combined and even foul sewers. Summer storm intensify with increasing temperatures in generally hotter and drier summers, so we need to be prepared for the unexpected.

c) *Combined sources* - Rising sea or river levels may also increase local flood risk inland and away from major rivers because of the interactions upstream with drains, sewers, ordinary watercourses (including IDB drains) and groundwater.

d) *Tidal flooding* - Even small rises in sea level could add to very high tides so as to affect places a long way inland. Significant future increases in both river levels and high tides could start to cause an impact on Peterborough's IDB systems (see section 7-11)

8.3.2. Flood and coastal erosion risk management guidance issued on adapting to climate change provides estimates for how river flood flows will change within the Anglian River Basin District. These are shown in table 8-2.

Table 8-2: Climate Change predictions for the Anglian Region (Environment Agency, Unknown)

Anglian Region	Total potential change anticipated for 2010 - 2039	Total potential change anticipated for 2040 - 2069	Total potential change anticipated for 2070 - 2099
Upper end estimate	30%	40%	70%
Change factor	10%	15%	25%
Lower end estimate	-15%	-10%	-5%

8.4. Local sensitivity to climate change

8.4.1. The impacts of climate change in Peterborough can only be understood fully from carrying out local studies. In 2012, Peterborough City Council therefore completed a Local Climate Impacts Profile to look at how changing weather patterns affect council services. The city council is also keen to have a wider understanding of Peterborough's sensitivity to climate change, but undertaking new modelling of the extent and scale of flood risk with climate change is beyond the scope of the FMS. A simple analysis has therefore been undertaken using existing data and tools to support existing plans and assessments.

8.4.2. Using maps showing different annual probabilities of flooding, the extent of flooding on a wide range of receptors around the city was recorded. Receptors include homes, hospitals, schools, nature reserves, listed buildings, roads and wastewater treatment works. The change in impact on the receptors across the different annual probability flood events can be used as a proxy to climate change. The risk of flooding from rivers shown in flood zone 3 was compared with that in flood zone 2 and the risk of flooding from surface water for a 1 in 30 annual probability event was compared with that of a 1 in 1000 annual probability event. The wards showing the greatest difference are those most likely to be sensitive to heavier storms and increased river flows as a result of climate change. A method statement is available in **Appendix E.**

The impact of flood risk and the sensitivity to climate change of a ward is a factor not only of the changing extent of flood risk but also of the types of receptors existing within that ward and the significance of those receptors being flooded.

8.4.3. Using this method, the scale of changing risk in Peterborough, based purely on flood risk impacts, does not appear to be as significant as might be expected from other climate change predictions. This could be because there are many other factors that can contribute to how susceptible an area is to climate change. For example other weather and temperature patterns, the types of construction processes used and the cost of adaptation are other relevant factors. The way that the results are presented gives a relative susceptibility to help the city council prioritise areas to work on. The intention here is that the outputs in table 8-3 below will be investigated further and the city council will work with its partner organisations to find more about how susceptible the different receptors are and what can be done in future years to ensure their protection or adaptation. This work will be linked to the adaptation plan (action 50-P) proposed in the **Action Plan**.

8.4.4. The wards expected to have medium to high sensitivity to climate change are listed in table 8-3 below. Note that the wards scoring highly are those expecting the biggest *change* in future years. A ward with a consistently high risk of flooding regardless of the probability/strength of the flood or rainfall events will not score as having a high sensitivity to climate change.

Table 8-3: Wards that are expected to be most susceptible to the flood risk implications of climate change

Source of flood risk	Ward	Rating	Flood risk expected to have greater impacts on
River flooding	Werrington South	Medium - high	-Health facilities -Infrastructure such as schools, roads, emergency services, power
	West		-Homes within the national 40% most deprived bracket -Infrastructure
Surface water flooding	Ravensthorpe	Higher 	-Health facilities -Infrastructure -Homes
	Werrington North		-Health facilities infrastructure -Homes
	East		-Health facilities
	Eye and Thorney		-Infrastructure -Homes with the national 40% most deprived bracket
	Werrington South		-Environmental and archaeological designations -Infrastructure

8.4.5. This means, for example that Ravensthorpe and Werrington North have, relative to other areas in Peterborough, a higher sensitivity to future changes in surface water flood risk. The data behind this conclusions shows that both wards have health facilities and other infrastructure that are very important to the lives of residents both in these wards and in other parts of Peterborough. Infrastructure includes

roads, rail, schools, power and emergency services for example). The predicted future increase in flood risk to some of these sensitive facilities or pieces of infrastructure is of note.

8.5. Adapting to change

8.5.1. Past emissions mean some level of climate change is inevitable. It is essential we respond by planning ahead. We can prepare by understanding our current and future vulnerability to flooding, developing plans for increased resilience and building in the capacity to adapt (referred to as a 'managed adaptive approach' by Government[21]). Regular review of flood risk management strategies and plans is key to achieving long-term, sustainable benefits. Although the broad climate change picture is clear, flood risk management organisations often need to make decisions against a more uncertain local picture. A range of different measures therefore need to be considered, each with flexibility to be adapted in future. This approach, embodied within national flood risk appraisal guidance, would help to ensure that our vulnerability to flooding is not increased.

8.5.2. For the city council specifically, it is important that business continuity plans consider how city council services can adapt to changing weather and become more resilient. Suggested adaptation measures for severe weather and flood risk include:

a) Detailed recording of the impact on city council resources and services of severe weather events to improve our understanding;
b) Developing a specific adaptation plan for city council services;
c) Appropriate management and maintenance of existing flood risk assets;
d) Ensuring development is sustainable with appropriate drainage systems and flood resilience measures;
e) Improving the resilience of city infrastructure (pumping stations, sewage treatment works, powers stations, railway lines etc) against flooding;
f) Improving the resilience of our highway network against droughts (can cause road subsidence and cracking in Fen areas), flooding and ice (blockage of drainage systems and potholes);
g) Increasing summer and winter water storage to be used for periods of flooding and drought;
h) Increasing tree cover across Peterborough to reduce urban heat island effect and slow down the movement of water;
i) Having strong working relationships and flexible contracts with health care delivery, emergency response and community recovery organisations to account for times of greater demand.

[21] Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities, Environment Agency

9. Partnership Funding

9.1. Introduction

9.1.1. This chapter provides background on the different types of funding which may contribute towards a flood management action or a water environment action proposed in Peterborough. National funding is explained in the most detail as this system has changed in recent years and often attracts questions. The sections following that are laid out in terms of how they are referred to in national funding guidelines and examples are given of average expenditure of Peterborough's flood risk management organisations.

9.1.2. Expenditure for all flood risk and water management schemes is split down into capital works (that create, purchase, significantly improve or replace new assets) and revenue works (operational maintenance). Maintenance is often funded by the owner of, or the organisation responsible for, a certain type of watercourse or management asset. Capital funding often requires more levels of approval. Capital budgets are not allocated as routine by organisations so money often has to be bid for in competition with other projects.

9.2. Grant in Aid - national funding

Flood risk funding

9.2.1. The way that flood risk management projects are managed and funded has recently changed in the UK. Since April 2012 the new government policy *Flood and Coastal Resilience Partnership Funding* has controlled how money is allocated to capital projects. In theory under the new approach every project providing a certain level of benefits has the potential to be supported by support from national funding over time. The amount of national funding, known as Grant in Aid (GiA) available to any capital project will directly relate to the outcomes the project delivers. GiA for flood risk management projects is called Flood Defence Grant in Aid (FDGiA). The outcomes measures for capital flood risk management schemes have been set by Defra and are as below:

- Outcome Measure (OM) 1 – Economic benefits
- OM 2 – Households at risk
- OM 2b – Households at very significant and significant risk
- OM2c – Deprived households at very significant and significant risk
- OM3 – Households at risk from coastal erosion
- OM3b – Households at risk from coastal erosion in 20 years
- OM3c – Deprived households at risk from coastal erosion in 20 years
- OM4a – Hectares of water dependent habitat created or improved
- OM4b – Hectares of intertidal habitat created
- OM4c – Kilometres of rivers protected under the EU Habitats/Birds Directive

9.2.2. Each outcomes measure has a payment rate associated with it. Households better protected against flood risk or coastal erosion in the 20% most deprived areas of the country have the greatest payment rate; in this case OM2c and OM3c have a payment rate of 45p per £1of the scheme cost. This clearly highlights the need for additional non-Government funding to enable any scheme to be delivered.

9.2.3. Defra have produced a spreadsheet calculator which allows flood risk management authorities to calculate what percentage of costs might be covered by central government through GiA funding and what other contributions they will need to raise locally. It is intended that beneficiaries to the scheme will contribute in some way, whether they be LLFAs, IDBs, parish councils, communities, or private companies. As well as direct financial contributions, agreements to carry out maintenance or other in-kind contributions that a cost could be put against may also be considered. Any contribution put towards the scheme improves the overall Partnership Funding score of the scheme. Every scheme must score a minimum of 100% to be eligible for GiA.

9.2.4. Schemes requesting FDGiA need to be submitted to the Environment Agency's / RFCC's Medium Term Plan (MTP). The MTP sets out a six-year programme of works that the RFCC would like to deliver subject to funding, further development of business cases and final scheme approvals. This is similar to the idea of the Peterborough FMS **Action Plan**, but for the Anglian region. Projects to be delivered in Peterborough that require FDGiA need to be in both the FMS and the MTP.

9.2.5. There is a limited pot of central government funding so FDGiA payments to approved projects will be subject to availability of funds. Each year competing projects will be prioritised by RFCCs to ensure projects provide good value for money and to achieve national and regional targets. As of 2014/15 there are several very large capital projects in the UK that already have expenditure in future years committed to them. This reduces the amount of money available to new schemes. Therefore the Partnership Funding score needed is very high, almost 250%. This may change in future years and so it is encouraged that projects are still submitted to the Medium Term Plan even for the future even if they cannot yet reach a suitable score to enable delivery.

9.2.6. It is expected that through the need to work in partnership all schemes proposed will now consider management of flood risk in an area from all sources, proposing joint solutions that reduce the overall flood risk to a community or area.

9.2.7. The inclusion of amenity benefits for local communities is one way of attracting wider support for schemes from local communities and helps to draw in local contributions.

9.2.8. All schemes are also encouraged financially to include the delivery of multiple benefits related to other themes of water management other than flood risk. Outcome measures 4a to 4c specifically encourage habitat benefits.

Water Environment funding

9.2.9. For schemes where the main driver is environmental improvement, the source of Government funding is instead Water Framework Directive Grant in Aid (WDGiA). These schemes may include work to improve habitats, increase biodiversity, remove obstacles to fish and eel migration, and improve water quality. Ultimately the schemes should bring about an improvement to, or help to prevent a deterioration in the status of a watercourse under the Water Framework Directive.

9.2.10. The investment plan in which all such schemes needs to be entered is called the Integrated Environment Programme (IEP). This is the equivalent of the flood risk management MTP. The process for submitting projects is largely similar to that for

flood risk management and schemes will need to demonstrate how they meet the IEP's outcome measures in order to attract funding.

9.2.11. If schemes deliver significant benefits to flood risk and to the water environment they can be entered into the MTP and the IEP and apply to use both FDGiA and WFDGiA.

9.3. Public contributions

Environment Agency funding

9.3.1. As discussed in section 6.4, the majority of the Environment Agency's funding for flood and coastal risk management comes directly from the Department for the Environment, Food and Rural Affairs (Defra). This is the same for water environment works to meet the Water Framework Directive. For new capital schemes, the Environment Agency need to put their projects on the MTP and IEP and submit project bids to Defra for GiA in the same way that LLFAs and IDBs can. Therefore there is no additional source of Environment Agency funding that could be added to a bid, e.g. as a local contribution, in order to raise the partnership funding score.

Regional Flood and Coastal Committee

Section 6.9 explains the role of the Anglian Northern Regional Flood and Coastal Committee. Part of this role is to oversee the MTP work programme of flood risk management schemes in the region. Within the region of the Anglian Northern Regional Flood and Coastal Committee the gross expenditure of the Environment Agency was £33,119,000 in 2013/14 and is £44,679,000 for 2014/15. These values include money collected from Local Levy, General Drainage Charges and IDB Precepts as shown in table 9-1.

Table 9-1: RFCC income

Income source	Income in 2014/15 (£k)
Government FDGiA	37,988
IDB precepts	2,167
General Drainage Charges	1,420
Local Levy payments from LLFAs	1,681
Movement in balances	1,423
Total Income	**44,679**

9.3.2. The RFCC collects and allocates IDB Precepts, General Drainage Charge and Local Levy funding which can be used as match funding for capital schemes requiring FDGiA or to support delivery of the revenue maintenance programme. For very small schemes that are deemed locally significant, it is sometimes possible for these to be funded directly from these sources. Therefore any schemes hoping for regional contributions need to be submitted to the MTP.

Local Levy

9.3.3. Under the FWMA 2010 and the Environment Agency (Levies) (England and Wales) Regulations 2011, local levy is collected annually from all Lead Local Floods Authorities in the area of the RFCC. The levy is agreed annually in January and are

often based on an average increase of between 0% and 5%. The total levy payment is shared between all contributing bodies in the committee area on the basis of the number of Council Tax Band D equivalents that each has. The table below illustrates the total value of the Local Levy collected by the RFCC and the contribution from PCC for the last few years.

Table 9-2:Local Levy paid by Peterborough City Council

Budget	Amount 2012/13	Amount 2013/14	Amount 2014/15
Average voted change from previous year*	0%	+ 5%	+ 3.5%
Actual Peterborough Local Levy contribution (£k)	147	154.5	161.4
Total Levy collected by Anglian Northern RFCC (£k)	1,547	1,624	1,681

General drainage charges

9.3.4. General Drainage Charges are charged directly to agricultural landowners who are not in an IDB area. The charge is deemed to be a contribution towards the management of water and flood risk for those landowners. It is calculated on a rate per hectare basis using the Council Tax Base of Band D equivalent properties.

IDB precepts

9.3.5. Precepts are paid by IDBs to the Environment Agency for works done by the Environment Agency on channels or defences that affect or are in an IDBs area. The works are normally maintenance based. The formula for calculating the precept is complex but is approximately based on the number of hectares of land protected. The value of precepts has not been raised for a few years.

Lead Local Flood Authority funding

9.3.6. Money spent by the city council on flood and water related actions comes from un-ringfenced Government flood risk grants, from allocating a share of the corporate budget to this area or from ringfenced commuted sums relating to specific development schemes. Since becoming an LLFA, the city council has had an average total budget of approximately £600k for all drainage, flood risk management and water management activities. This expenditure goes on:

a) highway drainage maintenance, schemes and reactive works (gullies and watercourses);
b) maintenance of adopted drainage systems on specific development sites;
c) relevant staff salaries and on-costs;
d) asset surveys;
e) flood awareness community events

f) delivery of required flood risk reports or policies e.g. for developing the
g) training and software; and
h) flood and water management projects.

9.3.7. The sum in section 9.3.6 excludes the drainage and flood risk sums collected through Council Tax each year which are then:

i. paid as a Local Levy contribution to the Environment Agency for management by the RFCC; or
ii. transferred to the IDBs as a Special Levy.

As of 2013/14 information is included in Peterborough's Council Tax booklet about these levies.

9.3.8. To obtain corporate capital funding to deliver significant capital schemes, officers would need to submit a separate bid for funding as part of the annual budget setting process.

9.4. Internal Drainage Board funding

9.4.1. As discussed in section 6.5 drainage boards are funded by rates paid by the landowners in their area. This can be broken down into Drainage Rates and Special Levies. Drainage rates are paid by agricultural landowners direct to the IDB based on the area of their property. Where land in the IDB's district is not in agricultural use, the owner instead pays their levy to Peterborough City Council as part of their Council Tax. The relevant amount is then separated out from the Council Tax and paid to each IDB. This is known as a Special Levy.

9.4.2. The total expenditure for Peterborough's two largest IDBs for the year 2014/15 is shown in table 9-3. The area of Peterborough that falls within the Middle Level and with the Whittlesey and District IDB is small and hence the details of these organisations is omitted below. It is important to note that the IDBs' funding is for maintenance and capital works across their whole areas, not just in Peterborough.

Table 9-3: IDB Expenditure

Internal Drainage Board	Total Expenditure for 2014/15
North Level District IDB	£1,514,778
Welland and Deepings IDB	£2,100,367

9.5. Use of public sector co-operation agreements

9.5.1. The use of public sector co-operation agreements can enable organisations such as councils, the IDBs and the Environment Agency to work in partnership to deliver services in a very efficient and more cost effective way. The agreements can be used for example, to cover maintenance and emergency response work, where the following criteria is met by the agreement:

a) it must be a genuine co-operation between the participating contracting authorities, aimed at jointly carrying out their public service tasks (different in character to a contract for services);
b) involves co-operation only between public entities;

c) is non-commercial in character (no profit is generated and only reimbursement of actual costs), and
d) is governed solely by considerations and requirements in the public interest and is of little interest to a private sector supplier.

9.5.2. The Environment Agency have such an agreement in place with some IDBs[22] in Peterborough, and it is hoped that in future the city council may also have agreements in place with some of its flood risk partners. See section 10.2.32 and **Action Plan**.

9.6. Private contributions (community and commercial)

9.6.1. Partnership funding guidance intends that those benefitting from the proposed flood management scheme contribute towards its costs. This could be local residents, a parish council or a local business, for example. Securing contributions from private sources is not easy, especially as it is a relatively new system, and therefore Peterborough City Council will endeavour to engage with all beneficiaries as early as possible in the process of developing new schemes. If there is an expectation that others will contribute then it is important that they are involved in designing the scheme.

Anglian Water

9.6.2. Contributions from water companies count as private contributions. In order to secure funding from Anglian Water, projects need to be part of the company's five yearly Asset Management Plan (AMP) which is agreed by Ofwat, the water company regulator. The upcoming AMP period is called AMP 6 and covers 2015 to 2020. Prices are set by Ofwat at the beginning of each AMP period, following submissions from the water company about what it will cost to deliver their business plan.

9.7. Impact of local funding contributions

9.7.1. In order to demonstrate the importance of local funding being available to contribute to schemes applying for FDGiA, the following figures have been calculated by the RFCC:

Figure 9-1: Example of the multiplying benefit of Local Levy

For a Levy contribution of	= £1000
Actual cost to the Local Authority	= £667
Expected funding levered in from GiA	= £3,000 to £15,000
Actual benefit to the local community	= £20,000 to £120,000

[22] http://www.ada.org.uk/news_detail.php?id=483

10. Management and Action Plan

10.1. Introduction

10.1.1. This chapter provides the context to and the benefits of the different management procedures, policies and actions of Peterborough's flood and water management organisations. The chapter is intended to be read alongside the proposed **Action Plan** and the Completed Action Table in **Appendix F**.

10.1.2. Since the introduction of the FWMA 2010 the organisations managing flood risk in Peterborough have come a long way in terms of working together to understand and manage risk. The Flood and Water Management Partnership, as described in section 9, has been established and many actions have been delivered in partnership. There has been a significant increase in communication and awareness raising activities and in the consideration of surface runoff and groundwater flooding. **Appendix F** has been put together to illustrate the actions delivered since the FWMA 2010 was enacted.

Figure 10-1: Completed action to create a new ditch near Eye Green to reduce flooding

10.1.3. A major role of the FMS is to set out measures or actions for the future that are proposed in order to meet the objectives set in chapter 5. These measures can be found in the **Action Plan**. The tasks and projects listed have been identified based on input from a wide range of stakeholders and an understanding of the need. In order for the proposed measures to become deliverable actions, each item on the action plan will need to be worked up in more detail and tested for deliverability and viability through the business case process. The key dependencies and risks affecting the actions are discussed in the box overleaf and sections 10.1.4 – 10.1.8 set out how to interpret the **Action Plan**.

Dependencies and risks

All of the schemes proposed in the strategy will require individual business cases to be developed by the lead partner. They will not be able to progress beyond the proposal stage unless approval is obtained from all stakeholders and funding partners. The benefits and impacts of the actions will be assessed. The following dependencies and risk affect the actions listed in the **Action Plan**:

Funding
Appropriate funding needs to be secured from a range of different sources to meet Partnership Funding requirements (see chapter 9). This may result in some schemes being delayed until these requirements are met.

Timescale and priority changes
Priorities may need to change, for example, as a result of updated information about the flood risk in an area (i.e. from modelling), the specific risks associated with delivering the project, and /or the availability of resources to deliver the schemes.

Land ownership and maintenance agreements
If third party land is required for a scheme, the landowner's approval will need to be sought. It is also essential that an agreement is put in place about the long-term maintenance of any structure or feature being constructed.

Flood defence or ordinary watercourse land drainage consent
Changes to watercourses require consent under the Land Drainage Act 1991. Consent requires the project to demonstrate that there will be no negative impacts on flood risk elsewhere, on the watercourse or on elements of the habitat and water quality that are governed by the Water Framework Directive.

Planning related consents and assessments
Some projects may require planning permission, environmental impact assessment, scheduled monument or listed building consents or be affected by other constraints like Tree Preservation Orders.

Traffic regulation orders
Works taking place near roads or on highway drainage may require a traffic regulation order to be put in place.

10.1.4. The **Action Plan** includes the following information about individual projects:

i. Name
ii. Action number and code e.g. 1-A, 51-P
iii. Ward
iv. Management area
v. Description of the action
vi. Lead partner
vii. Other partners
viii. Time frame
ix. Funding source
x. Cost
xi. Objectives and benefits

xii. Priority of the action
xiii. Progress

10.1.5. A more comprehensive action plan is available on request that also contains information about the: catchment, the source of flood risk being addressed, the objective that the action meets, project risks, legislation or policy drivers, and action plan review dates.

10.1.6. Some actions apply fairly consistently across Peterborough. These actions are listed as having a Peterborough-wide management area and are discussed next. Some actions are specific to different areas of Peterborough due to local characteristics (e.g. landscape type) dictating the need for different approaches. For the purpose of discussing these latter actions, Peterborough has been divided into three management areas: Urban, Fens (Rural North and East) and Rural West as shown in figure 10-2.

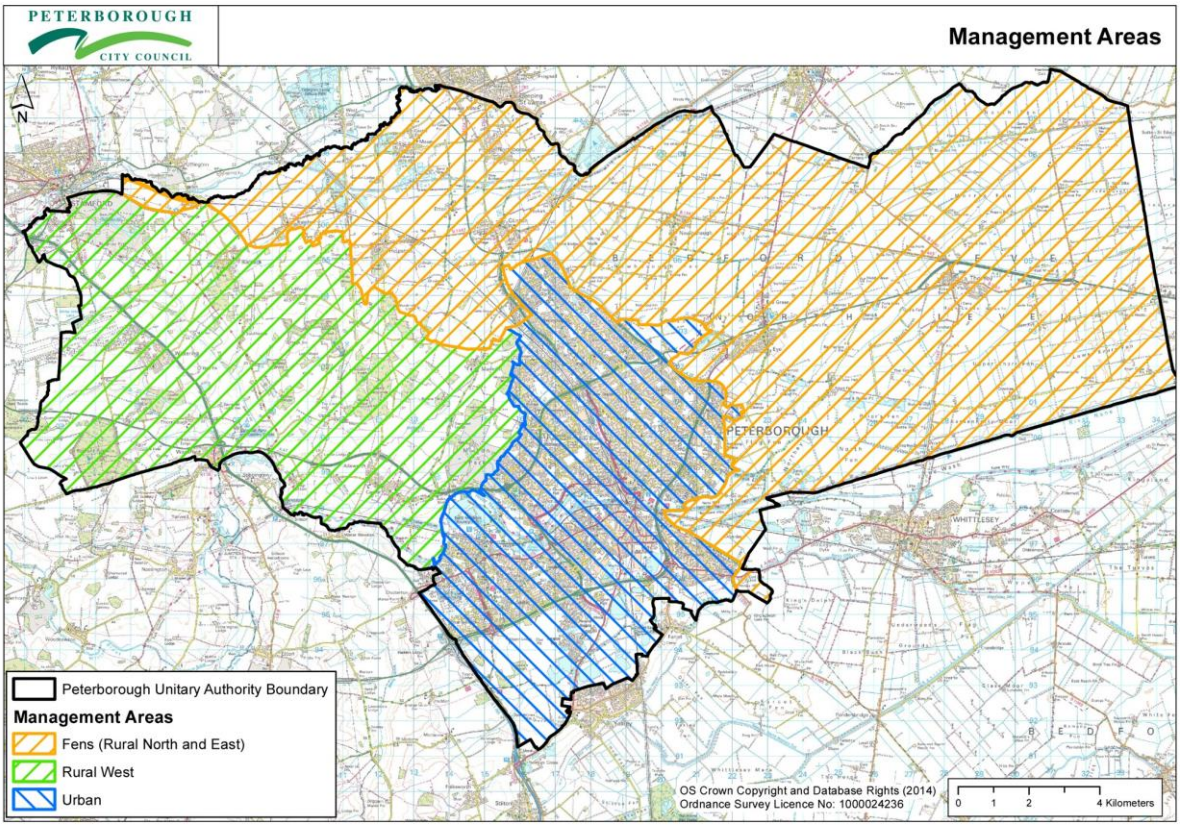


Figure 10-2: Management areas into which Peterborough has been divided for the purpose of the Action Plan

10.1.7. Against each action listed in the action plan it is noted which objectives the action meets and what type of benefits the action has. The meeting of FMS objectives allows the achievement of the objectives in the National Flood and Coastal Risk Erosion Management Strategy as set out in 3.3. Below is a reminder of the FMS objectives:

Objective 1 **–** Improve awareness and understanding of flood risk and its management, to ensure that everyone can make informed decisions and take their own action to become more resilient to risk.

