

DRAFT FOR CONSULTATION

# **BATH & NORTH EAST SOMERSET'S LOCAL FLOOD RISK MANAGEMENT STRATEGY**

## **STRATEGIC ENVIRONMENTAL ASSESSMENT**

### **ENVIRONMENTAL REPORT**

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# Bath & North East Somerset’s Local Flood Risk Management Strategy Strategic Environmental Assessment Environmental Report

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## Abbreviations and Glossary

| Abbreviation / Term             | Definition   |
|---------------------------------|--|
| <b>AONB</b>                     | Area of Outstanding Natural Beauty   |
| <b>BANES</b>                    | Bath & North East Somerset   |
| <b>DWI</b>                      | Drinking Water Inspectorate  |
| <b>EA</b>                       | Environment Agency   |
| <b>EIA</b>                      | Environmental Impact Assessment  |
| <b>EU</b>                       | European Union   |
| <b>FRM</b>                      | Flood Risk Management  |
| <b>HMWB</b>                     | Heavily Modified Water Body  |
| <b>LFRMS</b>                    | Local Flood Risk Management Strategy   |
| <b>LLFA</b>                     | Lead Local Flood Authority   |
| <b>LNR</b>                      | Local Nature Reserve   |
| <b>PFRA</b>                     | Preliminary Flood Risk Assessment  |
| <b>PPP</b>                      | Policies, Plans and Programmes   |
| <b>RBMP</b>                     | River Basin Management Plan  |
| <b>SEA</b>                      | Strategic Environmental Assessment   |
| <b>SAC</b>                      | Special Area of Conservation   |
| <b>SPA</b>                      | Special Protection Area  |
| <b>SSSI</b>                     | Site of Special Scientific Interest  |
| <b>SuDS</b>                     | Sustainable Drainage System  |
| <b>SWMP</b>                     | Surface Water Management Plan  |
| <b>UNESCO</b>                   | United Nations Educational, Scientific and Cultural Organization   |
| <b>UK</b>                       | United Kingdom   |
| <b>WFD</b>                      | Water Framework Directive  |
| <b>Biodiversity</b>             | The living component of the natural world and embraces all plant and animal species and communities associated with terrestrial, aquatic and marine habitats. It also includes genetic variation within species. |
| <b>Biodiversity Action Plan</b> | An agreed plan for a habitat or species, which forms part of the UK's commitment to biodiversity in response to the Convention on Biological Diversity, Rio de Janeiro 1992.                                     |
| <b>Conservation Area</b>        | An area designated under the Town and Country Planning Act, 1990 to protect its architectural or historic character.   |
| <b>Cultural Heritage</b>        | The legacy of physical artefacts and intangible attributes of a group or   |

|   |   |
|---|---|
|   | society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations.   |
| <b>Cumulative Effects</b>               | The combined effects of several policies, plans or programmes, which individually may not be significant, but together amount to a significant impact.  |
| <b>Deprivation</b>                      | The damaging lack of material benefits considered to be basic necessities in a society.   |
| <b>Environmental Impact Assessment</b>  | EIA applied at the project level is a process intended to ensure that environmental impacts of schemes are identified prior to the work being carried out so that proposals can be modified or managed in such a way that adverse impacts are avoided or minimised.   |
| <b>Flood Risk</b>                       | The combination of the likelihood of a flood happening and the impact it would have.  |
| <b>Flood Risk Management</b>            | Activities that are undertaken to reduce the impact of flooding   |
| <b>Habitat</b>                          | A place where an organism lives; a type of environment inhabited by a particular species and/or communities; often characterised by dominant plant forms, physical characters, or a combination of these.   |
| <b>Historic England</b>                 | Government statutory advisor on the historic environment, funded jointly by the government and by revenue from properties and members.  |
| <b>Landscape Character</b>              | The distinct pattern and arrangement of landscape elements or features that collectively create a sense of place.   |
| <b>Local Flood Risk Management Plan</b> | Under the Flood and Water Management Act (2010) Bath & North East Somerset Council has been designated as a Lead Local Flood Authority and is now responsible for managing flood risk from local sources including surface run-off ordinary watercourses and groundwater. The Local Flood Risk Management Strategy focusses on this local flood risk and outlines the roles of other Risk Management Authorities including the Environment Agency, Wessex Water Highways England and Bristol Water. |
| <b>Natural England</b>                  | Natural England is an Executive Non-departmental Public Body responsible to the Secretary of State for Environment, Food and Rural Affairs. Their purpose is to protect and improve England's natural environment and encourage people to enjoy and get involved in their surroundings. Their aim is to create a better natural environment that covers all of our urban, country and coastal landscapes, along with all of the animals, plants and other organisms that live with us.              |