Objective 2 – Establish efficient co-ordinated cross-partner approaches to flood and water management, response and recovery, sharing and seeking new resources together.

Objective 3 - Reduce flood risk to prioritised areas and strategic infrastructure, ensuring that standards of protection elsewhere are maintained.

Objective 4 – Improve the wider sustainability of Peterborough, ensuring an integrated catchment approach and proper consideration of the water environment and its benefits, in new and existing environments.

10.1.8. Some schemes have direct benefits to a numbers of home and businesses, some to infrastructure or the natural environment and some actions are more about improving the efficiency of management processes and expanding flood risk knowledge. The latter category will still have benefits to homes and businesses but they may be indirect. Once schemes are worked up in more detail in terms of development of the detailed business cases, it will be possible to provide further information about the exact benefits achieved. A list is provided below of the benefit categories used for the actions:

Benefit category code	The action has benefits for:
Agr	Agriculture
Bus	Businesses
Com	Community amenities and public services
Dev	New development (all types)
Eff	Efficiency of management
Env	Natural environment
Hom	Homes
Inf	Infrastructure
Kno	Better local knowledge and understanding

10.2. Management - Peterborough-wide

10.2.1. This section gives an overview of the different types of management taking place now and in the future that are not specific to one particular area of Peterborough. This section should be read alongside the section which specifically relates to your area of interest to give a full picture of flood risk management in your area.

Watercourse maintenance

Action	*Benefits to*
1-A	Agr, Bus, Com, Hom, Inf
2-A	Agr, Bus, Com, Hom, Inf

10.2.2. Each water management organisation undertakes a variety of maintenance activities to look after their infrastructure. Details are provided in table 10-1 below.

Table 10-1: Maintenance activities undertaken in Peterborough

Organisation	Location of activity	Maintenance activity	Average frequency
PCC (Drainage and Highways Functions)	Higher risk watercourses (classes 1-3)	Vegetation management	Annually
		Rubbish removal and headwall and screen clearance	As required
		De-silting	Every 30 years, plus localised high silt levels
	Lower risk watercourses (class 4)	Vegetation management, litter removal and desilting	As required
	Highway gullies	Carriageway and footway gully cleaning	Routinely as well as on a reactive basis
Environment Agency	Nene	Vegetation maintenance	As required
		De-silting	Annually at Popley's Gull where silt collects
	Welland	Vegetation maintenance	As required
		De-silting	Not applicable
	Higher risk Main Rivers (excluding Nene and Welland)	Vegetation maintenance	As required
	Lower risk Main Rivers	Vegetation maintenance	As required
	All raised defences	Vermin control of raised defences	As required

10.2.3. Some watercourses have much higher or lower risk associated with them and therefore the maintenance required will vary according to the risk profile. For example Peterborough City Council uses the following classification for its watercourses as shown in table 10-2:

Table 10-2: Watercourse classification

Class	PCC Classification
1	Critical
2	Non critical – high risk
3	Non critical – medium risk
4	Non critical – low risk
5	No routine maintenance

10.2.4. The maintenance works carried out by IDBs is covered in section 10.5 as this is specific to the Fens (Rural North and East).

10.2.5. Each organisation also undertakes upgrade schemes in specific locations depending on the areas of greatest need and the funding available. The schemes proposed for the upcoming years are included in the Action Plan.

Emergency planning

Action *Benefits to*

27-C	Bus, Com, Hom, Kno
36-C	Bus, Hom
38-P	Bus, Eff, Hom, Inf, Kno
59-P	Bus, Com, Hom, Inf

10.2.6. Under the Civil Contingency Act 2004, Peterborough City Council and many of the other flood management organisations are also emergency responders. There are two categories of emergency responder:

i. Category 1 – the core responders. Includes the 'blue-light' services (Police, Fire and Rescue, Ambulance Service), the NHS, local authorities and the Environment Agency.
ii. Category 2 – co-operating responders that act in support of the category 1 responders. Includes utility companies such as Anglian Water and UK Power Networks, and transport organisations such as Highway's England.

10.2.7. In planning for flooding the following different roles exist under this legislation:
a) Warning and informing people – all
b) Putting joint response plans in place - all
c) Response actions – blue light services
d) Recovery – Local authorities i.e. Peterborough City Council

10.2.8. All local authorities will have an emergency flood plan. Peterborough's Flood Guidance Document was last reviewed in 2011 and there are currently separate plans for Peterborough and Cambridgeshire. It is intended now to create one plan covering both local authority areas as this would then align with the area over which the Emergency Services operate, making response more efficient. The plan would be used by all emergency responders and is therefore to be called a Multi-Agency Flood Plan. The Environment Agency will also be involved in the development of both this plan and others from surrounding areas to ensure full coverage of the Nene and Welland catchments.

10.2.9. One of the most controversial elements of the November/December 2012 flood events was the issues of sandbags. The need for clarity over the policy of the city council and its partner organisations is very important. Some local authorities do provide sandbags, knowing that the presence and actions of council and emergency services officers on site helping local people is important. However many other councils do not provide sandbags. This is because while they can slow floodwater, they do not stop it; they provide no protection if the flooding is due to rising groundwater; and after the floods the disposal of large numbers of contaminated sandbags can be very difficult and expensive. Efforts can sometimes be better focused on investing in other, better and reusable defence measures. At any time you will be able to find the sandbag policy of Peterborough City Council online at http://ask.peterborough.gov.uk/help/council/environment/sandbags/ A proposed future action is for PCC to investigate the benefits of procuring any longer lasting 'temporary' defences. While a storage location for these would need to be found, the defences could be used to help protect city council property, such as the Key Theatre, as well as other key infrastructure.

10.2.10. As part of their role in managing flood risk from Main Rivers, the Environment Agency provide a Main River forecasting and flood warning service. It is their intention to continue this service, to work with local communities and other risk

management authorities to promote awareness of flood risk and the warning service.

10.2.11. Activities are included in the Action Plan to help us better plan for and improve resilience against surface water flooding. Surface water flooding is very hard to predict due both to the nature of heavy rain showers being localised and changes in land levels having a very significant effect on where the runoff ends up. To try and improve our understanding and management of surface water the following actions are being considered:

a) Raising awareness through our website and targeted communications of the risk of surface water flooding, of weather warnings and of what people can do and who they can contact.
b) Continue to follow the current national and European research (such as the RAINGAIN programme[23]) on the development of surface water flooding warning systems. Incorporate learning and actions into our plans whenever possible.

Resilience of critical infrastructure

Action	*Benefits to*
37-C	Inf

10.2.12. Peterborough's critical infrastructure (electricity substations, water treatment plants, care homes, schools etc) are often owned by a range of different organisations, many of them not part of the FloW Partnership. Peterborough City Council and the FloW Partnership have highlighted an action to work with the owners of critical infrastructure wherever possible to ensure that flood risk to the infrastructure is minimised.

Flood risk communication and awareness

Action	*Benefits to*
25-C	Com, Eff, Kno
26-C	Eff
27-C	Bus, Com, Hom, Kno
28-C	Bus, Com, Eff, Env, Hom, Kno
29-C	Bus, Hom, Eff, Inf
30-C	Hom, Inf
34-C	Hom, Inf

10.2.13. Communication about flood risk with residents and businesses is very important. The principal areas of communication which are required are:

a) Warning people of imminent flooding.
b) Making people aware of flood risk in their area (outside of flood events) and ensuring they know where to look and who to contact for further information.
c) Encouraging people to prepare themselves mentally and physically for flooding and make their homes more resilient.
d) Encouraging and supporting communities and parish councils to prepare their own emergency plans.

[23] http://www.raingain.eu

e) Helping people to understand what organisations and processes are currently in place to manage flood risk in their area and who to contact.
f) Being clear about things that residents, businesses, developers can do to make sure that they do not increase flood risk such as not paving over gardens with impermeable materials or putting fats, oils, greases and other 'unflushables' such as baby wipes down the sink, drains or toilets.
g) An awareness raising campaign about the responsibilities of riparian owners (those owning land which is alongside or which contains a watercourse) and the flood risks that are caused when appropriate maintenance is not carried out. Many residents and organisations in Peterborough, including the city council, the Environment Agency and Anglian Water, are riparian owners. If we can ensure that watercourses do not get forgotten about and receive an appropriate level of maintenance this will reducing the changes of flood risk being caused by blockages or a lack of care. In Peterborough, tree clippings, rubble and flytipping have all been dumped in watercourses from time to time. Each time this happens these will significantly increase the risk of flooding for those living alongside that watercourse.

10.2.14. All of these elements are included in the Flood and Water Management Partnership's intended actions (see **Action Plan**). The communication messages will be delivered through a range of mediums such as website updates, flood warden training sessions and larger scale public events.

Integrated landscape and water management

Action	*Benefits to*
41-P	Bus, Com, Dev, Eff, Env, Hom, In
44-P	Bus, Eff, Home
45-P	Bus, Dev, In
51-P	Hom
53-P	Agr, Env, Inf
54-P	Bus, Hom
55-P	Agr, Bus, Dev, Hom, Inf
56-P	Bus, Eff, Home, Inf

10.2.15. When flood management schemes are being proposed, consideration will be given to other water and green infrastructure management actions in the same catchment or sub-catchment that could be combined to create a larger joint scheme. This could deliver a wider range of benefits as discussed in chapter 4, increase the number of outcomes measures for Partnership Funding (section 9) and therefore increase the chance of a scheme going ahead. Actions from the Green Grid Strategy and the Nene and Welland integrated catchment management plans are included in the Action Plan for the FMS where these seeks to deliver notable benefits to flood risk.

Flood investigations and thresholds

Action	*Benefits to*
3-A	Agr, Bus, Hom, Inf

10.2.16. Section 19 of the FWMA 2010 sets out that LLFAs have a duty to investigate flooding incidents within their area, to the extent that the LLFA considers necessary or appropriate. The investigation must set out:

a) *which risk management authorities have relevant flood risk management functions, and*
b) *whether each of those risk management authorities have exercised, or is proposed to exercise, those functions in response to the flood.*

10.2.17. Where an authority carries out an investigation:

a) *it must publish the results of its investigation, and*
b) *notify any relevant risk management authorities.*

For the city council to undertake formal investigation it must be made aware of the flooding, whether from officers, contractors, other risk management authorities or members of the public. An incident notification form exists for this purpose and is in **Appendix G.** People are encouraged to send in photographs with the form to aid the investigation.

10.2.18. In order to determine situations where formal investigation is necessary, Peterborough City Council has established thresholds. Flooding must meet the criteria set out below for a section 19 investigation to take place:

Thresholds for FWMA 2010 section 19 flood investigations

a) Internal flooding to any one dwelling
b) Internal flooding to more than one business premises
c) Flooding to any critical infrastructure or critical services
d) Flooding that causes significant disruption to a transport link for a defined period*

10.2.19. In d) above the definition of ‘defined’ period is dependent on the transport link affected. The following thresholds have been derived for each of the highway categories set out in the UKRLG Code of Practice for Highway Maintenance:

Table 10-3: Thresholds for the city council to carry out and publish flood investigations

Category	Name	Description	Example	Duration of significant disruption to network
1	Motorway	Motorway	A1(M)	Over 1 hour
2	Strategic Route	Trunk roads and some principal 'A' roads	A15 Glinton Bypass, A1139 Fletton Parkway, A1260 Nene Parkway	Over 1 hour
3a	Main Distributor	Main urban network and inter-primary links	A605 Oundle Road, A15 Bourges Boulevard, A15 London Road	Over 4 hours
3b	Secondary distributor	Classified road: B and C class	B1443 Helpston, B1091 Peterborough Road Stanground, B1081 Old Great North Road Wothorpe, Taveners Road (C60), Eastfield Road (C51), Gresley Way (C299)	Over 4 hours
4a	Link Road	Roads linking the Main Distributor network to the secondary Distributor	Stamford Road Marholm (C40), Deeping Road Peakirk (C6), Oakdale Avenue Stanground, Hartwell Way Ravensthorpe, Werrington Bridge Road (C47)	Over 24 hours
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic	Any small cul-de-sac or similar residential estate road	Over 24 hours

10.2.20. The city council commits to starting the investigation within 30 days of the flood event. The investigation will be shared with the other risk management organisations and the results of the investigation will be published on PCC's website within six months of the date of the incident. No personal information will be included in the reports. Photographs supplied will not be included in the final report without the owners' permission.

Measuring the impacts of severe weather

Action	*Benefits to*
39-P	Eff, Kno

10.2.21. In 2012 Peterborough City Council prepared a Local Climate Impacts Profile (LCLIP) which illustrates the effects that severe weather has had on city council services over the years. The report set out that:

a) Between 2000 and 2012 a total of 220 media stories reported extreme weather events in Peterborough, with more than 500 consequences to city services and the wider community.
b) These consequences include impacts on transport systems, health and social systems and service provision.
c) Excessive rainfall/flooding and ice/snow are the most common events impacting city services, although hot weather and wind are also significant.
d) Severe weather events affect services both directly and indirectly and these events normally have cost implications, whether through direct action or lost opportunity costs. While some costs can be ascertained, the majority are not recorded in an accessible manner, or are hidden costs.
e) The financial impact of severe weather differs according to the services and weather types in question. Loss of income and increased costs are the most commonly associated with these events, in particular snow/ice, ground movement and excessive rainfall/flooding.
f) Existing budgets may not be able to cope with the expected increase in severe weather events and the resulting reactive works required. This makes the case for changing the way Peterborough approaches its work to make the City more resilient, rather than just focusing on post-event recovery and repair.

10.2.22. In order to be able to know how much to invest in more adaptable designs it is important to know what the costs of the severe weather impacts are. Therefore it is proposed that the city council adopts a severe weather recording system. One called SWIMS (Severe Weather Information and Monitoring System) has already been used by Kent County Council and al their emergency response partners. It has been very successful and now allows the organisations to collectively assess the costs of flooding, for example on staff resources and contractor availability, lost working hours, costs of repair and insurance claims.

Adapting to changes in climate and natural resource availability

Action	*Benefits to*
33-C	Bus, Env, Hom, Kno
49-P	Agr, Bus, Com, Dev, Eff, Env, Hom, Inf, Kno
58-P	Eff, Env

10.2.23. The city council and its Environment Capital partners would like to plan for change by developing an Adaptation Action Plan. The plan would need to look at both internal (e.g. changes to organisations' own processes) and external (e.g. Peterborough-wide building design and construction) so that companies, residents and public services can better cope with changing environmental and weather conditions. This would be made easier once better impact data has been collected through the implementation of a recording system as discussed in the previous paragraph. The LCLIP also noted that measures to adapt to and minimise the impacts of severe weather events require cross service collaboration. This demonstrates the need for a Peterborough-wide Adaptation Action Plan rather than just a city council-based one, for example.

Asset register

Action	*Benefits to*
7-A	Eff, Kno
8-A	Eff, Kno
9-A	Eff, Kno
10-A	Eff, Kno
11-A	Kno
13-A	Agr, Inf

10.2.24. Section 21 of the FWMA 2010 requires the city council to maintain a register of flood risk related structures. The legislation is provided below.

> **21 Lead local authorities: duty to maintain a register**
>
> (1) A lead local flood authority must establish and maintain—
>
> (a) a register of structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its area, and
>
> (b) a record of information about each of those structures or features, including information about ownership and state of repair.
>
> (2) The Minister may by regulations make provision about the content of the register and record.
>
> (3) The lead local flood authority must arrange for the register to be available for inspection at all reasonable times.

Figure 10-3: Extract from the FWMA 2010

10.2.25. The asset register provides a useful tool for:

a) ensuring that members of the Flow Partnership are aware of important assets belonging to other partners e.g. in case it would be useful to link the maintenance or operation of them;
b) the Flow Partnership to identify areas where joint actions may need to be planned and funding sought
c) providing a list of significant assets in certain locations so that if and when flood events occur the city council can quickly identify what partner organisations it needs to consult and which partners may need to be part of any investigation undertaken (section 10.2.24)

10.2.26. It is intended that the asset register will be reviewed annually by the Flow Partnership to ensure it is both useful and up-to-date.

10.2.27. Several actions are included in the action plan with regards to gradually increasing the data held about assets in Peterborough. This will continue to improve the understanding of the level of flood risk and the condition of the assets being used to manage this risk.

Designation of features or structures

Action	*Benefits to*
12-A	Bus, Hom, Inf

10.2.28. Under Section 30 and Schedule 1 of the FWMA 2010 a designating authority (the Environment Agency, an LLFA or an IDB) can designate a *"structure or natural or man-made feature of the environment"* whose existence or location influences flood risk. Once designated the feature or structure may then not be altered, removed or replaced without the consent of the designating authority. A designation becomes a local land charge, showing up on house searches.

10.2.29. This new power exists to prevent structures that are not formal flood defences but that are protecting locations from flooding, from being removed. Example might be a garden wall or potentially even an areas of trees. The designation does not place a requirement on a landowner to upgrade or spend money on maintaining the feature, but it does seek to prevent any work taking place that would cause the structure to be weakened or removed. Enforcement action will be taken by the city council if a designated structure is changed, damaged or removed.

10.2.30. Figure 10-4 below sets out the steps involved in designating a feature. The designation assessment involves considering what type and level of protection the structure provides, its vulnerability, the consequences of removal and the current management of the structure. Consultation with the land/property owner is a very important part of the full process.

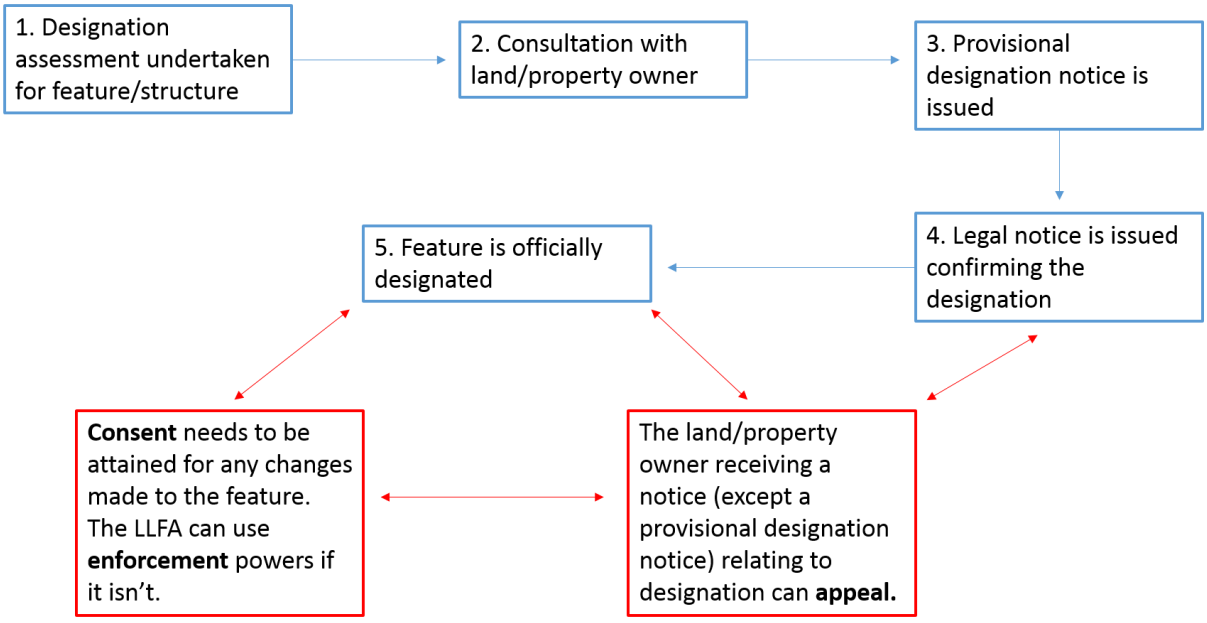


Figure 10-4 Designation process

10.2.31. If you would like to suggest to the city council that a particular structure or feature is assessed for designation then please email watermanagement@peterborough.gov.uk.

Sharing services

Action	*Benefits to*
17-A	Eff

10.2.32. Section 13(4) of the FWMA 2010 allows a risk management authority to arrange for a flood risk management function to be exercised on its behalf by another risk

management authority. The proposal is that the city council develops Public Service Co-operation Agreements, where appropriate, with one or more relevant partner organisations. This should help to increase the efficiency of flood risk management in Peterborough and reduce the costs. Chapter 9 provides more details about how these agreements could work for functions like emergency response, regular maintenance and asset inspection.

10.3. Management – Urban Peterborough

10.3.1. The soils underlying the urban area (and future urban extension area) of Peterborough are heavy clay and have been characterised by Natural England as Bedfordshire and Cambridgeshire Claylands. The clay soils along with impermeable urban surfaces have so far acted to limit infiltration potential and increase surface runoff after heavy rain. The urban area of Peterborough also has many Main Rivers running through it. In and near to the floodplain the soil type is more consistent with sand and gravels and hence can also be susceptible to groundwater flooding. The varying sources of risk and the high number of sensitive receptors (homes, roads and other infrastructure) make it a key area for investment in flood risk management.

Comprehensive flood alleviation and water environment schemes

Action	*Benefits to*
44-P	Bus, Com, Dev, Env, Hom
45-P	Bus, Dev, Env, Inf
46-P	Env, Hom, Inf
51-P	Com, Env, Hom

10.3.2. In Bretton North, Werrington North and Werrington South, a comprehensive water environment management project is underway which seeks to bring flood risk improvements as part of a wider scheme seeking improvements in the water quality, habitat, biodiversity and amenity value of water bodies. The project is focused on the Main Rivers of Brook Drain, Marholm Brook, Werrington Brook and Paston Brook, on Cuckoos Hollow Lake and on the ordinary watercourses that are part of this sub catchment of the River Welland. This project has many themes including physical in-channel improvements, improving the quality of discharges into the river by working with residents, industry and farmers, and trying to change long-term behaviours and attitudes towards the river environment. The project is already a fantastic example of using a catchment based approach to maximise the deliverability of projects and multiple benefits. The involvement of many different organisations and community members in this project is what has made it a success so far.

10.3.3. At Brook Drain in North Bretton and at Paston Brook in North Ward, the Environment Agency intend to undertake specific projects to review Main River assets and how these are managed. These projects had already been identified by the Agency in the Welland CFMP but will also form part of the catchment based approach of the project described in the previous paragraph. At North Bretton changes proposed to the river by Network Rail will also drive a review of the Dukesmead Penstock and significant environmental improvements, while at Paston Brook the A47 culvert is being considered for improvement. The latter may have benefits for surface water flood risk as well as Main River risk due to nature of the catchment.

10.3.4. In Dogsthorpe Ward a scheme is proposed to reduce the risk of surface water flooding to residential properties by increasing storage within the surface water network. The intention is to consider the retrofit of sustainable drainage systems, diverting and providing attenuation for excess flows that would otherwise put pressure on the surface water sewers. It is hoped to also provide a public amenity feature(s) and habitat as part of these works.

Understanding the risk and developing appropriate management

Action	*Benefits to*
40-P	Bus, Hom
42-P	Hom
43-P	Bus, Hom
47-P	Bus, Hom, Eff
48-P	Bus
57-P	Hom, Kno

10.3.5. A variety of projects have been proposed in the following urban wards in order to improve our understanding of the current and future risks: Fletton and Woodston, Orton Longueville, Orton Waterville, Ravensthorpe, Stanground Central and West Ward. These projects are about better understanding the risk, promoting awareness and resilience in the community and about investigating what other solutions might be deliverable to assist communities with protecting their properties. These areas do not rate as high flood risk areas in national assessments and hence will attract minimal Government funding. Working in partnership to identify alternative funding mechanisms for proposed solutions will be integral to these projects.

Understanding surface water flooding

Action	*Benefits to*
28-C	Bus, Com, Eff, Env, Hom, Kno
29-C	Bus, Eff, Hom, Inf
30-C	Hom, Inf
34-C	Hom, Inf
39-P	Eff, Kno

10.3.6. Surface water flooding can occur anywhere and is often localised. In order to try and improve our understanding and management of surface water Peterborough would benefit from increased data about rainfall both during and after the storms occur. The Fens and rural areas of Peterborough are home to several rain gauges managed by the Environment Agency and North Level District Drainage Board. However, the urban area has a lack of rain gauges. It is therefore proposed to install gauges on five to ten sites within Peterborough (mainly schools) to improve coverage. These will serve two main functions, firstly real-time data to allow the city council and its contractors to respond quickly, and secondly a bank of data that can be used to compare different locations and impacts. The data would be available for use (alongside other weather and air pollution data) in school science and research projects to encourage children to take a close interest in their environment.

10.3.7. Engagement campaigns are proposed to promote awareness around issues that can increase the risk of surface water flooding. These issues are not unique to the urban area but they do cause a greater severity of problems here and hence it is proposed to focus this activity in the urban area initially to ensure best use of resources. Communications will cover:

a) the paving of front gardens;
b) looking after your sewers and spotting misconnections;
c) minimising flood risk from watercourses by keeping them maintained and clear or debris.

10.4. Management - Rural West

10.4.1. The Natural England National Character Area assessment of landscape types characterises this area as Rockingham Forest and Northamptonshire Vales (see **Appendix A**). Tree cover and large areas of woodland are a significant feature of the Rockingham Forest landscape but the Northamptonshire Vale area contains less in the way of the woodland cover which can bring valuable water quality and flood risk benefits by slowing down water. Pastoral and arable farming and water supply abstraction also shape the landscape of the Vales. Soil compaction and erosion contributes to rural runoff in some places and along with nutrient and pesticide loss into watercourses these factors can affect water quality. Soils vary from clay to more permeable limestone, the latter being more prone to groundwater movement. The Northamptonshire Vales contain the river valleys of the Nene and Welland and are important areas of habitat which need further protection. Most ordinary watercourses in the rural west are privately owned and hence riparian maintenance is very important. The city council has taken on maintenance of the higher risk watercourses in this area, known as Parish Dykes.

Comprehensive flood alleviation and water environment schemes

Action	*Benefits to*
54-P	Bus, Hom

10.4.2. A project has been proposed in the Environment Agency's Flood Risk Management Plan to develop a flood management scheme for Wansford. This will include a comprehensive review of the risk and existing management assets and investigation of appropriate solutions. Funding needs to be sought for this scheme.

Riparian owner engagement

Action	*Benefits to*
28-C	Bus, Com, Eff, Env, Hom, Kno

10.4.3. The FloW Partnership would like to work more closely with riparian owners in this area to share knowledge and experience, see if we can support each other and gain a better understanding of the different ordinary watercourses and private reservoirs that are present in Peterborough. Ensuring that water bodies are maintained to prevent flooding is crucial.

10.4.4. There are also other water management schemes that landowners in this area may have already been engaged in which bring a wide range of other benefits to Peterborough. Farm stewardship schemes encouraged by Natural England and Nene Park Trust seek to reduce soil erosion into nearby water bodies and therefore improve water quality. Anglian Water is also increasing the scale of its catchment advisory scheme which aims to help reduce the impacts of chemical fertilisers and pesticides in our water supply. It is important that any proposed new schemes with riparian owners are complimentary and do not create a burden for agricultural landowners or detract from these existing beneficial schemes.

10.4.5. Section 6.13 discussed the rights and duties of riparian owners. Ultimately the city council, the Environment Agency and IDBs have powers under the Land Drainage Act 1991 that they can use where appropriate to require certain essential works to be carried out and to enforce prohibitions on obstructions being placed in watercourses. Legislation related to flytipping may also be used where this is appropriate. Any obstructions to the flow of watercourses could increase local flood risk.

10.5. Management - Fens

10.5.1. Peterborough's rural north and east are part of the wider Fens landscape area as described in **Appendix B**. The Fens is an intensively managed environment created in the 17th century from large scale drainage of the fertile peat soils. IDBs (IDBs) undertake specialist water management to maintain these areas. Their areas are split up into several pumped catchments, which are referred to as drainage districts. The actions listed in this section are specific to the area managed by Peterborough's IDBs.

Maintenance of Fen watercourses and structures

Action	*Benefits to*
1-A	Agr, Bus, Com, Hom, Inf
2-A	Agr, Bus, Com, Hom, Inf

10.5.2. Table 10-4 below illustrates the maintenance undertaken regularly by Peterborough's IDBs.

Table 10-4: Maintenance activities undertaken in IDB areas

Organisation	Location of activity	Maintenance activity	Average frequency
Internal Drainage Boards	Arterial ordinary watercourses within district	Vegetation management	Annually (More often for some watercourses that serve urban areas)
		De-silting	5-10 year rotation depending on watercourse
		Fallen trees and obstructions removed	As necessary
		Servicing of pumping stations by an engineer or pumping station attendant	Annually
		Test on pumping stations and defects noted and dealt with	Daily/weekly by a station attendant. Monthly by a Board engineer.
		Inspection of control structures by Board engineer	As required
	Landowner watercourses	Ratepayers and board members must notify IDB of any defects in assets	As soon as they are discovered

Works and asset upgrades

Action	*Benefits to*
52-P	Bus, Com, Hom
13-A	Agr, Inf

10.5.3. Improvements are being proposed to Stewards House Drain in Thorney which drains surface water from an area of approximately 300 houses within the villages and from agricultural land. The Drain has been running at full capacity in recent years, overtopping into adjoining gardens and hence improvements are proposed to raise the standard of protection to prevent more significant flooding. This is a partnership scheme that has been submitted to the Medium Term Plan for Grant in Aid funding. Contributions are also coming from the city council, the parish council and the local school.

10.5.4. North Level Drainage Board and Peterborough City Council have also identified several culverts within the North Level area that are in need of upgrade or improvement works. Partnership work is needed to first of all identify the ownership of the culverts. After this condition assessments are required and agreement is needed as to who will carry out the maintenance or upgrades required. This work will consider use the FWMA 2010 section 13 arrangement discussed in section 10.2.28 of the FMS.

Drainage district modelling

Action	*Benefits to*
16-A	Kno

10.5.5. Welland and Deepings IDB and North Level District IDB have begun modelling their drainage districts in order to find out what the district wide standard of protection now is. Over the years the systems will have changed significantly with regular improvements being made. Therefore the SoP is hoped to be greater than the previously noted 1 in 50 (2%). The Action Plan includes an action to continue with this work, spread out over the next few years.

Counter Drain

Action	*Benefits to*
53-P	Agr, Env, Inf

10.5.6. There has been a desire for many years among partners to improve the resilience of the Counter Drain. This channel carries a small amount of surface water from the urban area but its principal use is to carry the treated water discharged from Flag Fen Water Recycling Centre. The Drain is in a poor state with slipped banks in some places and trees and weed growth causing obstacles in other areas. The flow in the drain is pumped and the water flows eventually into the Nene at the Dog in a Doublet sluice downstream of Peterborough city centre. A study has been carried out which demonstrates that when the pumps are working, despite the current condition of the drain, most of the time it does have capacity for the flows which it receives now and increased flows which may result from new development. However when the pumps fail in power cuts or due to their own flooding issues, water flows from the drain onto adjacent agricultural land. This has happened on

several occasions and results in a measurable loss of potato crops for the landowner(s). Ideally the drain should be improved in partnership by all its riparian owners to prevent further decline and measures needs to be put in place to improve the resilience of the system with regards to pump failure There are however many obstacles to this work being carried out. These are outlined below and discussed in more detail in the Counter Drain Study:

d) The impacts of this flooding on agricultural land are not deemed significant enough by Partnership Funding guidelines for Peterborough to be able to secure GiA funding from Government.
a) Landownership (riparian ownership) is spread across several different partners including the Environment Agency, Peterborough City Council, businesses, Anglian Water and agricultural landowners.
b) The watercourse is not a Main River and so does not feature on the Environment Agency's regular maintenance schedule.
c) The watercourse is not designated as a public sewer and therefore is also not recognised by Ofwat, the Water Company regulator, as an asset which Anglian Water can significantly invest in.
d) The priorities for this watercourse are very different for each stakeholder.

10.6. Management - New Development

10.6.1. Although this section includes discussion of newly proposed actions that are Peterborough-wide, it has been separated out from the rest of the management chapters to make it easier to locate information relating to new development. It aims to give a brief overview of some of the current priorities for new development with regards to flood and water management. Before proposed actions are discussed the status of funding with regards to new development is confirmed.

Note about funding flood risk management schemes for new development

10.6.2. The Partnership Funding process described in section 8.2 will not fund flood risk management works to 'new' development. This is defined as any development built since 1st January 2009. This is because the appropriateness, design and safety of all new developments with regards to all sources of flood risk should have been fully considered as part of the planning process. If funding is required for schemes that relate to new development or redevelopment it will be sought through the Community Infrastructure Levy, Section 106 agreements, the Local Enterprise Partnership[24] or from organisations with an interest in the land or improved infrastructure. The potential for funding from CIL and S106 is explained further in the Peterborough Planning Obligations SPD (to be replaced by the Developer Contributions SPD in early 2015) available from the city council's website.

10.6.3. The following schemes might be eligible to apply for use of Community Infrastructure Levy due to the delivery of reductions in flood risk to sites available for growth and regeneration in Peterborough: 41-P, 44-P, 45-P, 46-P, 52-P, 53-P, 56-P)

Strategic Flood Risk Assessment

Action	*Benefits to*
20-D	Dev

[24] Greater Cambridge Greater Peterborough Enterprise Partnership http://www.gcgp.co.uk/

10.6.4. An update to our SFRAs is included in the FMS action plan. SFRAs should be updated regularly to ensure continued relevance with regards to changing flood zones and new flood risk data. Since the production of the Peterborough SFRA Levels 1 and 2 several new and/or updated data sets are available for use when planning new developments:

a) Publically available data about areas at risk of surface water flooding
b) Privately developed groundwater maps available for purchase
c) Information about the impacts of climate change on development sites particularly in the city centre.
d) Critical Drainage Areas/Areas of Notable Drainage Interest

10.6.5. **Critical Drainage Areas** are recognised as areas that are in Flood Zone 1 but that have special drainage requirements. These can include:

a) existing flood records
b) capacity issues which, with extra flows, would create increased surface water flood risk.
c) sensitive receiving environments
d) the potential for development to significantly change drainage patterns

10.6.6. The formal definition in the Town and Country Planning (General Development Procedure Amendment 2, England) Order 2006 for these is: *"an area within Flood Zone 1 which has critical drainage problems and which has been notified [to] the local planning authority by the Environment Agency".*

10.6.7. However with the introduction of the FWMA 2010, LLFAs are now the principal authority managing surface water flood risk and so it is more likely that LLFAs would need to identify important surface water risk areas. Until any changes are made in the national definition, when the city council needs to update the formally identified critical drainage areas in Peterborough, it will use the term **Areas of Notable Drainage Interest.** Each time the city council updates its Strategic Flood Risk Assessment these areas will be displayed in the new document.

10.6.8. A review of the existing Critical Drainage Areas identified in the *SFRA Level 2 (2010)* has been undertaken and a map of the newly proposed areas is included in **Appendix H**. Areas of Notable Drainage Interest have therefore been identified in the following wards and locations:

a) Central (2)
b) Dogsthorpe
c) East (2)
d) Fletton and Woodston
e) Newborough
f) North Bretton (2)
g) North
h) Orton Waterville
i) Ravensthorpe
j) Stanground Central
k) West

Resilient development

Action	*Benefits to*
19-D	Dev
20-D	Dev

10.6.9. As development in low risk areas continues and the impacts of climate change on flood risk increases, land for development that is low risk will eventually be in short supply. Planning ahead for the future, it is important that the city council and other risk management authorities agree what resilient development looks like in Peterborough. This will involve considering what makes appropriate access and egress routes for sites that are at risk of flooding, what emergency plans should consist of and the consideration of alternative designs that may be appropriate. This work will also link in with the development of an adaptation plan for Peterborough.

Flood and Water Management Supplementary Planning Document

Action	*Benefits to*
21-D	D

10.6.10. This SPD is a formally adopted part of Peterborough's suite of planning policy documents. One of the principal actions set out in the FMS is to ensure that the SPD is used, understood and followed by planners working on new development. The SPD provides planning guidance on:

a) How to assess whether or not a site is suitable for development based on flood risk grounds.
b) The use of different sustainable drainage measures within Peterborough.
c) The protection of aquatic environments and how development can contribute positively to the Water Framework Directive.

Sustainable Drainage Systems

Action reference	*Benefits to*
22-D	Dev

10.6.11. Peterborough City Council requires sustainable drainage in all new developments. Strengthened planning guidance plus the city council's in-house expertise will be used to help developers design drainage strategies and systems that reduce flood risk while also delivering the other benefits of SuDS such as water quality, amenity and biodiversity improvements (see section 4). As a unitary authority which is a Local Planning Authority, a Lead Local Flood Authority and a Highways Authority, the city council is confident it can provide an efficient process which will aid our development and regeneration sites to implement a solution that works for the residents, the developers and the environment. Peterborough's flood risk management organisations will continue to work closely with developers to this aim. For detailed guidance on SuDS, planners and developers are referred to the Flood

and Water Management SPD, the Peterborough SuDS website[25] and the Government's technical standards.[26]

Works to watercourses – byelaws, consents and culverts

10.6.12. If it is proposed to undertake construction within the locality of, including over, under and within, a watercourse a specific consent is needed from one of Peterborough's flood and water management organisations. This consent is not included within planning permissions but may be sought at the same time. The type of consent required and the distance from the watercourse for which it is needed depends on what area of Peterborough the site is in and the classification of the watercourse. The requirements are set out clearly in chapter 8 of the Flood and Water Management SPD.

10.6.13. It is the Flow Partnership's intention to ensure that such works have clearly included consideration of the environmental impacts in terms of biodiversity, habitat and water quality. Therefore example assessments that may be required in order for Land Drainage Consent to be granted for works to an ordinary watercourse, would be a water vole survey or a Water Framework Directive assessment.

10.6.14. The city council seeks to avoid culverting and its consent (see section 10.6.17) will not normally be granted except where there is a clearly demonstrated need to enable access. Further to this where the Flow Partnership progresses projects in areas where culverts already exist, alternative options for the culverts will be considered as part of the development of these schemes. If there is an appropriate option to enable the culvert to be daylighted (removed) then this will rate as a high priority.

10.7. Summary

10.7.1. Across all of the partner organisations the Action Plan proposes a significant number of actions for the future. Delivery of these may be challenging given the constraints involved in working up deliverable schemes (discussed in section 10.1.4), the current economic climate and pressure from other factors such as urban creep and climate change.

10.7.2. Each of the proposed actions delivers different types of benefits. Some seek to reduce the likelihood of flooding, some to reduce the impacts (e.g. by raising awareness so that property owners can act in time) and some to improve the efficiency of management. Delivery of the actions would bring improvements to flood risk management in the local area of the proposed schemes or projects. While there is no guarantee of being able to deliver the full action plan the FloW Partnership will work together closely to further develop the actions, seek funding and resources, and deliver as many actions as is possible in the plan period.

[25] www.peterborough-suds.org.uk
[26] Defra. (2015). Non-statutory technical standards for sustainable drainage systems https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards

11. Monitoring and Review

11.1.1. The FloW Partnership meetings will provide a method for monitoring the progress on activities listed with the FMS's action plan. Actions will be rated as:

i. Completed (in which case they will be moved to the other spreadsheet) - blue
ii. On target – dark green
iii. Progress - light green
iv. Some obstacles - yellow
v. At risk – red
vi. Not started - white

11.1.2. The Partnership will then be able to work together to try and progress past any arising barriers to ensure that schemes can be delivered. Part of the process will also be about ensuring that the actions do deliver the FMS objectives.

11.1.3. The FMS should be updated every 5-6 years. The FloW Partnership may wish this to be done to best co-ordinate with updates to the Environment Agency's Flood Risk Management Plans. Some of the background sections may change very little but updates may be needed to the risk, climate change and management chapters.

11.1.4. It is intended that the Action Plan will be reviewed every year at a FloW Partnership meeting alongside monitoring progress on the existing actions.

12. Glossary and References

12.1. Glossary

Term	Explanation
Annual flood probability	The estimated probability of a flood of given magnitude occurring or being exceeded in any year, expressed as, for example, a 1 in 100 or 1% chance.
Area of Notable Drainage Interest	An area where the existing drainage design or risk level means that measures used to address site drainage need careful consideration to ensure they comply with relevant drainage strategies and policies and that risk will not be exacerbated.
Asset Management Period (AMP)	The five year business planning period for UK water companies as set by the regulator, OfWAT. AMP 5 is 2010-2015, AMP 6 is 2015-2020 and AMP 7 is 2020-2025.
Aquifer	Layer of water-bearing permeable rock, sand, or gravel which is capable of providing significant amounts of water
Climate change	A change of average global climate caused by an alteration of the composition of the atmosphere that is due directly or indirectly to human activity and is in addition to natural climate variability.
Combined sewer overflow	Overflow that might be needed to prevent internal flooding of foul water. During intense rainstorms, when combined sewerage system can reach capacity diluted but untreated wastewater can be discharged from these overflows into a watercourse.
Combined sewer system	Sewer system that carries both foul water and rainwater
Community Infrastructure Levy	The Community Infrastructure Levy (CIL) is a new levy that local authorities in England and Wales can choose to charge new developments in their area to help pay for infrastructure which is needed to support those developments. CIL can be used to fund a wide variety of infrastructure including transport schemes, flood defences, schools, hospitals, parks, leisure centres etc.
Community Related Asset (CRA) land and dykes	Tranches of land transferred from the Development Corporation, when it closed, to Peterborough City Council. The majority of CRA land forms verges between the highway and other land uses and therefore often contains drainage ditches known as CRA dykes. Some of the land is subject to clawback agreements with the Homes and Communities

	Agency in the event of a chance of land use.
Critical ordinary watercourse	A watercourse that passes through an area of land which is either an intensively developed urban area at risk from flooding or a less extensive urban area with some high grade agricultural land and/or environmental assets of international importance requiring protection. The watercourse is only designated as critical for the length passing through these areas of land.
DG5 register	Register of properties at risk of internal sewer flooding. Register maintained by the sewerage undertaker at the requirement of their regulator, Ofwat.
Flood risk	An expression of the combination of a flood probability and the magnitude of the potential consequences of a flood event.
Floodplain	Area of land that borders a watercourse over which water flows in time of flood, or would flow but for the presence of defences.
Flood Zones	Flood Zones are defined in Government's National Planning Policy Framework. They indicate land at risk by referring to the probability of flooding from river and the sea, ignoring the presence of defences.
Highway authority	An organisation with responsibility for maintenance and drainage of highways
Infiltration	The passage of surface water through the surface of the ground
Lead Local Flood Authority	A term given to a unitary or county council under the Flood and Water Management Act 2010.
Local Levy	A sum collected annually by the Regional Flood and Coastal Committee from all Lead Local Flood Authorities in the region under the FWMA 2010 and the Environment Agency (Levies) (England and Wales) Regulations 2011.
Main River	Watercourse shown on the statutory Main River maps held by the Environment Agency and the Department of Environment, Food and Rural Affairs, and can include any structure or appliance for controlling or regulating the flow of water into, in or out of the channel.
Ordinary watercourse	Any watercourse which is not a Main River
Regional Flood and Coastal Committee	A committee established by the Environment Agency under the Flood and Water Management Act 2010 that brings together the Agency, members from Lead Local Flood Authorities and independent members with relevant experience.
Scheduled Monuments	Archaeological sites or historic buildings considered to be of national importance.
Stakeholders	Individuals and organizations that are actively involved in a project, or whose interests may be affected as a result of the project execution.
Sustainable Drainage Systems	Concept of surface water drainage which takes into account the quantity and quality of runoff, and the

	amenity value of surface water in the urban environment. The main focus is on source control and the mimicking of natural processes.
Unitary Authority	A local authority that is one-tier and has no separate county council.
Watercourse	A natural or artificial channel that conveys surface water

12.2. Acronym glossary

AMP	Asset Management Period
Anglian RMBP	Anglian River Basin Management Plan
AW	Anglian Water
CCC	Cambridgeshire County Council
CCTV	Closed Circuit Television
CFMP	Catchment Flood Management Plan
CIL	Community Infrastructure Levy
CPLRF	The Cambridgeshire and Peterborough Local Resilience Forum
CRA dyke	Dyke within Community Related Asset land
Defra	Department for Environment, Food and Rural Affairs
DPD	Development Plan Document
EA	Environment Agency
EU	European Union
FloW Partnership	Peterborough Flood and Water Management Partnership
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
FMS	Peterborough Flood Risk Management Strategy
FWMA 2010	Flood & Water Management Act 2010
GHG	Greenhouse Gas
GiA	Grant in Aid
IDB	Internal Drainage Board
IPCC	Intergovernmental Panel on Climate Change
LCLIP	Local Climate Impacts Profile
LDF	Local Development Framework
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
MLC	Middle Level Commissioners
NCC	Northamptonshire County Council
NLD IDB	North Level District Internal Drainage Board
NPPF	National Planning Policy Framework
OfWAT	Water Services Regulation Authority (was the Office of Water Services and the previous acronym has remained)
OM	Outcome Measure
PCC	Peterborough City Council
PFRA	Preliminary Flood Risk Assessment
RFCC	Regional Flood and Coastal Committee

RMA	Risk Management Authority
RNRP	River Nene Regional Partnership
SAB	SuDS Approving Body
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems
SoP	Standard of Protection
SPA	Special Protection Area
SPD	Supplementary Planning Document
SSSI	Sites of Special Scientific Interest
SWIMS	Severe Weather Information and Monitoring System
SWMP	Surface Water Management Plan
UKCIP	United Kingdom Climate Impact Profile
UKCP09	United Kingdom Climate Projections 2009
UKRLG	United Kingdom Roads Liaison Group
uFMfSW	Updated Flood Map for Surface Water
WFDGiA	Water Framework Directive Grant in Aid
WFD	Water Framework Directive
W&D IDB	Welland and Deepings Internal Drainage Board
WVP	Welland Valley Partnership

12.3. References

Portrayed as footnotes throughout the report with web address where possible.