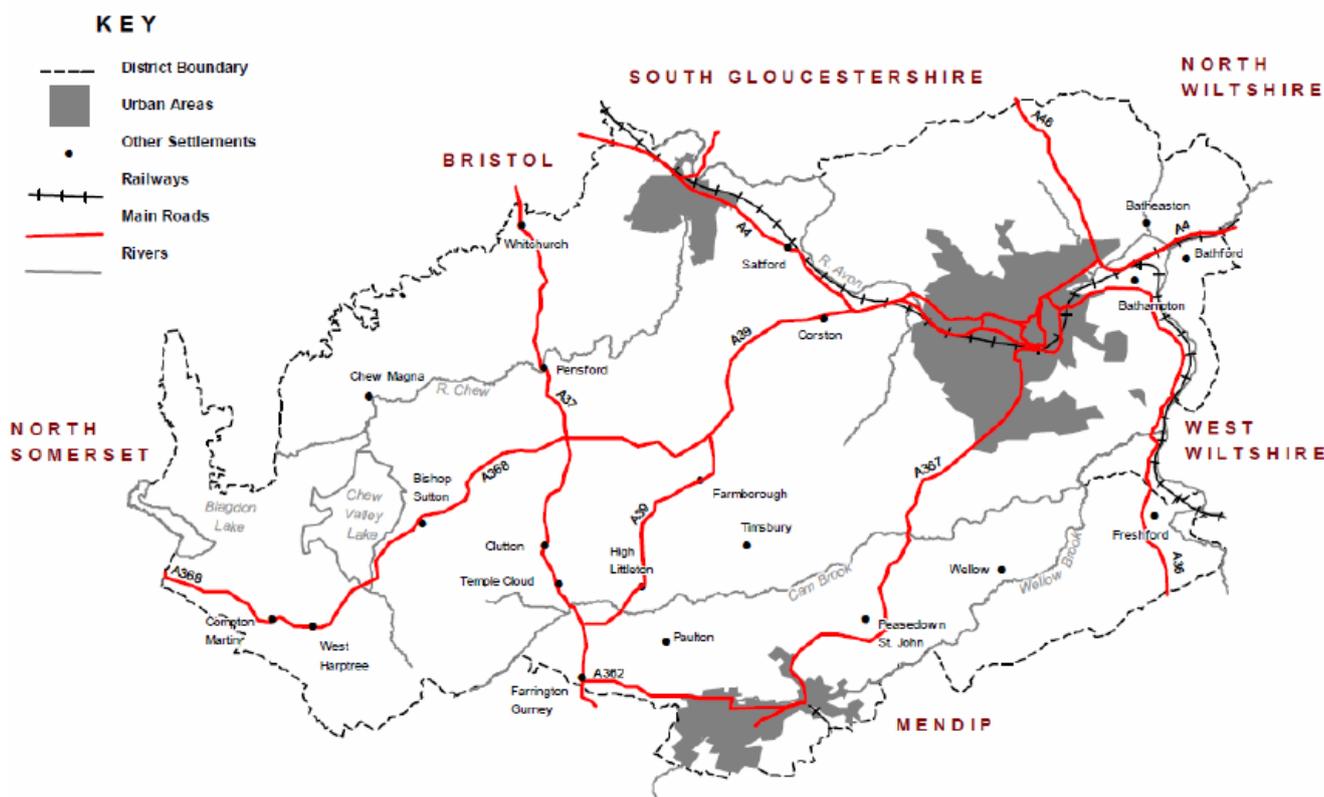
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| <b>Notable Species and Habitats</b>               | A list of species and habitats which are of principle importance for the purpose of conserving biodiversity. This list is part of the National Environment and Rural Communities Act 2006.   |
| <b>Mitigation measures</b>                        | Steps that may be taken to minimise, eliminate or compensate the adverse effects of a development.<br><br>'Should only be considered when all options for the avoidance of impacts have been exhausted or have been deemed to be impracticable. This may be achieved by examining alternatives (e.g. alternative equipment may be quieter) or by the addition of mitigation measures to the existing proposal (e.g. bunds, odour abatement technology and tree planting)' (IEMA 2004). |
| <b>Objective</b>                                  | A statement of what is intended, specifying the desired direction of change in trends.   |
| <b>River Basin Management Plan</b>                | A plan prepared under the Water Framework Directive that sets out the mitigation measures and actions that are needed for water bodies to reach good ecological status   |
| <b>Receptor</b>                                   | A component of the human or built environment that may be potentially affected by a development. Receptors include human population, animals, plants, soil, water, air, climate, material assets, landscape and cultural heritage.   |
| <b>Riparian</b>                                   | Area of land or habitat adjacent to rivers and streams   |
| <b>Scheduled Monument</b>                         | Nationally important historic sites, buildings or monuments identified by Historic England and designated by the Secretary of State for Culture, Media and Sport. Any work affecting a scheduled monument must gain consent from Historic England under the Ancient Monuments and Archaeological Areas Act (1979).   |
| <b>Scoping</b>                                    | Process of identifying the key issues in an environmental impact assessment/strategic environmental assessment. Issues that are identified as not significant by the scoping process do not need to be considered further in the environmental assessment.   |
| <b>Screening</b>                                  | The process of determining which developments require a statutory environmental impact assessment to be carried out.   |
| <b>Sequential Test</b>                            | The aim of sequential testing is to steer new development toward areas with the lowest probability of flooding.  |
| <b>Site of Special Scientific Interest (SSSI)</b> | Nationally important sites designated for their flora, fauna, geological or physiographical features under the Wildlife and Countryside Act (1981) (as amended) and the Countryside Rights of Way (CRoW) Act (2000).   |