i. Anglian Water (2011). *Towards Sustainable Water Stewardship – Sustainable Drainage Systems Adoption Manual.*

ii. Bray, B., (2011). Image: Dancing in the Swale

iii. CIRIA (2013). *C724 - Creating Water Sensitive Places.*

iv. Department for Environment, Food and Rural Affairs (2015). *Non-Statutory Technical Standards for Sustainable Drainage Systems.*

v. Department for Environment, Food and Rural Affairs (website accessed 2015). *Planning Practise Guide – Flood Risk and Coastal Change.*

vi. Department for Transport. (2013). *Action for Roads - A Network for the 21st Century.*

vii. Environment Agency (Unknown). *Adapting to Climate Change - Advice for Flood and Coastal Erosion Risk Management.*

viii. Environment Agency (2013). *Climate change allowances for planners - Guidance to support the NPPF.*

ix. Environment Agency (2013). *Living on the Edge: A Guide to your Rights and Responsibilities of Riverside Ownership.*

x. Forestry Commission (2012). *Research Report: Economic Benefits of Greenspace: a critical assessment of evidence of net econominc benefits.*

xi. *Local Authority SuDS Officer Organisation.* (Due to be published 2015). *Non-Statutory Technical Standards for Sustainable Drainage Systems – Best Practise Guidance*

xii. Met Office (accessed 2014). *Flooding – Summer 2007.* Retrieved from: http://www.metoffice.gov.uk/about-us/who/how/case-studies/summer-2007

xiii. Natural England. (2014). *Microeconomic Evidence for the Benefits of Investment in the Environment.*

xiv. Saunders, Dr M.A. (1998). *The UK Floods of Easter 1998 - Commissioned Report for the Benfield Greig Hazard Research Centre.*
xv. Eye Peterborough (website accessed 2014). *The 1947 Flood.* Retrieved from: http://www.eyepeterborough.gov.uk/heritage/1947flood.html
xvi. Peterborough City Council (2011). *Counter Drain Study.*
xvii. Peterborough City Council (2012). *Local Climate Impacts Profile.*
xviii. Peterborough City Council (2014). *Population and Dwellings Stock Estimates.*

13. List of Associated Documents and Appendices

13.1. Appendices to the FMS

Appendix A – Natural England's National Landscape Character Areas

Appendix B – The Fens

Appendix C – Map of Internal Drainage Boards

Appendix D – Risk Matrix Method

Appendix E – Summary Method Statement for Climate Change Sensitivity Exercise

Appendix F – Plan of completed actions

Appendix G – Flood Incident Notification Form

Appendix H – Critical Drainage Areas

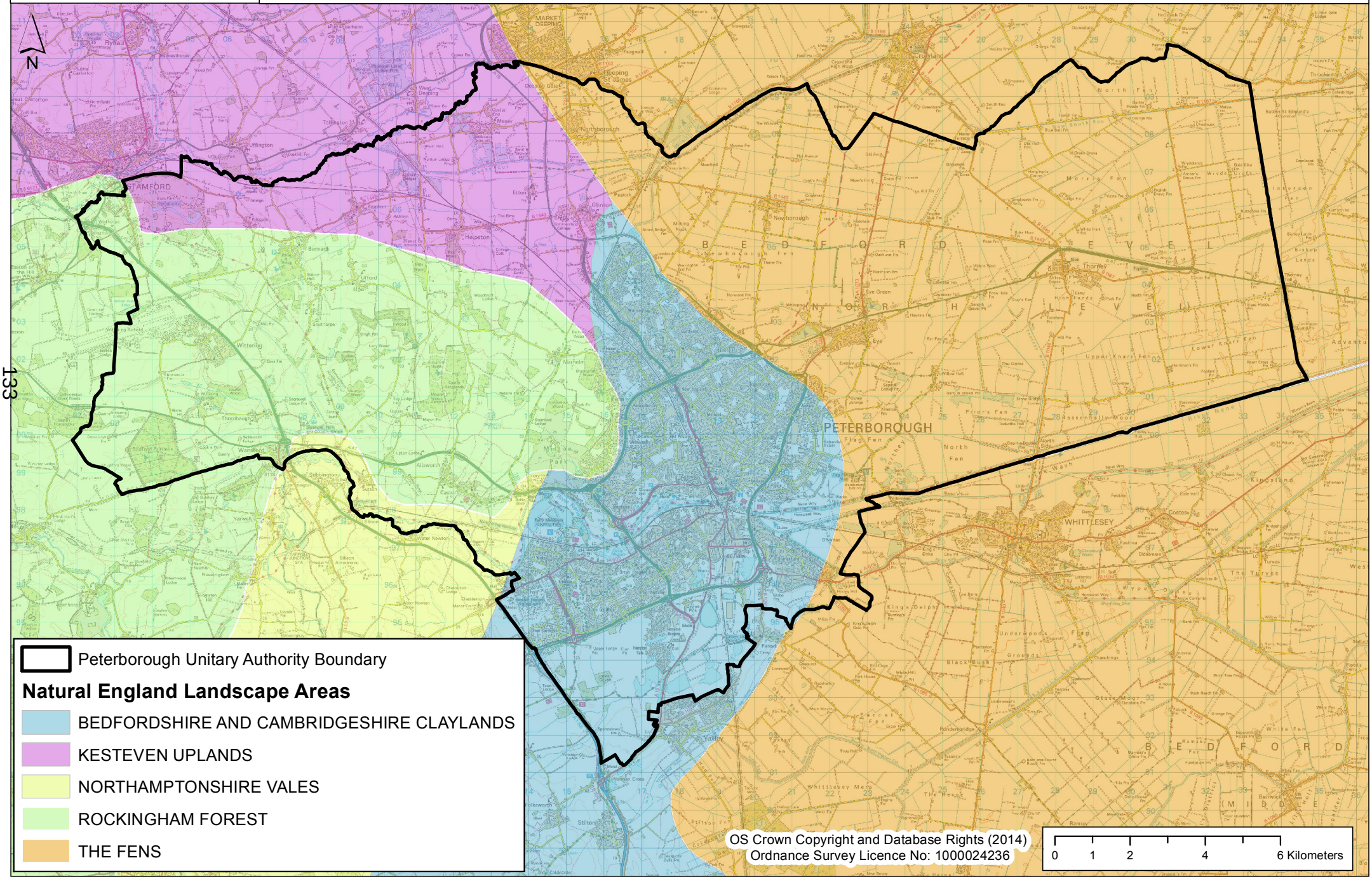
13.2. Associated documents

Action Plan – Plan showing the identified actions proposed for future delivery

Strategic Environmental Assessment – Assessment of the environmental impacts of the proposed actions

PETERBOROUGH CITY COUNCIL

Appendix A - Natural England Landscape Areas



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Appendix B

1.1. Introduction to the Fens Area

1.1.1. The Fens cover a large area of eastern England, stretching from the Wash out to Lincoln, Peterborough and Cambridge (see figure B1). Five different rivers – the Witham, Welland, Glen, Nene and Ouse, carry water from surrounding uplands through the Fens and into the Wash.

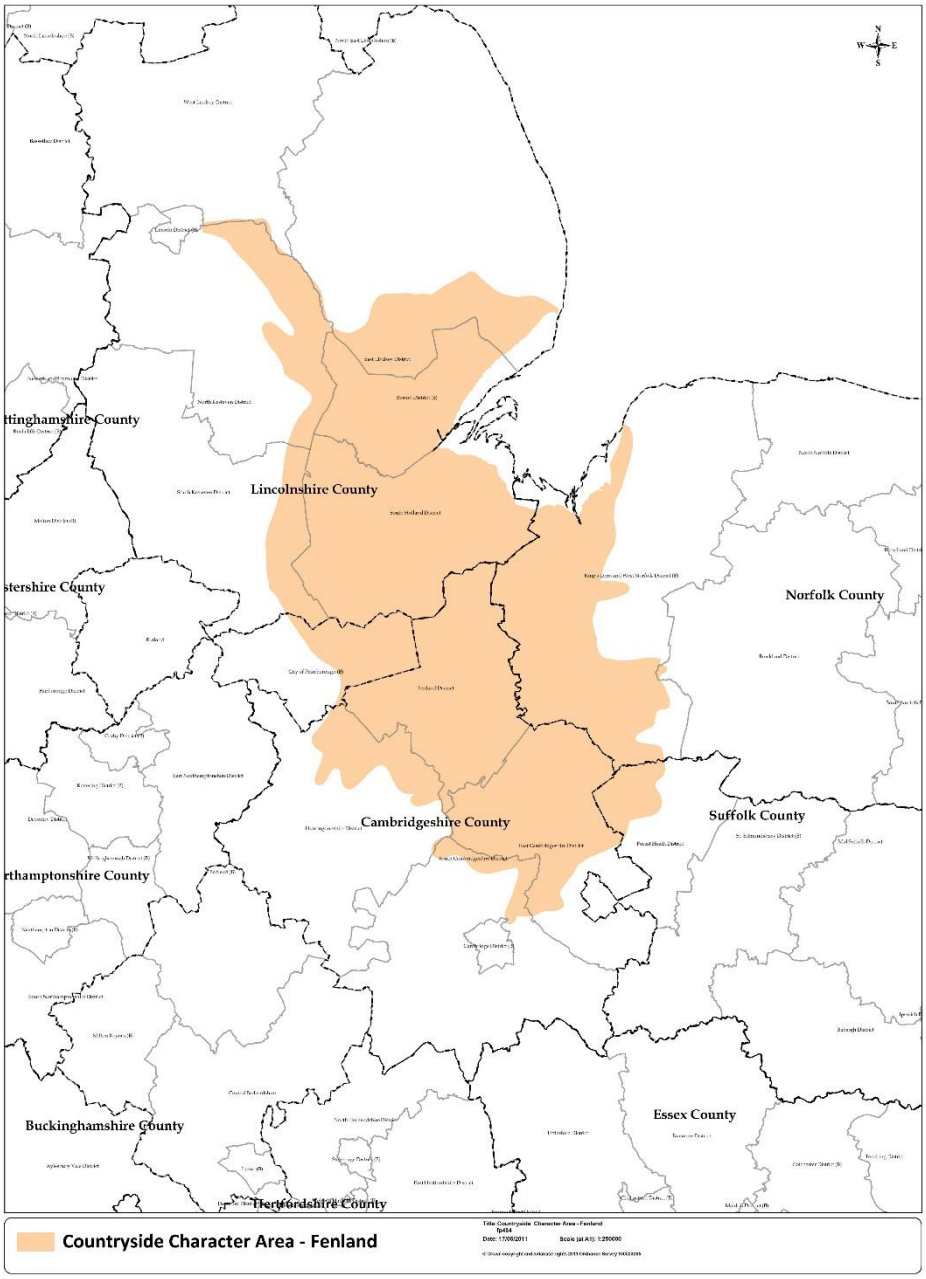

Figure B1: The position of the Fens in eastern England.

1.2. Background to the Fens

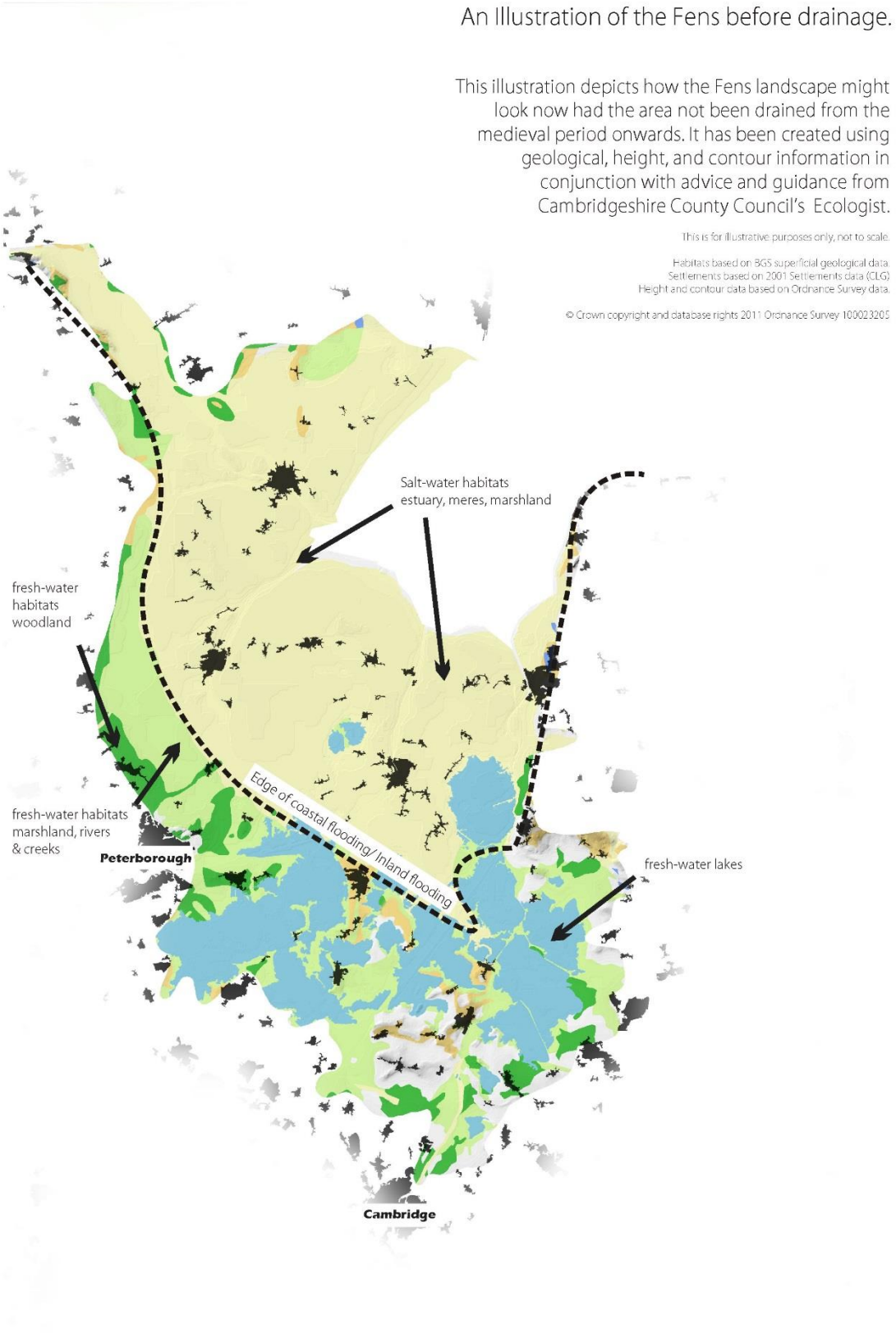

Figure B2: All illustration of the Fens before drainage

1.2.1. Localised drainage took place in the fenland landscape from as early as the medieval period. However, large scale drainage of the Fens first began in the 17th

Century, when the 'Fens' as we now know it began to take shape. Today this artificially drained landscape is home to approximately half a million people. The Fens cover an area of almost 1,500 square miles, divided between eleven District and five County Councils. For comparison, figure B2 depicts how the Fens landscape might look now had the area not been drained from the medieval period onwards.

1.2.2. Well maintained coastal and fluvial flood defences are essential to providing the conditions in which Internal Drainage Boards can maintain extensive artificial drainage of the area. Across the Fens, IDBs maintain 3,800 miles of watercourse, 200 miles of watercourse embankment and 286 pumping stations. Coupled with over 60 miles of coastal sea walls and 96 miles of river embankments, the Fens has a high level of protection, and is classified as a defended flood plain. Climate change, however, poses a serious threat to the Fens and a continued programme of investment in flood defences and drainage systems will be needed for existing standards of protection, including provision for climate change, to be maintained in the medium and long term.

1.2.3. The Internal Drainage Boards within the Fens have been established over many years because of the special water level and drainage management needs existing within this area, and the particular need for lowland and inland local flood risk management activities. These local works are funded in the main from funds levied locally by IDBs, and present an effective example of the Government's 'localism' agenda.

1.2.4. It is essential for the promotion of sustainable growth that coastal defences and the extensive drainage infrastructure behind them are well maintained. Housing, jobs and services that meet the needs of the market towns and the rural communities can only happen if drainage and flood risk is well managed. Growth in the Fens will need to be embraced in a sustainable way; balancing development needs with the need to promote and protect open spaces, natural habitats, landscapes, the built environment and the unique qualities of the Fens. It is therefore essential that 'Flood Risk Management Authorities', utilities and local communities continue to work closely with local planning authorities, so that consideration of sustainable drainage in particular and flood and water management in general are an integral part of the planning and development control process.

1.2.5. Farming contributes significantly to the success of the local economy, supporting a large number of businesses involved in the production of food and rural tourism. The important role that farming plays in the Fens is emphasized by the steady decline in self-sufficiency in the UK, and the Government's renewal of the food security agenda. The Fens account for 50% of all Grade 1 agricultural land in England, producing 37% of all vegetables and 24% of all potatoes grown in the country, as well as enough wheat to make 250 million loaves of bread every year.. The area also supports significant livestock, dairying and outdoor pig production as well as about 18 million hens, ducks, turkeys and geese in the Lincolnshire Fens alone. This supports a large well-established food processing industry. It is critical, therefore, that appropriate flood risk and drainage management measures are taken to protect this nationally important food production area.

1.2.6. In addition to food production, the Fens is popular for tourism, attracting more than 15 million visitors a year. The Fens provide a unique and rich habitat for wildlife and include the Ouse and Nene Washes which while providing flood storage capacity, also retain important wetland for birds. There are also major transport networks, road and rail, as well as houses, critical infrastructure, water, gas and electricity that

would be affected if fenland areas were to flood. The Fens also contain heritage sites and form three sides of the Wash, which is internationally designated for animal and plant biodiversity. There are also numerous local sites, ranging from SSSIs to Local Nature Reserves which need to be protected.

Management plans for the Fens

1.2.7. The Environment Agency previously developed Catchment Flood Management Plans for the Anglian Region with the aim of taking a broad view of flood risk at catchment level over the next 100 years. Factors such as climate change, future development and changes in land use and land management were taken into account in developing sustainable policies for managing flood risk in the future.

1.2.8. The Fens area is covered by four different Catchment Flood Management Plans (CFMPs); one for each of the fenland catchments of the Nene, Welland and Glen, Witham and Great Ouse and also by the Wash Shoreline Management Plan (SMP). All five plans recommended that an integrated plan is produced specifically for the Fens in order to develop a sustainable, integrated and long term flood risk management approach for this landscape area. There was also a need for any future plan to bring together organisations and other plans and projects from across the Fens.

1.2.9. Since the development and approval of the CFMPs, the legislative framework for flood risk management landscape has changed considerably, providing opportunities to develop a more integrated approach to upland and lowland flood risk and drainage management from all sources. The introduction of the duties for LLFAs to produce local flood risk management strategies and the Environment Agency to produce flood risk management plans provides an opportunity for integrating and delivering the aims for the Fens.

1.2.10. Local flood risk management strategies and flood risk management plans need to integrate the needs and opportunities of the local Fens and fenland communities with those of the rest of the local LLFA area while also promoting a consistent approach across the Fens as a whole. This consistency is crucial, for example, to IDBs, who often span more than one local authority and whose practices will be similar throughout their area. The LLFAs of Lincolnshire, Peterborough, Cambridgeshire, Norfolk and Suffolk have therefore agreed to work together closely to achieve this aim. Forest Heath District Council has been involved on behalf of Suffolk County Council since Suffolk's fenland is principally located in this area.

Aspirations

1.2.11. To reflect the importance of the Fens as a highly productive and precious resource the following joint aspirations have been identified for the wider area in respect of flood risk and drainage management:

i. Continue to ensure that appropriate flood risk and drainage management measures are taken to protect the nationally important food production areas in the Fens
ii. Ensure that where appropriate, current levels of protection are maintained in the Fens taking into account climate change
iii. Manage flood risk and drainage in accordance with principles of sustainable development
iv. Ensure that development is undertaken appropriately, so that adverse consequences of flood risk are not increased

v. Contribute towards the protection and enhancement of the environmental heritage and the unique landscape character of the Fens including biodiversity;
vi. Support promotion and use of the waterways and other areas in the Fens for tourism and recreation
vii. Develop effective dialogue with local communities to facilitate their involvement in flood risk management in the Fens;
viii. Work with local planning authorities to help them grow the economy in the Fens, through the early consideration of flood and water management needs.

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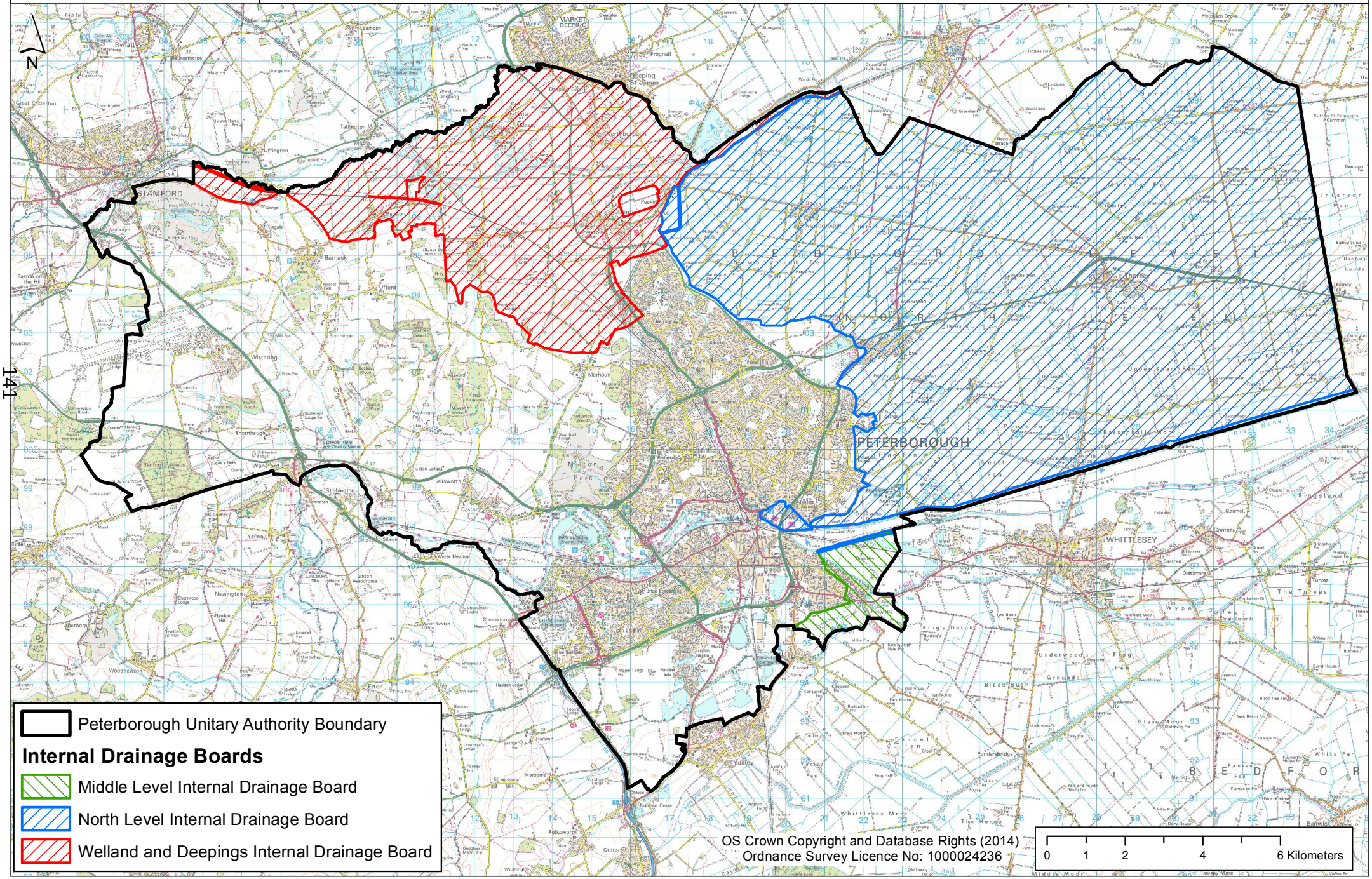
Appendix C - Internal Drainage Boards



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Appendix D

1.1. Risk calculation

To give an overall perspective of flood risk in Peterborough, each type of flooding (referred to here as the hazard) has been rated according to the average likelihood and the expected impacts of that type. The results are set out in table C1 in the main report based on a risk matrix calculation. This appendix shows the categories for likelihood, impact and risk that were used for this calculation. The likelihood categories have been developed based on the Environment Agency's classification bands for flood risk. For each source of flood risk, where the risk in Peterborough from this source spans more than one band the highest likelihood band has been chosen.

1.2. Likelihood

After the hazard has been identified, the likelihood of it occurring each year is calculated. The following table outlines the five different probability categories ranging from very low to high.

Table C1: Likelihood score

Level	Descriptor	Likelihood, written as annual probability	
		Annual probability	Annual probability as a percentage chance
5	High	1/30 ≤ X <1	3.3% ≤ X < 100%
4	Medium	1/100 ≤ X< 1/30	1% ≤ X< 3.3%
3	Medium-Low	1/200 ≤ X < 1/100	0.5% ≤ X < 1%
2	Low	1/1000 ≤ X < 1/200	0.01% ≤ X < 0.5%
1	Very Low	1/10000 ≤ X < 1/1000	0.001% ≤ X < 0.01%

1.3. Impact

The following table sets out the Health, Social, Economic and Environmental impact for each impact level. When scoring the overall impact level of a type of a flooding the highest relevant impact (health, social, economic or environmental) level was recorded.

Table C2: Impact explanation

Impact category	Meaning
Health – casualties	Injuries directly attributable to the emergency
Health – fatalities	Deaths directly attributable to the emergency
Social	The social consequences of an event, including availability of social welfare provision; disruption of facilities for transport; damage to property; disruption of a supply money, food, water, energy or fuel; disruption of an electronic or other system of communication; homelessness, evacuation and avoidance behaviour; and public disorder due to anger, fear, and/or lack of trust in the authorities
Economic	The net economic cost, including both direct (e.g. loss of or damage to goods, buildings, infrastructure) and indirect (e.g. loss of business, increased demand for public services) costs

Environmental	Disruption to or destruction of plant or animal life, contamination or pollution of land, water, or air, with harmful biological/chemical/radioactive matter or oil.

Table C3: Impact scores

Level	Health – casualties	Health – fatalities	Social	Economic (£)	Environmental
1	0-5	0	Limited	Thousands	Insignificant
2	6-10	0	Some / local	Millions	Minor
3	11-50	1-20	Moderate / local – medium to long term	Tens of millions	Limited – long/short term
4	51-200	21-50	Significant local / local and regional	Hundreds of millions	Significant – medium/long term
5	200+	151	Severe local, regional and national	Billions	Serious long term

1.4. Risk calculation

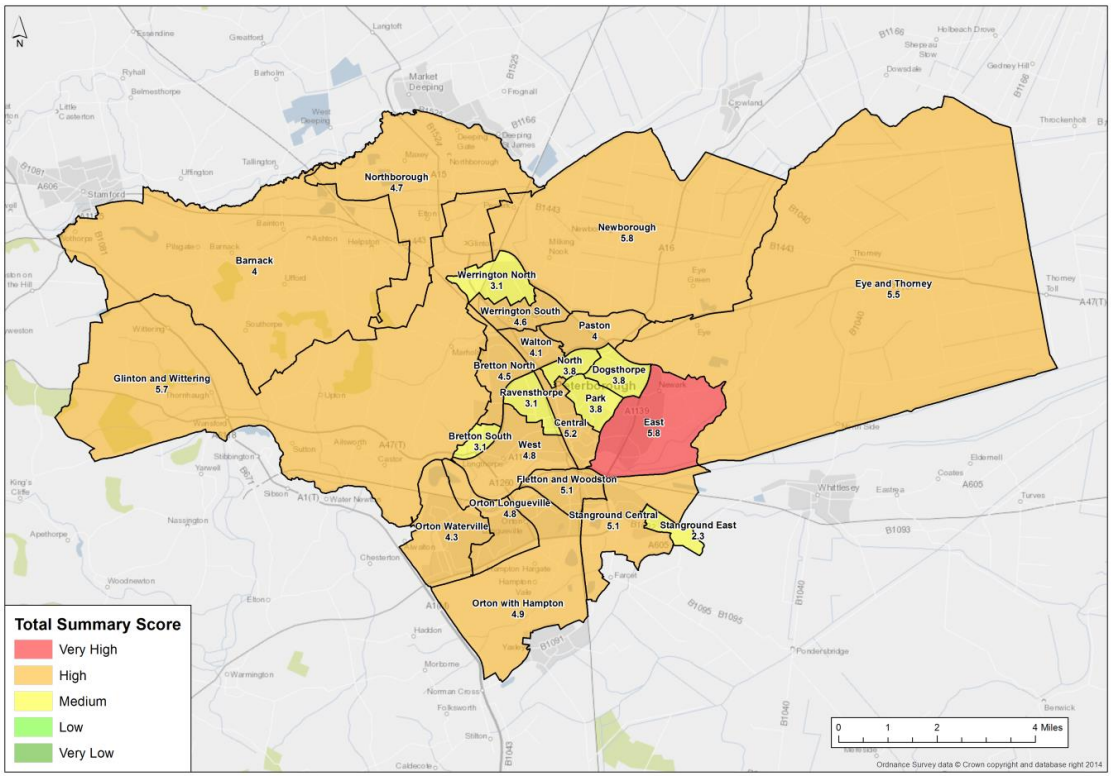
The risk matrix combines both the score from impact and likelihood to give an overall score for the area from a particular known hazard. The numbers correspond to the overall risk rating given in the Peterborough Flood Risk Management Strategy.

Table C4: Risk matrix

Catastrophic 5	**Impact**	5	10	15	20	25
Significant 4		4	8	12	16	20
Moderate 3		3	6	9	12	15
Minor 2		2	4	6	8	10
Insignificant 1		1	2	3	4	5
		Likelihood				
		Very Low 1	Low 2	Medium - Low 3	Medium 4	High 5

Overall Risk Rating	Low 1-5	Medium 6-9	High 10-14	Very High 15+

APPENDIX E
Peterborough Flood Risk and Climate Change Sensitivity
Summary of Methodology



What is it?

The Peterborough flood risk and climate change sensitivity tool, combines local and national datasets of environment and infrastructure to help understand the risk of present-day and future flooding, based on climate change predictions, within the city.

Was does it do?

The tool produces a summary score per ward based on the risk of flooding from surface water, groundwater and fluvial flooding to people, infrastructure, economy and environment; for present day and future risk.

How does it work?

A list of infrastructure and environmental receptors were identified and split into impact categories (as presented in **Table 1**). For each of the receptors in a ward, an individual score from 0 (low number of receptors impacted) to 8 (high number of receptors impacted) is calculated based on how many receptors are at risk. This is undertaken for each of different flood events. These individual receptor scores are then combined to give an overall impact score and priority grading for each ward.

Results for future risk (climate change) are calculated using the change in impact scores between the modelled results. For fluvial this is the difference between flood zone 2 and flood zone 3 and for surface water this is the change in impact score between the 1 in 30 probability event and the 1 in 1:1,000 probability event. No climate change results have been derived for groundwater.

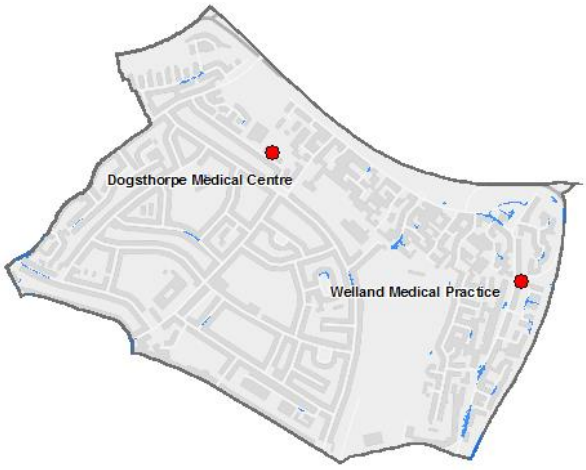
Impact Category	Receptor types	
Health	GP Surgeries	
	Hospitals	
	Nursing Homes (vulnerable people at risk)	
Social	Residential Properties in 40% Most Deprived Areas	
	Residential Properties in 40% to 80% Most Deprived Areas	
	Residential Properties in 20% Least Deprived Areas	
Economics	Residential Properties	
	Non-Residential Properties	
Environmental	Environmental Designations	
	Listed Buildings	
Infrastructure	Roads	Trunk Roads
		Strategic Routes
		Main Distributor Roads
		Secondary Distributor Roads
		Link Roads
		Local Access Roads
	Rail	Railway Lines
		Railway Stations
	Schools	Primary Schools
		Secondary Schools
	Emergency Services	
	Sewage Treatment Works	
	Power Network	Electricity Sub Stations
		Gas Compression Sites
		Power Stations

Table 1 – List of Infrastructure and environmental receptors

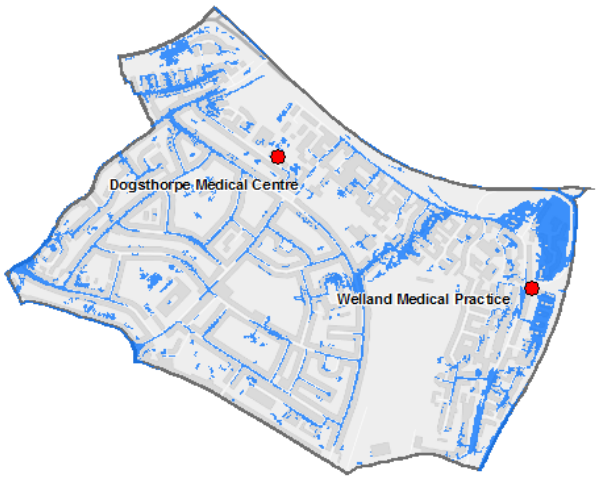
Example of how the Peterborough flood risk and climate change sensitivity tool works

For each ward the total number of a specific receptor (e.g. GP surgeries) are identified. The locations of these receptors are then reviewed against the risk of flooding.

The Dogsthorpe Ward has two GP surgeries located within its ward boundary, Dogsthorpe Medical Centre and Welland Medical Practice (red dots on the map to the right).



For a 1 in 30 probability surface water event (blue outline on the map below) only the Welland Medical Practice is affected.



The tool uses this information to determine the 'GP capacity at risk score' which is based on the percentage of GP surgeries within a ward that are at risk (**Table 2**). The score in Dogsthorpe Ward for GP risk is **5** (25% – 50% at risk) based on one of the two GP surgeries being affected. For a larger surface water event, the score increases to an **8**, as both the surgeries would be affected by flooding.

The overall health impact score is calculated for each type of flood risk by taking the **highest score** from the following health receptors:

- GP capacity at risk;
- Vulnerable people at risk; and
- Hospitals at risk.

Score	Criteria
1	None at risk
3	1% – 25% at risk
5	25% – 50% at risk
8	More than 50% at risk

Table 2 – Scoring criteria for GP's surgeries

An impact score is then calculated for each of the five impact categories.

The impact scores are then combined and displayed as an average. The average impact score is then calculated and converted into a priority grading. The results for the 1 in 1000 probability surface water event are displayed below. Dogsthorpe is classed as being Very High.

PETERBOROUGH CITY COUNCIL

Flood Risk and Climate Change Senstivity

Ward Summary for Surface Water (1,000 year RP) Flood Map

Ward	Health	Social	Economics	Environmental	Infrastructure	Average Score	Priority Grading
Barnack	3	5	3	8	8	5.4	High
Bretton North	8	8	5	5	8	6.8	Very High
Bretton South	8	5	3	2	8	5.2	High
Central	8	8	5	8	8	7.4	Very High
Dogsthorpe	8	8	5	2	8	6.2	Very High
East	8	8	5	8	8	7.4	Very High
Eye and Thorney	8	8	5	8	8	7.4	Very High
Fletton and Woodston	8	8	5	5	8	6.8	Very High
Glinton and Wittering	8	5	5	8	8	6.8	Very High
Newborough	8	5	3	8	8	6.4	Very High
North	8	8	3	3	8	6.0	High
Northborough	8	5	3	8	8	6.4	Very High
Orton Longueville	8	8	5	8	8	7.4	Very High
Orton Waterville	8	5	5	8	8	6.8	Very High

Table 3 – Results for the 1 in 1000 probability flood event

The tool provides summary scores for different types of flood events along with a combined score for all the flood types.

Further reading

A more detailed methodology report is available, outlining all the classifications, queries and scoring used within the tool.

Appendix F - List of completed actions

Version 3

KEY TO ACRONYMS						
Action code	**A**	Asset related	**D**	Development related		
	C	Communications related	**P**	Project or scheme		
Management area	**Fens**	Fens (rural north and east)	**P-wide**	Peterborough wide	**RW**	Rural west
	U	Urban				
Organisations/partners	**AW**	Anglian Water	**IDBs**	All Internal Drainage Boards	**PCC**	Peterborough City Council
	CCC	Cambridgeshire County Council	**MLC**	Middle Level Commissioners	**Peterborough DNA**	Peterborough DNA future cities project
	EA	Environment Agency	**NCC**	Northamptonshire County Council	**W&D IDB**	Welland and Deeping IDB
	FloW	Flood and Water Management Partnership	**NLD IDB**	North Level	**WVP**	Welland Valley Partnership
Funding source	**AW AMP**	Anglian Water Asset Management Plan	**FDGiA**	Flood Defence Grant in Aid	**WFDGiA**	Water Framework Directive Grant in Aid

Action Name	Action Code	Managemen Area	Ward	Action Description	Lead Partner	Other Partners	Risk source	Funding Source	Cost (£)	FMS Objectives				Progress Notes
										1	2	3	4	
Parish dykes	**A**	RW & U	Several Wards	Asset survey of Parish dykes	PCC		Ordinary watercourse	PCC	10 - 50 k	1				**Completed**
Staffing 1	**D**	P-wide	All	Creation of Flood and Water Management Officer post	PCC		All	PCC	10 - 50 k	1	2	3	4	**Completed**
Staffing 2	**D**	P-wide	All	Creation of a Drainage Team - recruitment	PCC		Surface water	PCC	50 - 100 k	1	2	3	4	**Completed**
Planning	**D**	P-wide	All	Improve consideration of drainage in planning considerations - greater involvement of PCC Drainage Team and raising awareness of future sustainable drainage requirements	PCC		Surface water	PCC	Staff-time	1				**Completed**
Training	**D**	P-wide	All	Training of Drainage Team and all council officers to be involved in sustainable drainage processes	PCC		All	PCC	≤ 10 k	1				**Completed**
Planning policy	**D**	P-wide	All	Development, adoption and implementation of Flood and Water Management Supplementary Planning Document as part of planning policy framework.	PCC	FloW Partnership	Main river & surface water	PCC	Staff-time	1			4	**Completed**
SuDS software	**D**	P-wide	All	Purchase new software to manage SuDS inspection and adoption process	PCC		Surface runoff, ordinary watercourse, groundwater	PCC	10 - 50 k		2			**Completed**
Land drainage consent	**D**	U & RW	All	Establish a Council system for approval of third party works on ordinary watercourses and raise awareness among planners and develoeprs	PCC		Ordinary watercourse	PCC	Staff-time	1			4	**Completed**
Padholme	**D**	U & RNE	East	Put in place final proceses for completing the conditions of the Padholme Catchment agreement	PCC	HCA, EA, NLD IDB	Main river & ordinary watercourse	Padholme Agreement (HCA)	Staff-time		2			**Completed**

CPLRF	**C**	P-wide		Strengthen relationships within the Cambridge and Peterborough Local Resilience Forum	PCC	LRF		PCC, CPLRF	Staff-time		2			**Completed**
Red Cross support	**C**	P-wide		Develop relationship with the Red Cross to enable improved recovery procedures and facilities.	PCC	LRF	All	PCC	Staff-time		2			**Completed**
Flood wardens	**C**	P-wide		Increase the number of Peterborough flood wardens	PCC	EA	All	EA,PCC	Staff-time	1	2	3		**Completed**
Partnership creation	**C**	P-wide		Create Peterborough Flood Risk Partnership	PCC	FloW Partnership	All	PCC	Staff-time		2			**Completed**
RFCC input	**C**	P-wide		Strengthen the involvement of PCC in the Regional Flood and Coastal Committee - regular attendance, amended voting regime, officer attendance	PCC	EA	All	PCC, RFCC	≤ 10 k	1	2	3	4	**Completed**
Keep it Clear Central Ward	**C**	U	Central Ward	Reduce the chance of sewer flooding in Central Ward - Keep it Clear campaign, working with businesses and residents to keep fats, oils , greases and rag out of sewers.	AW		Foul sewer	AW	10 - 50 k	1		3		**Completed**
Keep it Clear Stanground	**C**	U	Stanground Central	Reduce the chance of sewer flooding in Stanground Central Ward - Keep it Clear campaign, working with businesses and residents to keep fats, oils , greases and rag out of sewers.	AW		Foul sewer	AW	10 - 50 k	1		3		**Completed**
Insurance	**C**	P-wide		Stay abreast of changes to the flood insurance situation; keep flood wardens up-to-date, develop procedure for residents with insurance queries and lobby with the RFCC for improvements.			All	PCC	Staff-time	1				**Completed**
Surafce water maps	**C**	P-wide		Develop and publish first set of surface water maps on Environment Agency website (uFMfSW)	EA		Surface runoff	EA	50 - 100 k	1		3		**Completed**
Main River map update	**C**	P-wide		Publish new format Main River flood risk maps on Environment Agency website	EA		Main river	EA	10 - 50 k	1		3		**Completed**
Flood fair	**C**	U	West Ward	Work with Flood Wardens and community to put on a Flood Fair in Thorpe Meadows	Flood Warden(s)	FloW Partnership	All	EA, PCC, Community, Ramada Hotel	≤ 10 k	1		3		**Completed**
PCC water web pages	**C**	P-wide		Keep flood and water web pages up-to-date and useful	PCC		All	PCC	Staff-time	1				**Completed**
SuDS website	**C**	P-wide		Develop new SuDS website (microsite)	PCC		Surface runoff, ordinary watercourse, groundwater	PCC	≤ 10 k	1			4	**Completed**
North Bank highway protocals	**C**	RNE	Eye and Thorney	Review of Highway Protocol document relating to closures of North Bank caused by flooding	PCC	EA	Surface runoff	PCC	Staff-time		2	3		**Completed**
FloW Partnership	**C**	P-wide		Change function of Peterborough Flood Risk Partnership to cover all water issues - becoming the Peterborough Flood and Water Management (FloW) Partnership	PCC	FloW Partnership	All	PCC	Staff-time		2		4	**Completed**
ADA Demonstration event	**C**	RNE	Eye and Thorney	ADA Demonstration Event to raise awareness of IDB roles and drainage capabilities and equipment	NLD IDB	FloW Partnership	Ordinary watercourse	NLD IDB, ADA, many other organisations	10 - 50 k	1				**Completed**

Werrington Brook	**P**	U	North Bretton, Walton, Werrington North, Werrington South	Werrington Brook Improvements Project - Feasibility Study	PCC	EA, WVP, WNC	Main river & surface runoff	WVP, EA, PCC	10 - 50 k				4	**Completed**
SWMP	**P**	P-wide	All	Improving baseline knowledge about surface water flood risk through the Surface Water Management Plan process - feeds directly into development of the Peterborough Flood Risk Management Strategy. Includes identification of partner roles, existing maintenance, hotspots, key actions required etc.	PCC	FloW Partnership	Surface runoff	Defra	10 - 50 k	1	2	3		**Completed**
Corporate Tactical Team	**P**	P-wide		Create and implement improve internal emergency planning procedures across the Council - Establish a council Tactical Team of officers who can co-ordinate /prepare for any emergency	PCC		All	PCC	Staff-time					**Completed**
Test emergency plans	**P**	P-wide		Cary out response exercises with other emergency responders and services	CPLRF		All	CPLRF	10 - 50 k		2			**Completed**
Whitecross subway	**P**	U	Ravensthorpe and Bretton North	Flood reduction scheme in Whitecross subway	PCC		Surface runoff	PCC	£5,000			3		**Completed**
Rural highway drainage assets	**P**	RW & RNE	Several wards	CCTV surveys of rural highway assets	PCC		Surface runoff, ordinary watercourse, groundwater	PCC	10 - 50 k	1	2			**Completed**
New England sewers	**P**	U	North Ward	Investigate and resolve flooding issues in New England - large scale cleanse of sewers along Lincoln Road and removal of tree roots from surafce water sewer under A47	AW	FloW Partnership	Foul and surface water sewers	AW	10 - 50 k			3		**Completed**
Ham Lane ditch	**P**	U	Orton Waterville	Ham Lane ditch works	PCC		Ordinary watercourse	PCC, NPT	≤ 10 k			3		**Completed**
Upton highway drainage works	**P**	RW	Glinton and Wittering	Jetting and cleansing of the highway drainage system, Church Walk, Upton	PCC		Surface runoff	PCC	≤ 10 k			3		**Completed**
Gully connection investigations	**P**	U	Several Wards	Investigations of problem gully lateral connections - various locations	PCC		Surface runoff	PCC	≤ 10 k	1				**Completed**
CCTV and root cutting various	**P**	P-wide	Several Wards	CCTV and root cutting, cleansing at Cannons Barn Farm Lincoln Road Werrington, Rectory Lane Etton and Church Walk Marholm.	PCC		Surface runoff, ordinary watercourse, groundwater	PCC	≤ 10 k	1		3		**Completed**
Monarch Avenue	**P**	U	Stanground Central	Monarch Avenue CCTV and cleansing	PCC		Surface runoff	PCC	≤ 10 k	1		3		**Completed**
Stewards House Drain	**P**	RNE	Eye and Thorney	Stewards House Drain surveys, investigation and scheme design	NLD IDB	PCC	Ordinary watercourse	NLD IDB, PCC	≤ 10 k		2	3		**Completed**
Parkway drains	**P**	U	Several wards	Major cleansing and de-rooting programme of parkway highway drains	PCC		Surface runoff	PCC	50 - 100 k	1		3		**Completed**
Nene measurement boards	**P**	U	West Ward, Central Ward	Nene measurement boards at Thorpe Meadows and Town Bridge	PCC		Main river	PCC	≤ 10 k	1				**Completed**
Dams Pond de-silt	**P**	U	West	De-silting of Dams Pond	PCC		Ordinary watercourse	PCC	10 - 50 k			3		**Completed**

Racecourse Drain	**P**	U	East	De-silting culverted and open sections of Racecourse Drain - two phases	PCC		Ordinary watercourse	Padholme Agreement (HCA)	50 - 100 k			3		**Completed**
Hampton investigations	**P**	U	Orton with Hampton	Investigations into foul sewer issues and first phase implementation measures related to resilience of pumping station control panel	AW		Foul and surface water sewers	AW	10 - 50 k			3		**Completed**
North Ward flood alleviation works 1	**P**	U	North Ward	Works to improve surface water drainage system on Welland Road, removing inadequate soakaway function	AW and PCC		Surface runoff	AW	≤ 10 k			3		**Completed**
North Ward flood alleviation works 2	**P**	U	North Ward	Works to improve surface water drainage system in Welland Close	AW and PCC		Surface runoff	AW	≤ 10 k			3		**Completed**

Appendix G - Flood Incident Notification Form

Please note that the Peterborough thresholds for the investigation under section 19 of the Flood and Water Management Act 2010 are set out at the end of this form.

Incident notification being sent to Peterborough City Council by:

These details will <u>not</u> be included in the published results

INDIVIDUAL OR ORGANISATION	✓	INDIVIDUAL OR ORGANISATION	✓
Peterborough Resident		North Level District IDB	
Peterborough Business		Peterborough City Council officer	
Anglian Water		Peterborough City Council call centre	
Cambridgeshire Fire and Rescue		Peterborough Highway Services	
Cambridgeshire Police		Welland and Deepings	
Environment Agency		Whittlesey and District	
Middle Level Commissioners		Other (please specify)	

NAME OF PERSON REPORTING	TELEPHONE	EMAIL ADDRESS

Incident details

Question number	Question	Response
1	Date and time	
2	Name and contact details of person reporting incident *(in case we have to check further details later on e.g. officer or resident details)*	
3	Location of flooding. *e.g. 1 Beasley Road, Bretton Must include a clear address, or landmark (such as or the junction of X and Y roads or outside Z school) or will be rejected. By the bus stop on Thorpe Rd is no good!*	
4	Depth and extent of water *e.g. within highway, up to properties or inside properties*	`

Question number	Question	Response
5	Duration of flooding *e.g. if residents tell you it has been like that for 2 hours*	
6	Suspected cause of flooding *e.g. from sewers, river*	
7	**Other notes** *e.g.* • *any significant weather to note* • *has this happened before* • *is it getting worse?*	

Initial flood category rating

Category	Description	Tick relevant category based on information above
1	Meets a PCC threshold	
2	Doesn't meet a PCC threshold but flooding is very close to a property or with fair chance of reaching property with similar future rain events e.g. within property boundary	
3	Flooding within carriageway or within a field with low chance of reaching property	

Peterborough City Council thresholds (for information)

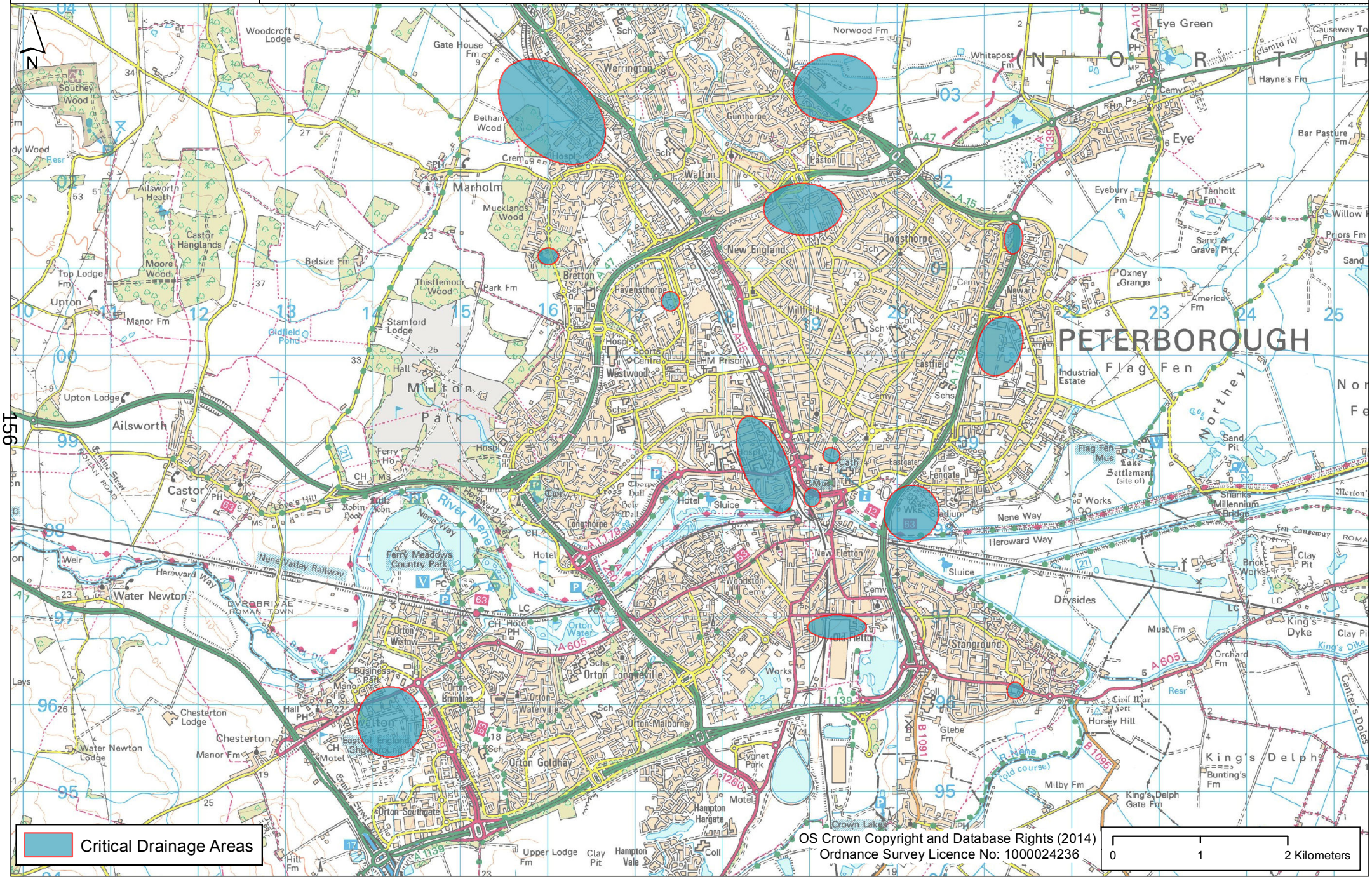
1. Flooding internally to one or more residential properties
2. Flooding to critical infrastructure (e.g. electricity substation)
3. Flooding to five or more commercial properties
4. Flooding which causes a transport link to be totally impassable for a significant period*
5. Reoccurring flooding on five or more occasions over a period of separate flood events of strategic highway routes or within property boundaries

For the purposes of threshold 4 above the definition of "significant period" is dependant on the transport link affected. The highway categories are as set out in Table 1 of the UKRLG Code of Practice for Highway Maintenance, but the timings for significant period have been derived for the purpose of the Local Flood Risk Management Strategy They are as follows:

- Category 1 Motorway - over 2 hours
- Category 2 Strategic Route (Trunk Roads and some Principal "A" roads) – over 4 hours
- Category 3a Main Distributor (Major Urban Network and Inter-Primary Links) – over 4 hours
- Category 3b Secondary Distributor (Classified Road (B and C class) – over 10 hours
- Category 4a Link Road (Roads linking the main distributor network to the Secondary Distributor) – over 10 hours
- Category 4b Local Access Road (Roads serving limited numbers of properties carrying only access traffic) – over 24 hours

PETERBOROUGH CITY COUNCIL

Appendix H - Critical Drainage Areas



Peterborough Flood Risk Management Strategy (FMS) Action Plan

Measures listed here are proposed in order to achieve the objectives of the FMS. Each proposed measure will need to be worked up in more detail in a business case and tested for deliverability and viability. See page 74 of the FMS for an explanation of the different dependencies for delivering actions.

KEY TO ACRONYMS						
Action code	**A**	Asset related	**D**	Development related		
	C	Communications related	**P**	Project or scheme		
Management area	**Fens**	Fens (rural north and east)	**P-wide**	Peterborough wide	**RW**	Rural west
	U	Urban				
Organisations/partners	**AW**	Anglian Water	**IDBs**	All Internal Drainage Boards	**PCC**	Peterborough City Council
	CCC	Cambridgeshire County Council	**MLC**	Middle Level Commissioners	**Peterborough DNA**	Future Cities Demonstrator project (Peterborough DNA)
	EA	Environment Agency	**NCC**	Northamptonshire County Council	**W&D IDB**	Welland and Deeping IDB
	FloW Partnership	Flood and Water Management Partnership	**NLD IDB**	North Level District IDB	**WVP**	Welland Valley Partnership
Funding source	**AW AMP**	Anglian Water Asset Management Plan	**FDGiA**	Flood defence Grant in Aid	**WFDGiA**	Water Framework Directive Grant in Aid
Benefits to	**Agr**	Agriculture	**Eff**	Efficiency of management	**Kno**	Better local knowledge/understanding for use in management, planning schemes and resilience, new development and insurance
	Bus	Businesses	**Env**	Natural environment (biodiversity,		
	Com	Community amenities & public services	**Hom**	Homes		
	Dev	Supports new development	**Inf**	Infrastructure e.g. highways, power, water		

Action No. & Code	Action Name	Management Area (and location in report)	Ward	Action Description	Lead Partner	Other Partners	Funding source	Cost (£)	FMS Objectives 1	2	3	4	Benefits to	Time Frame	Progress
1-A	**Maintenance**	P-wide	All	Continue current maintenance actions for watercourses, major assets and all other assets as identified in management chapter. Exceptions where new projects result in changes and improvements to operation.	All	N/A	All partners budgets and contractor frameworks	Maintenance frameworks			3		Agr, Bus, Com, Hom, Inf	Ongoing	**In progress**
2-A	**Proactive maintenance**	P-wide	All	Carry out additional proactive targeted maintenance based on incident and asset registers, forecasts and budgets.	All	N/A	All partners budgets and contractor frameworks	Maintenance frameworks			3		Agr, Bus, Com, Hom, Inf	Ongoing	**In progress**
3-A	**Incident recording**	P-wide	All	Record flooding incidents occurring or occurred in Peterborough and keep an up-to-date incident database. Investigate incidents meeting PCC thresholds and plan appropriate future actions.	PCC	FloW Partnership	PCC in-house resources	Staff-time	1	2			Agr, Bus, Hom, Inf	Ongoing	**In progress**
4-A	**Partnership issue resolution**	P-wide	All	Resolution of the issues and incidents identified to FloW Partnership (these are the more complex, long lasting issues).	PCC	FloW Partnership	All partner in-house resources. Potential to need funding bids depends on the issue arising.	Unknown		2	3		Agr, Bus, Hom, Inf	Ongoing	**In progress**
5-A	**Padholme Catchment**	U	East	Continue to maintain and operate Padholme main river systems and controls including undertaking desilting.	EA	PCC, NLDIDB	Maintenance funding from Padholme Catchment Agreement	50 - 100 k		2	3		Hom, Bus	2015 - 2020	**On-target**

6-A	**SAMPs**	P-wide	All	Review System Asset Management Plans (SAMPs) to determine appropriate levels of maintenance, taking into account the level of risk, funding and asset condition.	EA	-	EA in-house resources	≤ 50 k	1				Eff	2015 - 2020	**New**
7-A	**Asset register**	P-wide	All	Maintain and further develop partner asset register with yearly updates.	PCC	FloW Partnership	PCC in-house resources	≤ 50 k	1	2			Eff, Kno	2015 - 2020	**In progress**
8-A	**Data plan**	P-wide	All	Prepare and implement data management plan for shared asset data to ensure data sets are kept up-to-date and used correctly.	PCC	FloW Partnership	PCC in-house resources	Staff-time		2			Eff, Kno	2015 - 2020	**In progress**
9-A	**PCC asset survey**	P-wide	All	Undertake full asset survey of all PCC key assets to inform local knowledge and feed into asset register. Prioritise and implement according to budget and deliverability.	PCC	N/A	PCC LLFA budget	≤ 50 k	1				Eff, Kno	2015 - 2020	**In progress**
10-A	**Surface sewer surveys**	P-wide	All	Obtain additional data on the public surface water sewer network in priority areas to improve partner knowledge and aid scheme design.	AW	PCC	AW Business Plans AMP 6/7, PCC LLFA budget, joint funding bids	50 - 100 k	1				Eff, Kno	2020 - 2025	**New**
11-A	**Private assets**	P-wide	All	Gather mapping and condition information about private assets e.g. ordinary watercourses and small reservoirs to determine their risk level. Requires standardised framework for inspection findings.	PCC	Riparian owners	PCC LLFA budget / other stakeholder funds on case by case basis	≤ 50 k	1				Kno	2020 - 2025	**New**
12-A	**Designation**	P-wide	All	Designate third party assets (natural or man-made structures or features) deemed to affect flooding. Agree on process, criteria for designation, evidence required, appeal system and protocol for enforcement.	PCC	AW, EA, IDB	PCC in-house resources	Staff-time	1				Bus, Hom	2015 - 2020	**New**
13-A	**Culverts and bridges**	Fens	Eye & Thorney	Work together to clarify ownership of culverts and bridges throughout IDB area with the aim of developing an efficient working plan to improve asset data and improve conditions.	PCC and NLDIDB	Other IDBs	IDB and PCC in-house resources	Staff-time	1	2	3		Agr, Inf	2015 - 2020	**New**
14-A	**Peakirk pumping station**	Fens	Newborough	Investigate issues at Anglian Water's Peakirk pumping station and resolve any mechanical issues.	AW	Peakirk Parish Council	AW AMP 5 / 6	≤ 50 k	1		3		Com	2015 - 2020	**In progress**
15-A	**Fletton and Woodston**	U	Fletton & Woodston	Investigation of sewer networks in Fletton High Street to update asset records and identify if improvements can be made to the existing routing of surfae water.	AW	PCC	AW AMP 5 / 6	50 - 100 k	1		3		Bus, Hom	2015 - 2020	**In progress**
16-A	**Drainage district modeling**	Fens	Barnack, Eye & Thorney, Glinton & Wittering, Newborough, Northborough, Stanground Central, Stanground East	IDBs to model their drainage districts to get an updated idea of the standard of protection offered.	NLDIDB, W&D IDB, MLC	-	IDBs	50 - 100 k	1				Kno	Ongoing	**In progress**
17-A	**Public Services Co-operation Agreements**	P-wide	All	Establish public sector co-operation agreements where appropriate with fellow flood and water management organisations to benefit from shared services delivered on a not-for-profit basis.	PCC	EA, IDB	PCC in-house resources	Staff-time		2			Eff	2015 - 2020	**New**
18-A	**Groundwater**	P-wide	All	Carry out further research into groundwater flood risk within Peterborough and stay up-to-date on the development of a national publically available groundwater map.	PCC	EA	PCC in-house resources	Staff-time	1				Kno	2015 - 2020	**In progress**

19-D	**Resilient development**	P-wide	All	Define PCC approach to resilient development in planning, including clearer policy on exceedance flows and resilient construction in new and redeveloped buildings.	PCC	EA	PCC in-house resources	Staff-time				4	Dev	2015 - 2020	**New**
20-D	**SFRA**	P-wide	All	Review the Strategic Flood Risk Assessment including climate change impacts and critical drainage areas approximately every five years in line with the Local Plan review.	PCC	FloW Partnership	PCC strategic planning budget and EA in-house resources	≤ 50 k	1			4	Dev	2015 - 2020	**New**
21-D	**SPD**	P-wide	All	Review Flood and Water Management Supplementary Planning Document approximately every five years in line with the Local Plan review.	PCC	FloW Partnership	PCC in-house resources	Staff-time	1		3	4	Dev	2015 - 2020	**New**
22-D	**Development management**	P-wide	All	Improved focus on surface water management and sustainable drainage through the Planning (Development Management) process including improved consultation with AW and IDB and setting out options for adoption.	PCC	FloW Partnership, Developers	PCC in-house resources	Staff-time	1		3	4	Dev	2015 - 2020	**In progress**
23-D	**WCS**	P-wide	All	Review the Water Cycle Study approximately every five years in line with the Local Plan review.	PCC	FloW Partnership, Developers	PCC strategic planning budget	50 - 100 k				4	Dev	2015 - 2020	**New**
24-C	**FloW Partnership**	P-wide	All	Communication across the FloW Management Partnership organisations and within PCC - continue 6-monthly external meetings, and regular internal meetings, monitor progress against action plan and objectives, and establish sub groups as required.	PCC	FloW Partnership	All partner in-house resources	Staff-time	1	2			Eff, Kno	Ongoing	**On-target**
25-C	**Council website**	P-wide	All	Ensure water and flood risk information is available on the City Council water website and it is useful and up-to-date. Implement and maintain new SuDS website.	PCC	Communities and developers	PCC in-house resources	Staff-time	1				Com, Eff, Kno	Ongoing	**On-target**
26-C	**Co-ordinate engagement**	P-wide	All	Undertake and co-ordinate appropriate engagement activities to promote greater awareness of flood and water-related management in Peterborough. Involve community groups in the establishment of campaigns.	FloW Partnership	-	PCC in-house resources	Staff-time	1				Eff	2015 - 2020	**New**
27-C	**Flood awareness**	P-wide	All	Deliver targeted community engagement to encourage people to be flood aware, to sign up to receive flood warnings and to understand what action to take to reduce the impact of flooding on receipt of a warning. Continue to promote and use the EA's Floodline Warnings Direct service but also investigate other warning and engagemen tools related to surface water flooding or different types of social media. Learn from the outcomes of the Northamptonshire County Council pathfinder project and implement recommendations as appropriate.	EA and PCC	FloW Partnership	EA budgets and PCC LLFA budget	≤ 50 k	1				Bus, Com, Hom, Kno	2015 - 2020	**New**
28-C	**Community involvement**	P-wide	All	Engagement campaigns encouraging community involvement in managing rivers and the environment. Includes working closely with RiverCare groups in Peterborough and with landowners, as well as generally raising awareness of riparian responsibilities.	FloW Partnership	RiverCare, landowners, communities	PCC LLFA budget, AW AMP 6/7, Keep Britain Tidy (RiverCare), EA budgets	≤ 50 k	1		3	4	Bus, Com, Eff, Env, Hom, Kno	2015 - 2020	**New**

29-C	**Keep it Clear 1**	U	Orton with Hampton	Keep it Clear: Campaign to encourage communities to help our work by playing their part in protecting the sewer network. This includes not disposing of fats, oils, greases and other non-flushables down the sink or toilets or putting anything into surface water drains in the road.	AW	PCC, Parish Council	AW AMP 6 and PCC LLFA budget	≤ 50 k	1		3		Bus, Eff, Hom, Inf	2015 - 2020	**New**
30-C	**Keep it Clear 2**	Fens	Barnack, Glinton & Wittering, Newborough, Northborough	Keep it Clear: Campaign to encourage communities to help our work by playing their part in protecting the sewer network. This includes not disposing of fats, oils, greases and other non-flushables down the sink or toilets or putting anything into surface water drains in the road.	AW	PCC, Parish Councils	AW AMP 6 and PCC LLFA budget	≤ 50 k	1		3		Env, Hom, Inf	2015 - 2020	**New**
31-C	**Existing flood wardens**	U, Fens	Newborough, Orton Waterville, West	Maintain relationships with existing flood wardens.	PCC	EA	PCC and EA in-house resources	Staff-time	1	2	3		Eff, Kno	Ongoing	**On-target**
32-C	**New flood wardens**	P-wide	All	Actively recruit more volunteers to the Flood Warden Scheme starting in priroity areas. Provide annual training and relationship building event for all flood wardens and interested residents. Ideally would have one warden for each Parish area, subcatchment area or Ward.	PCC and EA	FloW Partnership	PCC LLFA budget and EA budgets/ in-house resources	≤ 50 k	1	2	3		Eff, Kno	2015 - 2020	**New**
33-C	**Sustainable water**	P-wide	All	Continue campaigns and projects promoting sustainable water to communities including Drop 20 water efficiency campaigns and RiverCare support (flood risk benefits come from general improvement in people's understanding of water management and their actions).	AW	EA, PECT, Keep Britain Tidy, PCC	AW AMP 6 , EA budgets	≤ 50 k	1			4	Bus, Env, Hom, Kno	2015 - 2020	**Progress**
34-C	**Permeable driveways**	P-wide	All	Set up a campaign to discourage the paving over of drives and gardens with impermeable surfaces and raise awareness about the problems of urban creep.	PCC	AW	PCC LLFA budget	≤ 50 k	1		3	4	Env, Hom, Inf	2015 - 2020	**New**
35-C	**Developer engagement**	P-wide	All	Continue and increase engagement with developers regarding surface water management through forums, website, pre-application advice and promotion of Supplementary Planning Document.	PCC	FloW Partnership	PCC in-house resources	Staff-time	1			4	Dev	2015 - 2020	**In progress**
36-C	**Flood warnings**	P-wide	All	Flood forecasting/warning service: Maintain current services, undertaking reviews of community based flood warning areas after improvements to forecast models or post-incident performance analysis. This service is underpinned by maintenance of flow gauging station and rain gauges throughout the catchment. Links to be made to PCC and NCC's rain gauge projects.	EA	NCC, PCC	EA budgets	≤ 50 k	1	2			Bus, Hom	Ongoing	**In progress**
37-C	**Utilities and infrastructure**	P-wide	All	Continued engagement with energy and water companies and other service providers about ensuring the resilience of infrastructure in Peterborough. Joint projects will be considered where appropriate.	PCC	EA, AW, UK Power Networks, Network Rail	PCC in-house resources. Potentially CIL if joint projects are identified.	Staff-time	1	2	3	4	Inf	Ongoing	**In progress**
38-P	**MAFP**	P-wide	All	Update Cambridge and Peterborough Multi-Agency Flood Plan using new flood maps, incident database and SFRA mapping to identify priority areas.	PCC	LRF	PCC in-house resources	Staff-time	1	2			Bus, Eff, Hom, Inf, Kno	2015 - 2020	**New**

39-P	**Severe weather system**	P-wide	All	Consider the use of a severe weather recording system to enable the LRF to be able to assess impacts on resources and budgets of extreme weather events.	PCC	LRF	PCC in-house resources / environment budget	≤ 50 k	1	2			Eff, Kno	2015 - 2020	**New**
40-P	**Understanding the risk - Ortons**	U	Orton Waterville, Orton Longueville	Complete flood risk assessment from all sources, communicate to community and work with community to understand future options for resilience.	EA	PCC	EA budget, EA and PCC in-house resources	≤ 50 k	1		3		Bus, Hom	2015 - 2020	**Some obstacles**
41-P	**Welland flood banks refurbishment**	Fens	Newborough, Glinton & Wittering, Northborough	Re-review Welland Cradge Bank Performance Review project using outputs from updated River Welland model. Include review of the operation of the Crowland and Cowbit Washes. Implement recommendations from review sustaining the standard of service provided. Opportunities to improve river corridor habitats and improve the ecological resilience of the Maxey Cut to extreme high and low flows will be included as part of this project.	EA	PCC, Lincolnshire County Council, W&D IDB, Communities, WVP, Welland Rivers Trust	FDGiA, WFDGiA, several other sources to be sought including CIL	5 m - 10 m			3	4	Bus, Com, Dev, Eff, Env, Hom, Inf	2015 - 2025	**New**
42-P	**Understanding the risk - West ward**	U	West	Continue to work with the community and Flood Wardens to develop understanding of the local river response based on river levels and local knowledge. Develop appropriate actions to manage the risks.	EA and PCC	Flood Wardens, community, Flow Partnership	PCC and EA in-house resources. Other sources of funding will be sought as appropriate.	≤ 50 k	1		3		Hom	2015 - 2020	**New**
43-P	**Understanding the risk - Fletton & Woodston**	U	Fletton & Woodston	Work with the community to better understand flood risk in this ward, including the impact of combined sewers, and develop appropriate actions to manage the risk. Assess the modelling required to determine actual allowable discharge rates for sites discharging to Fletton Spring.	EA and PCC	Community, Flow Partnership	PCC and EA in-house resources. Other sources of funding will be sought as appropriate.	≤ 50 k	1		3		Bus, Hom	2015 - 2020	**New**
44-P	**Werrington Brook improvements programme**	U	Werrington North, Werrington South, Walton, North Bretton	A programme of works: Appraise options and develop detailed designs for water quality, habitat and flood risk improvements. Seek additional funding. Deliver community and business engagement schemes. Deliver in-channel improvements at various points along Marholm Brook and Werrington Brook.	EA and PCC	Werrington Neighbourhood Council, Welland Valley Partnership, Flow Partnership, Network Rail, local businesses and landowners	PCC LLFA budget, WFDGiA, FDGiA, WVP, AW AMP 6, CIL, other funding sources being sought such as community grants and business funding.	100 - 500 k			3	4	Bus, Com, Dev, Env, Hom	2015 - 2020	**On-target**
45-P	**Brook Drain flood alleviation scheme**	U	North Bretton	Comprehensive review of system. Develop and secure funding for a flood alleviation and WFD improvements scheme linked to Network Rail's proposed works to Werrington Junction. Investigate the need for and improvements to be gained from changing the operation of the Werrington penstock at the confluence with Marholm Brook and Brook Drain. Investigate options for control of diffuse pollution.	EA	PCC	FDGiA, Network Rail, CIL, PCC LLFA budget, WFDGiA	500 k - 1 m			3	4	Bus, Dev, Eff, Inf	2015 - 2020	**New**

46-P	**Paston Brook flood alleviation scheme**	U	North Ward	Comprehensive review of flood risk, investigating appropriate solution to manage the risk, which may include improving the A47 culverts on Paston Brook.	EA	PCC, AW	FDGiA, PCC LLFA budget, AW AMP 6	1 m - 5 m			3		Env, Hom, Inf	2015 - 2025	**New**
47-P	**Understanding the risk - Stanground Central**	U	Stanground Central	Work with the community to better understand flood risk in this ward and develop appropriate actions to manage the risk. Includes consideration of flow monitoring on the Lode, modelling to determine the actual allowable discharge rates for sites discharging to Stanground Lode, and removal of surface water from combined sewers.	FloW Partnership	Community	WFD GiA, EA and PCC in-house resources. Other sources of funding will be sought as appropriate.	≤ 50 k	1		3		Bus, Eff, Hom	2015 - 2020	**New**
48-P	**Understanding the risk - Rivergate**	U	Central	Work with local businesses and partners to better understand the risk around Rivergate. Undertake additional mapping of sewers if needed. Determine whether further works are required. Link works in with highway improvements.	FloW Partnership	Local businesses	AW AMP 7 business plan, PCC LLFA budget, local businesses	≤ 50 k			3		Bus	2020 - 2025	**New**
49-P	**Peterborough adaptation plan**	P-wide	All	Develop a partnership adaptation plan for Peterborough to enable the City to be more resilient to changes in severe weather, climate, resource availbility etc.	PCC	FloW Partnership, Environment Capital Steering Group	PCC environment budget and other sources of funding will also be sought.	≤ 50 k	1	2	3	4	Agr, Bus, Com, Dev, Eff, Env, Hom, Inf, Kno	2015 - 2020	**New**
50-P	**Rain gauges**	P-wide	Barnack, Bretton North, Central, Dogsthorpe, East, Eye & Thorney, Fletton & Woodston, Glinton & Wittering, North, Northborough, Newborough, Orton with Hampton, Orton Longueville, Orton Waterville, Paston, Stanground Central, Werrington North, West	Install rain gauge(s) in Peterborough to provide data for warnings and response, incident reporting and long-term records for use by schools and PCC.	Peterborough DNA	Local schools	Peterborough DNA, PCC LLFA funding	≤ 50 k	1	2			Eff, Kno	2015 - 2020	**On-target**
51-P	**Dogsthorpe Ward flood alleviation scheme**	U	Dogsthorpe	Work in partnership with the community to better understand the risk in this area and to develop options for reducing surface water flood risk. Consider retrofit of sustainable drainage systems and an outlet in the embankment. Implement preferred option.	PCC	AW, community	PCC, AW AMP 7 business plan	50 - 100 k			3		Hom	2015 - 2020	**New**
52-P	**Stewards House Drain**	Fens	Eye & Thorney	Undertake capacity improvement works to Stewards House Drain	NLDIDB	PCC, local school, Parish Council	FDGiA, NLD IDB budget, PCC LLFA budget, local beneficiaries	50 - 100 k			3		Bus, Com, Hom	2015 - 2020	**On-target**

53-P	**Counter Drain flood resilience scheme**	Fens	East	Make the channel more resilient to pump failure and failure of the banks. Reduce the frequency of flooding.	Flow Partnership	Landowners	All riparian owners	100 - 500 k		2	3	4	Agr, Env, Inf	2015 - 2020	**Some obstacles**
54-P	**Wansford flood alleviation scheme**	RW	Outside Peterborough, Glinton & Wittering	Work with professional partners and community to develop and secure funding for a flood alleviation scheme. Involves a comprehensive review of flood risk and existing managment assets and investigation of appropriate solutions to sustain the standard of service that they provide.	EA	CCC, NCC, Community, PCC	FDGiA, WFDGiA, other funding to be sought	500 k - 1 m			3		Bus, Hom	2020 - 2025	**On-target**
55-P	**Whittlesey Washes (Nene Washes) works**	Fens	Outside Peterborough	Improvement to banks of the Washes to reduce the chances of breach. Essential works under the Reservoirs Act, arising from the Whittlesey Washes Probable Maximum Flow study and the section 10 Inspection Report. Includes work to Stanground green wheel cycle route.	EA	NLD IDB, PCC, CCC	FDGiA, local levy, NLD IDB, local beneficiaries	> 10 m			3		Agr, Bus, Dev, Hom, Inf	2015 - 2020	**In progress**
56-P	**City centre combined sewers**	U	Central, West	Upon redevelopment of sites or significant highway improvements push for removal of surface water discharges to combined sewers. Outside of these sites consider partnership projects (such as SuDS retrofit schemes) to drive this change forward and achieve a reduction in flood risk from the combined sewers.	PCC	AW, developers	CIL, new PCC capital budget, developers, AW AMP 6 and 7	100 - 500 k			3	4	Bus, Eff, Hom, Inf	2015 - 2020	**New**
57-P	**Understanding Ravensthorpe**	U	Ravensthorpe	Exercise to understand why Ravensthorpe scores highly in the climate change susceptibility work and plan for this accordingly with future actions.	PCC	FloW Partrnership	PCC in-house resources	Staff-time			3	4	Hom, Kno	2015-2020	**New**
58-P	**City Council - sustainable water**	P-wide	All	Undertake a variety of measures to help deliver the Environment Capital Action Plan, by ensuring best use of natural resources and promoting protection of water environments (e.g reducing water consumption and minimising pollution).	PCC	-	PCC strategic resources, framework contractors or environment budget	Staff-time				4	Eff, Env	2015 - 2020	**In progress**
59-P	**Emergency response**	P-wide	All	As warning of flooding is given prepare for the event through communications and implementation of the Multi Agency Flood Plan. Undertake response activities in accordance with the roles of Category 1 and 2 emergency responders.	LRF	Flood wardens, FloW Partnership	In-house budgets, emergency resilience budgets	Unknown	1	2	3		Bus, Com, Hom, Inf	Ongoing	**On-target**
60-P	**Riverside pathway flood alleviation**	Fletton & Woodston	U	Work with landowners in the area to develop options and seek funding to reduce the impact of flooding to key city centre cycle and pedestrian routes (Green Wheel and other highways). Could be combined into a more holistic community scheme involving improvements to aesthetic environment, amenity, safety and biodviersity.	Railworld and PCC	Network Rail, EA, RiverCare, PECT	In-house budgets, emergency resilience budgets	≤ 50 k			3	4	Com, Inf	2015 - 2020	**New**
61-P	**Woodland creation for flood risk**	P-wide	All	Encourage opportunities for targeted new woodland creation where it will help to mitigate flood flow issues, at the same time as contributing to biodiversity enhancement and green infrastructure provision.	PCC and PECT	Woodland Trust	Funding to be sought	≤ 50 k				4	Agr, Bus, Env, Hom	2015 - 2025	**New**

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Peterborough Flood Risk Management Strategy

Equality Impact Assessment:

Initial assessment

What are the proposed outcomes of the policy?

Peterborough experiences flood risk from a variety of sources and significant budgets are spent every year by a range of organisations in order to reduce that risk. The Peterborough Flood Risk Management Strategy provides information on the level of flood risk experienced, the organisations managing those risks and how works are funded. It also sets out a co-ordinated plan of future actions for all the flood risk management organisations in the area.

Which individuals or groups are most likely to be affected?

All residents, businesses, landowners and community groups living or working in an area of flood risk and Peterborough's flood risk management organisations.

Now consider whether any of the following groups will be disproportionately affected:

Equality Group	**Note any positive or negative effects**
Particular age groups	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on a particular age group.
Disabled people	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on disabled people.
Married couples or those entered into a civil partnership	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on married couples or those entered into a civil partnership.
Pregnant women or women on maternity leave	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on pregnant women or women on maternity leave.
Particular ethnic groups	The document is written in English. There is a glossary at the end of the document to explain any technical terms used.
Those of a particular religion or who hold a particular belief	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on people due to their religion or beliefs.
Male/Female	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on people due to gender (including transgender).
Those proposing to undergo, currently undergoing or who have undergone gender reassignment	
Sexual orientation	There is no evidence to show that the strategy will have a disproportionately positive or negative impact on people due to their sexual orientation.

What information is available to help you understand the effect this will have on the groups identified above?

The consultation and engagement that has been carried out since 2010 to enable the City Council to research what the strategy should contain and what its approach should be.

The many years of experience of the other flood risk management authorities and emergency services in Peterborough of responding to flood events and working to address community concerns. Actions will need to have their own equality impact assessment carried out by the lead partner before the actions are implemented. Any potential impacts will need to be fully considered through the design processes and appropriate consultation undertaken. In drafting the strategy officers have considered all of the equality strands and this initial review does not raise any serious issues.

Who will be the beneficiaries of the strategy?

Peterborough residents, flood wardens, communities and community groups (such as Parish Councils), local businesses, City Council officers, landowners, developers, Peterborough's flood risk management organisations such as the Environment Agency and Anglian Water. These benefits are delivered firstly through the production of the strategy (raising awareness) and then through the implementation of the action plan.

Has the policy been explained to those it might affect directly or indirectly?

The strategy has been developed in close liaison with the organisations who are responsible for managing flood risk in Peterborough and therefore who are proposing to use their resources to carry out the actions listed in the strategy. Engagement has been taking place since 2011 with communities and individuals in Peterborough that are at risk of flooding and information learned from the events, conversations and responses has been used to develop this plan. At the end of 2014 we held a public consultation on the strategy, consulting flood risk management organisations, Parish Councils, flood wardens, Neighbourhood Councils, local community associations, developers and appropriate local and national charities. The strategy was also available on the Council's website. Once the strategy is adopted and each action is further developed, local communities directly affected by the implementation of the action will be closely involved to ensure schemes deliver the best outcomes for Peterborough.

Can any differences be justified as appropriate or necessary?

Officers have concluded that the Peterborough Flood Risk Management Strategy will have positive impacts on Peterborough. There is no evidence that the document may result in disproportionate impacts on equality or community relations. Therefore there is no need to proceed past the initial assessment stage of the Equality Impact Assessment process.

Are any remedial actions required?

No remedial action is required

Once implemented, how will you monitor the actual impact?

The monitoring chapter of the strategy sets out how the strategy will be reviewed and how progress on the actions will be monitored. The Flood and Water Management Partnership will be responsible for monitoring the strategy. The lead partner for each action will be responsible for considering equality in the design process and on monitoring the impacts.

Policy review date	To be reviewed when the strategy is reviewed.

Assessment completed by	Julia Chatterton
Date Initial EqIA completed	June 2015
Signed by Head of Service	

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CABINET	AGENDA ITEM No. 6
20 JULY 2015	PUBLIC REPORT

Cabinet Member(s) responsible:	Councillor David Seaton – Cabinet Member for Resources	
Contact Officer(s):	Jonathan Lewis – Service Director – Education, Resources and Corporate Property	Tel. 01733 863912

STRATEGY FOR THE MANAGEMENT OF THE FARMS ESTATE

R E C O M M E N D A T I O N S	
FROM : Sustainable Growth and Environmental Capital Scrutiny Committee	**Deadline date :** n/a
That Cabinet adopts the proposed strategy for the management of Peterborough City Council's Farms Estate.	

1. ORIGIN OF REPORT

1.1 This report is submitted to Cabinet following the completion of a task and finish group instigated by the Sustainable Growth and Environmental Capital Scrutiny Committee. The Task and Finish Group objective was to review the future management of the Council's Farms Estate with a view to help informing and developing a long term strategy for the development of the estate.

1.2 The Group was established by the Committee at its meeting on 20 January 2014. At its meeting on the 17 March 2015, the Committee endorsed the Strategy for the Management of the Farms Estate and recommended the Strategy to Cabinet for approval.

2. PURPOSE AND REASON FOR REPORT

2.1 The purpose of this report is to seek endorsement of the proposed Strategy for the management of the Peterborough City Council Farms Estate.

2.2 This report is for Cabinet to consider under its Terms of Reference No. 3.2.4 to promote the Council's corporate and key strategies and Peterborough's Community Strategy and approve strategies and cross-cutting programmes not included within the Council's major policy and budget framework.

3. TIMESCALE

Is this a Major Policy Item/Statutory Plan?	**NO**

4. PETERBOROUGH CITY COUNCIL FARM STRATEGY

4.1 The Peterborough Farms Estate was purchased by the Council approximately 100 years ago. It is a statutory smallholdings estate held by the Council under the provisions of the Agriculture Act 1970. Section 39 of the Act states;

"In the performance of their functions under this Part of this Act smallholding authorities, having regard to the general interest of agriculture and of good estate management, shall make it their general aim to provide opportunities for persons to be farmers on their own account".

4.2 The farms estate consists of a total land area of 1,217 hectares (3,007 acres) consisting of:

- 15 equipped holdings (with house and buildings)
- 7 holdings with land and some buildings (no dwelling)
- 12 bare-land lettings (no buildings)

4.3 The estate is located in three areas of the city: Newborough, Thorney and Fengate. Newborough has by far the largest number of assets and accounts for nearly 90% of the estate by area. The farm estate the Council retains is a valued and important aspect of the work of the city council and the character of the authority. It is a long term holding, held for the benefit of the City of Peterborough. The Council needs to protect these assets whilst maximising the financial benefit of these assets and enhancing the rural economy. There has not been a significant review of the farms estate for many years and at the meeting of the Sustainable Growth and Environmental Capital Scrutiny Committee on the 20 January 2014, it was proposed to establish a task and finish group to develop a formal strategy. A cross party group was formed.

4.4 The terms of reference for this group were as follows -

- Ensure that the profile of the farm estate is raised, within the Council and to members, also to the public including the key role it has played for the City over a number of years going back to 1913.
- Develop a strategy for the farm estate and its use into the future.
- Consider options around realising maximum value from the estate, including financial, social and environmental returns. Financial considerations include options for sale, expansion, rental levels, alternative uses, attracting external funding or invest to save proposals.

4.5 Eight meetings were held during 2014 to ensure members understood the farm estate operation and develop an appropriate strategy.

4.6 The draft strategy went to the Scrutiny Panel on the 21 January 2015 and the committee asked for further clarity over the financial business case for the retention of the farm estate. An analysis showed that the long term holding of the farm estates outweighs the financial benefit from the sale. The retention of the farm estate meets Central government policy that encourages all the remaining small holdings authorities, such as Peterborough, to retain and develop their farms estates. In 2004 Lord Whitty wrote to all small holdings authorities to confirm the following stated aims:

- To provide opportunities for new entrants into farming
- To provide examples of best practice
- To provide a positive link between the city and the surrounding rural land
- To support the local rural economy

4.7 Attached in Appendix 1 is the proposed Farm Strategy that was agreed by Scrutiny to recommend to Cabinet in March. An action plan to meet the strategic objectives is currently being worked on and has been shared with the Peterborough City Farm Tenants Association.

5. CONSULTATION

5.1 The Task and Finish Group worked with a number of key stakeholders. A key part of the Group's work has been to undertake visits to the Farms Estate and discuss the Strategy with tenant farmers. A working group was formed with representatives from the Peterborough City Farm Tenants Association (PCFTA) and these included –

- William and Margaret Cave (Eardely Grange Farm, Speechleys Drove)
- Jonathan Woodroffe (Eardely Grange Farm, Wrights Drove)
- Alan Skeels (Hurn Farm)
- John Harris (Lodge Farm, Thorney)

5.2 The Task and Finish Group would like to thank everybody who assisted them during the course of the investigation for their support and openness. This assistance was greatly appreciated.

6. ANTICIPATED OUTCOMES

6.1 If adopted by Cabinet, the Strategy will be mobilised through an action plan which is currently being developed in conjunction with the PCFTA to look at how the farm estate can be used to its maximum benefit – both financially and non-financially.

7. REASONS FOR RECOMMENDATIONS

7.1 Effective ownership of an agricultural estate requires a long-term view to ensure sustainable management. Decisions made can affect the estate for many years and decades. Without a clear understanding of the aims of the Council with regard to the estate, effective management is handicapped. On occasion quick decisions are required to take advantage of events. In recent years there has not been an agreed strategy for the estate to enable such decisions to be made, resulting in lost opportunities. A clear strategy also should act as a means of informing the Council so that it has an understanding of the asset and the reasons for its ownership. The Council's Farm Estate is a long term positive asset held by the Council for the benefit of the rural community. It produces a steady stream of income and employment for the wider city of Peterborough. The Farm Strategy has been produced in conjunction with our tenant farmers

8. ALTERNATIVE OPTIONS CONSIDERED

8.1 None. There is no recorded publically held strategy for the management of the farms estate. This provides a transparent framework for their future operation and ownership.

9. IMPLICATIONS

9.1 The Strategy provides a framework within which reflects the long term planning of the farm estate. This will be updated every five years in line with changes in the economy and any legal and financial constraints prevalent at the time. Any proposals around delivering the Strategy will be considered in the action plan being developed and subject to appropriate decision making.

10. BACKGROUND DOCUMENTS

Used to prepare this report, in accordance with the Local Government (Access to Information) Act 1985)

None

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APPENDIX 1

PETERBOROUGH CITY COUNCIL

Strategy for the Management of the Farms Estate

Final Version 1.0

Prepared by Task and Finish Group (March 2014)

Councillor Judy Fox

Councillor Ed Murphy

Councillor David Harrington

Jonathan Lewis, Assistant Director for Education, Resources and Corporate Property

Jo Gresty, Farms Manager

Dania Castagliuolo, Democratic Services Officer

Contents

Strategy for the Retention and Development of the Farms Estate

The overall strategy for the estate is to retain it as a viable land holding which will provide significant benefit to the people of Peterborough.

The strategy identifies the principle objectives of ownership and the methods by which the objectives may be achieved.

The estate is subject to many changing influences, many of which are beyond the Council's influence. The strategy is designed to give the Council the flexibility to react to changing financial, social and environmental circumstances.

The strategy will be supported by three yearly and ten yearly programs which will be updated annually. It is within these programs that the details of projects will be agreed by the Council.

1. Objectives for the Peterborough Farms Estate

OBJECTIVE 1 – Financial

- Promotion of viable farm enterprises
- Maintenance of rental and capital values of the estate
- Sale of property which is genuinely surplus to the operating requirements of the estate or which are not financially viable to retain

OBJECTIVE 2 – Agricultural

- Provide opportunities new farm businesses, new entrants into farming and opportunity for diverse farming related enterprises
- Encourage sustainable farming practices and businesses

OBJECTIVE 3 – Social & Environmental

- Provide opportunities for varied use, environmental and social benefit to the people of Peterborough.
- Where appropriate non-agricultural uses will be integrated with agricultural use

2. Implementation of Objectives

2.1 Financial

a) Investment –

- The estate has not had any significant investment in the repair and improvement of its fixed equipment (mainly houses, farm buildings and land drainage) since the 1970s.
- To maintain the rental and capital value of the estate as well as to provide the basis for viable farming businesses, the Council will undertake targeted investment in the repair and improvement of the estate.
- The Council will seek a sustainable financial return on the cost of investment.

b) Rental Values –

- Rents of let holdings will be reviewed regularly in accordance with the provisions of the relevant statutory provisions.
- When vacant holdings are relet, they will be advertised on the open market where appropriate. The amount of rent tendered by applicants will be a key factor to be

balanced against other material considerations, such as sustainability and non-financial benefits of the tender, in seeking best value for Peterborough.

c) Sustainable Businesses –

- Agricultural incomes are volatile, being highly dependent on factors outside the control of the individual farming business. The Council will seek to set rents for independent holdings at sustainable levels.
- When reletting on the open market, the Council will not be bound to accept the highest or any rent tendered if such amounts are likely to be unsustainable.
- Encourage diversification of businesses which are appropriate to the rural environment if they help support individual farm businesses and the wider rural economy.

d) Sustainability of the Estate –

- A balance will be sought between maximising immediate financial return and achieving indirect and non-financial benefits to Peterborough. To achieve a balance, account will be taken of the financial demands on the Council as the local authority.

e) Sales & Development –

- Property which is identified as surplus to the requirements of the sustainability of the estate shall be offered for sale on the open market.
- Property which is available for sale at a significant capital uplift, for example following the gaining of planning permission for development, will be sold on the open market or retained for re-letting at a viable financial return.

f) Acquisition of Land and Property –

- The estate will not be regarded as an unchangeable asset. The Council will consider purchase of agricultural property elsewhere in the district if that property would provide significant advantages to Peterborough. Where appropriate, acquisitions will be funded by sale of less strategically valuable parts of the existing estate.

2.2 Agricultural

a) New Tenants –

- In accordance with the responsibility placed on the Council by the Agriculture Act 1970, the Council will endeavour to provide opportunities for new entrants into agriculture.
- Consideration will be given to making available small part-time holdings and holding with and without fixed equipment. Provision of housing on the holding will not be necessary for all tenancies.
- All new tenants will be required to demonstrate a good standard of agricultural expertise and training. Whilst new entrants may not have extensive business management experience, a good understanding supported by appropriate academic qualification will be necessary. Further, new tenants will be required to demonstrate that they have adequate financial and practical resources to support their proposed business models.

- Proposals for mixed agricultural / commercial businesses which meet the Council's environmental and sustainability standards will be encouraged to provide economic diversity and strength.

b) Sustainable Farming –

- EU and UK government policy is to encourage environmentally sustainable practices. The Council will encourage tenants to enter into appropriate environmental stewardship schemes with a view to enhancing the landscape and wildlife habitat of the estate whilst maintaining a high level of agricultural output.
- When re-letting land, proposals for innovative low environmental impact methods and systems shall be considered favourably if they help to support an economically and environmentally viable business.
- Conditions of tenancy concerning the management and use of land will be informed by statutory controls prevailing at the time. The growth of genetically modified crops will not be permitted without formal decision of the Council.

c) Sustainable Food Delivery –

- Market conditions do not always favour the sale of produce locally. However, favourable consideration shall be given to applicants for tenancies that include proposals for local food production and marketing.

2.3 Social & Environmental

The government recognises the social and environmental importance of county farms estates within the local and national context. The Peterborough Farms Estate potentially provides a valuable social, financial and environmental link between the urban and rural communities.

The farms estate is run on a relatively intensive basis supporting significantly more households than the equivalent area of privately let land. Encouragement will be given to business enterprises which provide employment opportunities for local residents or contribute to business in the city.

Environmental

a) Sense of Place -

There is scope to enhance the character and appearance of the estate through a planned program of tree and hedge planting. Whilst a Fenland Landscape, targeted planting could greatly enhance the landscape and improve habitat. A co-ordinated approach with other initiatives and bodies (e.g. the Woodland Trust and Peterborough Forest) should be explored.

b) Energy –

Energy efficiency and use of renewable energy products should be encouraged. Continuation of energy efficiency improvement measures to the housing stock is needed to bring the properties up to modern standards.

c) Habitat –

The soils of the estate are largely suitable for intensive, high output agriculture. This is generally considered good use of the land. There should be a presumption in favour of food and industrial crop production with habitat schemes directed to poorer quality land, both on the estate and elsewhere.

Social

Peterborough is growing fast and overall there is little social and financial exchange between the urban and rural areas of the district. Whilst Nene Park provides a major recreational link to the Nene Valley west of the city, its objectives are not necessarily the same as the Farms Estate's. The Farms Estate provides an opportunity for the Council to encourage better integration of the two communities, especially to the east of the city.

a) Education –

- Promote formal and informal education, including promotion of the profile of the estate through occasional newsletters and press releases.
- Encourage tenants to allow school visits, Open Farm Sunday etc.
- Provide information boards when carrying out projects visible to the public.
- Work with other Council departments to enable social and community work projects as appropriate.
- Work with the Regional College in the development of its rural based curriculum.

b) Social Inclusion –

- Ensure that all elements of the population of Peterborough are given the opportunity to tender for land to let.
- Peterborough is ethnically diverse and there is scope for development of specialist local growers to serve the local community.

c) Support of the Rural Community and Economy –

- The government recognises the importance of maintaining and developing a strong rural economy. The letting of the estate as small holdings results in intensity of use which supports more livelihoods per area of land than larger, less intensively run farming operations tend to.
- The Council will endeavour to let the majority of the land as small holdings whilst maintaining a balance with its financial aims and demands.

d) Retirement of Farm Tenants –

Not all of the Council's farm tenants are financially equipped to retire comfortably at 65. Many of the tenants hold retirement tenancies which enable the Council to terminate the tenancy after the tenant has reached the age of 65. The Council will adopt a retirement policy which will enable tenants to continue to farm for a limited period beyond 65 where the tenant continues to farm actively with a good standard of husbandry, where it does not compromise unduly the ability of the Council to make land available for new entrants into farming or the overall management objectives for the Estate. Each tenant's case will be assessed on its merits. To provide certainty for all parties, tenants who hold retirement

tenancies and who wish to farm beyond 65 will be required to enter into a new fixed term agreement for the additional term.

e) Public Access –

- There is limited informal public access to the farms estate. Provision of permissive footpaths and bridleways where there is an identifiable need will be considered as and when necessary. The right to create new permissive access routes will be reserved in new tenancy agreements.
- The estate provides a long-term potential for recreational open space to the east of the city.

Annex I - Background to the Peterborough Farms Estate

History

Nationally the County Farm Estates (CFE) is one of the major institutional landowners in England and Wales which has a long history. Peterborough has owned an agricultural estate for over 100 years.

In 1892 the Small Holdings Act was implemented in an attempt by parliament to counter the loss of farms to urbanisation and the over-concentration of land in the hands of large private estates by making land available to small farmers. This resulted in opportunities for the young who were tempted to leave the land for the attractions of urban life and helped to improve farming efficiency.

In 1908 the Small Holdings and Allotments Act imposed a statutory duty on councils to provide smallholdings for farmers where the “need existed”. By 1914 the national CFE had expanded to 80,600 hectares (199,000 acres), made up of some 14,908 holdings.

Peterborough acquired its first farm at Thorney from the Duke of Bedford under the provisions of the 1908 Act in 1910 with other land being acquired over the following 11 years. Today the national CFE extends to 96,206 ha (237,725 acres) with 2836 tenants, 20% more land than in 1914 but with only 20% of the tenancies.

The Agriculture Act 1970

The Agriculture Act 1970 (the Act) imposes statutory duties on all councils with farms estates. S39 of the Act states;

> *“In the performance of their functions under this Part of this Act smallholding authorities, having regard to the general interest of agriculture and of good estate management, shall make it their general aim to provide opportunities for persons to be farmers on their own account”.*

This duty remains the fundamental force behind the CFE and up until the mid-1980s County Farms provided a valuable route for new entrants into agriculture. However, it has become progressively less easy for new entrants to establish themselves as farmers in their own right. The financial capital needed to farm is far greater than it used to be and declining profit margins of conventional farms, especially in the 1980s and 90s, means that the viability of small farms has become increasingly uncertain over the past thirty years. This trend has in part been reversed in recent years with worldwide shortages of agricultural commodities and demand for higher quality food in the developing world leading to higher food price, generally improving the viability of small farms.

In a response to the changing agricultural economy, many councils have departed from the provisions of the Act by selling land to release capital. In line with national trends, smaller farms have been amalgamated to form larger, potentially more profitable units. Significant parts of the Peterborough Estate were sold by Cambridgeshire County Council prior to establishment of the unitary authority in 1998. Most of the remaining holdings have had land added to make them larger. However, the farms remain small by national standards and few of the tenants rely on them for their sole source of income.

Nationally the average age of farmers is high (58) and there is considerable concern that shortly there will be a significant national skills shortage in the agricultural sector as well as an over-concentration of farming in the hands of a few, large agricultural companies. In many respects, this is a situation which is similar to the one which lead to introduction of the Small Holdings Act in 1982.

Central government has recognised that local authorities are increasingly naturally urban in their character and outlook and that many have very limited links with the rural economy and society.

Current Central Government Policy

Central government policy is to encourage all the remaining small holdings authorities, such as Peterborough, to retain and develop their farms estates. In 2004 Lord Whitty wrote to all small holdings authorities to confirm the following stated aims:

To provide opportunities for new entrants into farming
To provide examples of best practice
To provide a positive link between the city and the surrounding rural land
To support the local rural economy

Whilst the Government has stated that it does not intend to legislate beyond the existing powers of the 1970 Act, in 2003 it wrote to all council chief executives emphasising their councils' statutory duties regarding the CFE.

In November 2008, the government's advisor Sir Donald Curry issued a paper entitled *The Importance of the County Farms Estate to the Rural Economy*.

The paper made a number of key recommendations, including:

1. *Regional Economic Strategies should recognise the importance of the County Farm structure as a crucial entry point for new entrants to agriculture*

2. *Local authorities should take a longer-term view when considering sale of land to seek to maximise revenue for development whilst not undermining the principle objectives of the estates*

3. *Local authorities should develop the wider benefits of their holding with particular regard to renewable energy, local food, public access, education, employment and the broader rural economy*

Food Strategy – Food 2030
In January the Government published its paper *Food Strategy – Food 2030*. The paper is in response to increasing concerns regarding national food security.
The paper states

"Our food security is ensured through strong UK agriculture and food sectors ..."

The County Farms are regarded as having significant potential to make a valuable contribution UK agriculture.

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CABINET	AGENDA ITEM No. 7
20 JULY 2015	PUBLIC REPORT

Cabinet Member(s) responsible:	Councillor Peter Hiller - Cabinet Member for Growth, Planning, Housing and Economic Development	
Contact Officer(s):	Simon Machen Corporate Director of Growth and Regeneration	Tel. 453492
	Richard Kay – Head of Sustainable Growth Strategy	Tel. 863796

REVIEW OF THE PETERBOROUGH LOCAL PLAN

R E C O M M E N D A T I O N S	
FROM : Corporate Director of Growth and Regeneration	**Deadline date :** *Not Applicable*
It is recommended: 1.That Cabinet authorises officers to commence a review of the Local Plan; and 2.That Cabinet approves the attached Local Development Scheme (LDS), which sets out a timetable for the production of a new Local Plan, and brings it into effect from 31 July 2015	

1. ORIGIN OF REPORT

1.1 This report is submitted Cabinet following a request by the Cabinet Member.

2. PURPOSE AND REASON FOR REPORT

2.1 The purpose of this report is to enable Cabinet to consider the proposal to commence preparation of a Local Plan for Peterborough and, if it is agreed a new Local Plan should be produced, seek Cabinet's approval for an updated Local Development Scheme (LDS) which outlines the timetable for preparing the Local Plan.

2.2 This report is for Cabinet to consider under its Terms of Reference No. Para 3.2.1 To take collective responsibility for the delivery of all strategic Executive functions within the Council's Major Policy and Budget Framework and lead the Council's overall improvement programmes to deliver excellent services.

3. TIMESCALE *(If this is not a Major Policy item, answer **NO** and delete second line of boxes).*

Is this a Major Policy Item/Statutory Plan?	**NO**	If Yes, date for relevant Cabinet Meeting	n/a

4. BACKGROUND

4.1 The Council has an adopted Local Plan, albeit made up of a collection of documents:

- Core Strategy (Feb 2011)
- Site Allocations (April 2012)

- Planning Policies (Dec 2012)
- City Centre Plan (Dec 2014**)**

4.2 We are at a point whereby it is appropriate for the Council to decide whether the time is right to commence a review of its Local Plan. The existing Local Plan runs to 2026. A new Local Plan would extend the plan period to 2036. This report sets out reasoning why it may be appropriate to do so.

Advantages of commencing a Local Plan review

4.3 In short, the following reasons are advantages of commencing a Local Plan review (see Appendix 1 for more details):

(i) To ensure that new development continues to take place in planned locations and help demonstration of a '5 year housing land supply' (a Government requirement), reducing the risk of challenge from speculative, unplanned development.

(ii) An opportunity to identify new locations for growth in Peterborough, which in turn will meet our longer term housing and employment needs.

(iii) To maintain the Council's strong reputation for high quality strategic planning by keeping the Local Plan as up to date as possible.

(iv) Certainty about future housing delivery

(v) Align preparation of a new Local Plan with the review of other corporate strategies, including the Local Transport Plan, Housing Strategy and Green Infrastructure Plan.

(vi) Identification of additional employment sites to accommodate increasing commercial demand.

(vii) Continued and potentially additional income via New Homes Bonus, business rate growth and council tax income.

(viii) Overall, an up-to-date Local Plan, covering a longer time frame, means more certainty for everyone (the public, developers and public service providers) about where growth will take place.

Other considerations

4.4 There are other considerations which may determine that now is not an appropriate time to commence a Local Plan review. These are mainly twofold:

- **The cost:** Preparing a new Local Plan will require staff resources and some finance to cover necessary expenses (such as examination fees). However, with careful management, the costs associated with preparing a Local Plan should be able to be met from existing budgets.
- **The temporary uncertainty:** It is inevitable that through the preparation of a Local Plan, uncertainty and concerns will arise as to where new growth may or may not occur. However, with careful management of the process, and clear and consistent communication messages throughout, this uncertainty should be minimised (as well as the benefits of a new Local Plan clearly expressed and communicated)

Process for preparing a new Local Plan

4.5 If it is agreed that a review commences, then preparing a Local Plan is a statutory process which from start to finish will take about three years. There are normally 3 rounds of public consultation followed by public examination by the Planning Inspectorate, and finally adoption by Full Council. National Policy strongly recommends production of a single all-embracing Local Plan, rather than the previous Government-recommended approach of having a collection of plans as we currently have in Peterborough. It is therefore proposed that a single Local Plan be prepared.

Local Development Scheme

4.6 The first legal step, should a new Local Plan be commissioned today, is to adopted a Local Development Scheme (LDS) setting out the timetable for preparing a new Local Plan. It is unlawful to prepare a Local Plan without first agreeing and publishing a LDS.

4.7 Should Cabinet decide, therefore, to agree in principle to commencement of a new Local Plan then it is next asked to agree the attached LDS (see Appendix 2)

5. ANTICIPATED OUTCOMES

5.1 That Cabinet will agree, in principle, to commencement of a Local Plan and, if Cabinet does so, also approve the attached Local Development Scheme which sets out the timetable for preparing a new Local Plan.

6. REASONS FOR RECOMMENDATIONS

6.1 It is recommended a Local Plan be commenced for the reasons stated in Appendix 1

7. ALTERNATIVE OPTIONS CONSIDERED

7.1 Do nothing and review the situation in 12 months. This option was rejected because it would fail to take advantage of the benefits of commencing a new Local Plan, as set out in this report.

8. IMPLICATIONS

8.1 **Legal Implications** – It is a legal requirement for the Council to have an LDS in place at all times. The Council can only prepare new Development Plans (Local Plans) in accordance with the LDS. Adoption of the attached LDS would therefore enable a new Local Plan to be prepared. If it is not adopted, it would be unlawful to commence a new Local Plan.

8.2 For the avoidance of doubt, the decision to commence (or not) a new Local Plan has no impact on the legal status of existing adopted planning policy documents in operation in Peterborough. Such documents will continue to be used to determine planning application and similar proposals.

8.3 **Financial Implications** – Preparing a new Local Plan requires resources to pay for staff, essential supporting evidence base documentation, consultation costs and independent examination costs. However, with careful management, the costs associated with preparing a Local Plan should be able to be met from existing budgets.

8.4 **Human Resources** – no implications

8.5 **Equality & Diversity** – The preparation of the Local Plan will be an opportunity to positively address equality and diversity issues. Formal assessments in this regard will be undertake as the Local Plan begins to emerge.

9. BACKGROUND DOCUMENTS

Used to prepare this report, in accordance with the Local Government (Access to Information) Act 1985)

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Summary of advantage	Further details
To ensure that new development continues to take place in planned locations and help demonstration of a '5 year housing land supply' (a Government requirement), reducing the risk of challenge from speculative, unplanned development.	Whilst we still have a significant supply of allocated housing sites this includes large urban extensions and this can be a risk to delivery in the short term. The national planning system is founded heavily on delivering accelerated housing growth and is weighted in favour of development proposals, even on unallocated land, where a '5 year land supply' cannot be evidenced. Preparing a new Local Plan will give the Council the opportunity to allocate new development sites, and thus ensure we meet the '5 year land supply' requirement. Not preparing a new Local Plan might mean we cannot demonstrate such a supply, with the subsequent risk of development taking place in unplanned locations on the edges of our settlements, including villages. This creates uncertainty in communities and also has significant implications for infrastructure, such as school place planning.
An opportunity to identify new locations for growth in Peterborough, which in turn will meet our longer term housing and employment needs.	The Council has recent evidence through the Strategic Housing Market Assessment which indicates that our growing population, and demographic changes, is creating the need for further housing sites to be allocated to meet need/demand. The precise need will determined as part of preparing the Local Plan, but is likely to be around 1,100 -1,200 per annum, over the period to 2036.
To maintain the Council's strong reputation for high quality strategic planning by keeping the Local Plan as up to date as possible.	The current Local Plan (known locally as the Peterborough Core Strategy) is now 4 years old, and will be 7 years old by the time any replacement document is adopted. The planning policy team is highly successful in securing contracts with other Local Authorities to deliver their planning policy services. The team currently has contracts with Central Lincolnshire (North Kesteven, Lincoln City, and West Lindsey), East Cambridgeshire and Fenland District Councils. It is important that our own policy documents remain current and robust if we are to continue to work with other authorities.
Certainty about future housing delivery.	A review of the Local Plan will, ultimately, lead to new sites allocated which will increase the supply of land available for delivering new homes.
Align preparation of a new Local Plan with the review of other corporate strategies, including the Local Transport Plan, Housing Strategy and Green Infrastructure Plan.	A review of the Local Plan at this stage will coincide with plans to review other key corporate strategies. It will enable a co-ordinated response to the Council's strategic priorities and ensure a more holistic approach to delivery.
Identification of additional employment sites to	Property agents are indicating that there is a risk of demand outstripping supply in the medium term for commercial and, particularly, office sites. Changes to the

accommodate increasing commercial demand.	planning system by Government which allow offices to be converted to residential use without the need for planning permission has also reduced available commercial stock. This is an important issue for business rate growth.
Continued and potentially additional income via New Homes Bonus, business rate growth and council tax income.	By increasing the supply of sites available for the delivery of new homes and employment we increase the potential to generate more income for the Council as well as enhance the wider economy for Peterborough.
Overall, an up-to-date Local Plan, covering a longer timeframe, means more certainty for everyone (the public, developers and public service providers) about where growth will take place.	An up to date Local Plan provides certainty for developers, land owners, service providers and local residents in terms of where future development will take place. Infrastructure providers (e.g. Education, Highways, NHS facilities) will also have more certainty to plan for future provision contributing to the development of sustainable communities.

APPENDIX 2

Peterborough City Council

Peterborough Local Development Scheme 2015

July 2015

This Peterborough Local Development Scheme (LDS) was approved by Peterborough City Council at a meeting of its Cabinet on 27 July 2015 and came into effect 31 July 2015. It is the fifth LDS produced by the council, replacing the previous LDS, dated 2 April 2012.

Peterborough City Council
Growth and Regeneration
Strategic Planning Team
Town Hall
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www.peterborough.gov.uk

Preface

This Peterborough Local Development Scheme (LDS) was approved by Peterborough City Council at a meeting of its Cabinet on 27 July 2015 and came into effect 31 July 2015. It is the fifth LDS produced by the council, replacing the previous LDS, dated 2 April 2012.

If you require any further information regarding the Scheme, please contact a planning policy officer on (01733) 863872 or by email to planningpolicy@peterborough.gov.uk

Each month we publish a monthly update table[1] on our website. This sets out the current and next stages of preparation, with dates, of each of the documents included in this LDS.

This LDS is produced under section 15 of the Planning and Compulsory Purchase Act 2004 (as amended).

[1] https://www.peterborough.gov.uk/council/planning-and-development/planning-policies/local-supporting-information/#LPinfo_lds

Peterborough Local Development Scheme 2015 to 2018

1. Introduction

1.1 The Local Development Scheme (LDS) is a timetable which sets out the Development Plan Documents (DPDs) that a local planning authority intends to produce over the next few years. Such DPDs are also known as the Local Plan for an area.

1.2 This Peterborough LDS sets out the timetable for Peterborough for the period 2015 to 2018. It explains when the council intends to reach key stages in the preparation of a new Local Plan. This LDS replaces the Peterborough LDS which was adopted on 2 April 2012.

The Local Plan and Supporting Documents

1.3 National planning policy is headlined by the 'National Planning Policy Framework' (NPPF). Locally, we are describing the collection of planning policies for Peterborough as the 'Peterborough Planning Policy Framework' (PPPF) which comprises more than just DPDs (Local Plan).

1.4 In summary, the PPPF comprises the following:

- **Development Plan Documents (DPDs):** These are documents (often referred to as 'Local Plans') that form part of the statutory development plan for the area. They are prepared by the relevant plan-making authority and are subject to independent examination by a planning inspector appointed by the Secretary of State. For Peterborough, as at July 2015, they are the Core Strategy, Site Allocations, Planning Policies and City Centre DPDs, and the Cambridgeshire and Peterborough Minerals and Waste Core Strategy and Minerals and Waste Site Specific Proposals DPDs. All of these documents are proposed to be replaced by a new, single Local Plan apart from the two Minerals and Waste DPDs (which will be retained).
- **Policies Map:** This is a map on an Ordnance Survey base for the whole of a local planning authority's area which shows where policies in DPDs apply. The Policies Map may include inset maps for particular areas to show information at a larger scale. The Policies Map is updated each time that a DPD is adopted.
- **Supplementary Planning Documents (SPDs):** These can cover a wide range of issues on which the planning authority wishes to provide guidance to supplement the policies and proposals in its DPDs (Local Plan). They do not form part of the statutory development plan and are not subject to independent examination. The city council can decide to produce an SPD on any appropriate subject whenever the need arises. There is no requirement for this LDS to set out a timetable for the production of any SPDs.
- **Neighbourhood Plans**: Local communities, including Parish and Town Councils, can now prepare Neighbourhood Plans (NPs) putting in place policies to guide the future development of the area. Any NP must be in general conformity with 'strategic policies' in DPDs (Local Plan) and with national policy. NPs are not able to propose lower levels of development than those set out in up to date Local Plans but could propose higher levels, or offer other detailed policy proposals. It is up to local communities to decide if it wants to produce a Neighbourhood Plan and so it is not appropriate for this LDS to specify when, or for where, they will be produced. Any NP, if adopted, has the same status as a DPD.
- **Statement of Community Involvement (SCI):** This is a document that explains how the local planning authority will engage the community in the preparation,

alteration and review of planning documents, and in development control decisions. It is required to specify how and at what stages people will have the opportunity to be involved in planning for their area. A refresh of our SCI is due later in 2015.

- **Authority's Monitoring Report:** This is a report which must be produced by the local planning authority (on an annual basis) to explain how the local development scheme is being implemented and the extent to which policies in the Local Plan are being achieved.

1.5 Further details on the adopted Peterborough documents can be found in Tables 2 and 3.

Joint Working Arrangements and Joint Local Plans

1.6 The city council has a good track record of joint working with other authorities. The adopted Cambridgeshire and Peterborough Minerals and Waste Core Strategy DPD and Site Specific Proposals DPD were both the product of successful joint working between the council and Cambridgeshire County Council. This arrangement is likely to continue in the future when the need arises to review these documents.

1.7 There are no plans to establish joint working arrangements (apart from Cambridgeshire County Council as discussed above) or a joint committee (under section 29 of the Planning and Compulsory Purchase Act 2004) with any other local planning authority, but the city council will fulfil its responsibilities under the duty to co-operate requirements of s33A of the Planning and Compulsory Purchase Act, and keep open the possible production of joint evidence studies, and, if appropriate the preparation of joint plan or SPDs.

2.0 Local Plan Timetable

2.1 There are a number of stages involved in producing a DPD (Local Plan). This process allows for opportunities for the public to be involved, early resolution of conflicts/objections, and an Independent Examination. The stages in producing a Local Plan, and the intended time of those stages for the new Local Plan, are set out in Table 1.

3.0 Subject Matter and Geographical area of new Local Plan (DPDs)

3.1 To meet the requirements of section 15 (2)(b) of the Planning and Compulsory Purchase Act 2004, it is confirmed that the subject matter of the new Local Plan (DPD) for Peterborough will include:

- A vision for the future of Peterborough
- Housing policies and allocations for housing
- Employment allocations and policies
- Retail policies
- Transport policies
- Culture, Leisure and Tourism policies
- If required, policies and land allocations on other subject matters

3.2 The Local Plan will cover the whole administrative area of Peterborough. Other than the Minerals and Waste DPDs, the Local Plan will replace all other existing DPDs currently in force in Peterborough.

Table 1: Timetable for Production of Development Plan Document

	2015							2016											2017												2018			
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April
Peterborough Local Plan				**1**				**2**						**2**							**3**			**4**					**5**			**6**		**7**		

No.	Stage	Description	Approval Dates (subject to change)	Actual dates stage proposed to take place
1	Consult on a sustainability appraisal (SA) scoping report	The SA scoping report sets out the sustainability objectives proposed to be used to appraise the economic, social and environmental effects of the emerging Local Plan policies. The SA scoping report is subject to consultation.	N/A	Sept – Oct 2015
2	Public participation (Regulation 18)	Opportunity for interested parties and statutory consultees to consider the options for the plan before the final document is produced. This stage may involve one or more public consultation rounds. We intend two rounds for the new Local Plan	First Round: Cabinet – 14 December 2015	Jan – Feb 2016
			Second Round: Cabinet – June 2016	July – Aug 2016
3	Pre-Submission Publication (Regulation 19)	The Council publishes the Local Plan which is followed with a 6 week period when formal representations can be made on the Local Plan.	Cabinet – Dec 2016 Full Council – January 2017	Feb – March 2017
4	Submission (Regulation 22)	The Council submits the Local Plan to the Secretary of State together with the representations received at Regulation 19 stage.	N/A	May 2017
5	Independent Examination Hearing	Held by a Planning Inspector into objections raised on the Local Plan	Set by Inspector	Sept – Oct 2017 (estimate: dates set by Inspector)
6	Inspector's Report	This will report whether if the Plan is 'Sound' or 'Not Sound'. The Inspector may make recommendations to make the plan 'sound'	Set by Inspector	Dec 2017 (estimate)
7	Adoption of DPD (Local Plan)	Final stage, the Council will formally need to adopt the Local Plan and it will then be used in making planning decisions.	Cabinet – Jan 2018 Council – Feb 2018	Feb 2018

Table 2: Adopted Development Plan Documents (as at July 2015)

Document title	Status	Geographical area	Role and content	Adoption Date
Peterborough Core Strategy	DPD	Administrative area of Peterborough	Sets out the vision, objectives and overall strategy for the spatial development of Peterborough up to 2026	**Adopted February 2011**
Peterborough Site Allocations	DPD	Administrative area of Peterborough other than the city centre	Identifies individual site allocations, together with policies relating to these allocations. Covers the period to 2026	**Adopted April 2012**
Peterborough Planning Policies	DPD	Administrative area of Peterborough	Sets out specific policies for determining planning applications	**Adopted December 2012**
Peterborough City Centre	DPD	City centre of Peterborough	Sets out policies and proposals for the city Centre	**Adopted December 2014**
Minerals and Waste Core Strategy (including development control policies)	DPD	Administrative areas of Cambridgeshire and Peterborough	Prepared jointly with Cambridgeshire County Council. Document setting out the strategic vision, objectives and core development control policies to guide minerals and waste development over the period to 2026	**Adopted July 2011**
Minerals and Waste Site Specific Proposals	DPD	Administrative areas of Cambridgeshire and Peterborough	Prepared jointly with Cambridgeshire County Council. Document setting out site specific proposals for minerals and waste development over the period to 2026 and supporting site specific policies	**Adopted February 2012**

Table 3: Other Adopted Documents (as at July 2015)

Document title	Status	Geographical area	Role and content	Adoption Date
Peterborough District Hospital Site SPD	SPD	Former District Hospital Site	Further guidance on how the site could be redeveloped	adopted 14 June 2010
Peterborough Design and Development in Selected Villages SPD	SPD	Selected villages, as set out in the SPD	Further design guidance	adopted 13 June 2011
The Location and Design of Waste Management Facilities SPD	SPD	Administrative areas of Cambridgeshire and Peterborough	Further guidance on waste management location and design	adopted 19 July 2011
RECAP Waste Management Design Guide SPD	SPD	Administrative areas of Cambridgeshire and Peterborough	Further guidance on waste management location and design	adopted 22 February 2012
Flood and Water Management SPD	SPD	Administrative area of Peterborough	Further guidance on a wide range of flood and water matters	adopted 10 December 2012
Peterborough Shop Front Guidance SPD	SPD	Administrative area of Peterborough	Further guidance on achieving good quality shop front design	adopted 27 January 2014
Peterborough Developer Contributions SPD	SPD	Administrative area of Peterborough	Further guidance on how s106, CIL and other developer contributions will work in Peterborough	adopted 15 April 2015 and came into effect on 24 April 2015
Statement of Community Involvement (SCI)	SCI	Administrative area of Peterborough	Statement setting out the Council's commitments on consulting the public. Includes Neighbourhood planning guidance and commitments.	adopted 5 November 2012