|   |  |
|---|--|
| <b>Special Area of Conservation (SAC)</b> | Sites of European importance for habitats and non-bird species. Above mean low water mark they are also SSSIs.   |
| <b>Special Protection Area (SPA)</b>      | An area designated for rare or vulnerable birds, or migratory birds and their habitats, classified under Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC). They are also SSSIs.  |
| <b>Strategic Environmental Assessment</b> | A process carried out according to the requirements of the Strategic Environmental Assessment Directive 2001/42/EC designed to ensure that significant environmental effects arising from proposed plans and programmes are identified, assessed, subjected to public participation, taken into account by decision-makers, and monitored. |
| <b>Sustainable Drainage Systems</b>       | Drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes and sewers to nearby watercourses. They manage surface water by taking into account water quantity (flooding), water quality (pollution) and amenity issues.   |
| <b>Water Framework Directive (WFD)</b>    | The WFD (EC Directive (2000/60/EC)) sets out environmental objectives for water status based on ecological and chemical parameters, common monitoring and assessment strategies, arrangements for river basin administration and planning and a programme of measures in order to meet the objectives.                                     |
| <b>Wet spots</b>                          | Areas which include clusters of reported flood incidents which are considered vulnerable to flooding from surface water, groundwater, and/ or Ordinary Watercourses (taken from the area-wide Surface Water Management Plan).  |
| <b>World Heritage Site</b>                | A natural or man-made site, area or structure recognised as being of outstanding international importance and therefore as deserving special protection. Sites are nominated to and designated by the World Heritage Convention (an organisation of UNESCO).   |

# 1 Introduction

## 1.1 Local Flood Risk Management Strategy

As a Lead Local Flood Authority (LLFA), Bath & North East Somerset Council is required under Section 9 of the Flood and Water Management Act 2010 to develop, maintain, apply and monitor a Local Flood Risk Management Strategy. The Local Flood Risk Management Strategy must address potential flood risk arising from all local sources including: surface water run-off, groundwater and ordinary watercourses. The Study Area includes the entire area within the Bath & North East Somerset (see Figure 1.1). This covers a total area of 352km<sup>2</sup> of which two-thirds is classed as green belt.



Local Flood Risk Management Strategy and is managed by the Environment Agency. The Environment Agency has produced the National Flood and Coastal Erosion Risk Management Strategy, which describes how national flood risk and coastal erosion risk will be managed for England and Wales; the Local Flood Risk Management Strategy must be consistent with this document. Potential interactions between local flood risk sources and other sources must also be considered within the Local Flood Risk Management Strategy.

The objectives of the Local Flood Risk Management Strategy are:

1. Improve understanding of local flood risk
2. Promote community awareness and build capability for appropriate action
3. Manage local flood risk through capital and maintenance investment.
4. Prevent inappropriate development that creates or increases flood risk.
5. Improve flood preparedness, warning and ability to recover.

## 1.2 Strategic Environmental Assessment

A Strategic Environmental Assessment has been undertaken to support the Local Flood Risk Management Strategy. This document is the Strategic Environmental Assessment Draft Environmental Report, which describes the outcomes of the Strategic Environmental Assessment.

Strategic Environmental Assessment is a systematic process for evaluating and anticipating the consequences of decision-making, such as policies, plans, strategies and programmes prior to the implementation stage. Its purpose is to ensure that environmental considerations and alternatives are addressed as early as possible alongside economic and social factors during policy, plan or programme development.

The Strategic Environmental Assessment has been undertaken in line with the Strategic Environmental Assessment Directive (2001) (European Commission Directive 2001/42/EC) (the ‘Strategic Environmental Assessment Directive’). The Directive was adopted in June 2001 and aims to:

- Increase the level of protection for the environment;
- Integrate environmental considerations into the preparation and adoption of plans and programmes; and
- Promote sustainable development.

The Directive was transposed into UK Legislation by the Environment Assessment of Plans and Programmes Regulations 2004 (the ‘Strategic Environmental Assessment Regulations’).

Discussion on whether Strategic Environmental Assessment is needed for Local Flood Risk Management Strategies is covered in the Local Government Association (2011) Framework to Assist the Development of the Local Strategy for Flood Risk Management. This document states:

*“The Strategic Environmental Assessment (Strategic Environmental Assessment) Directive (2001) (EC Directive 2001/42/EC) is legislation which aims to increase the consideration of environmental issues during decision making related to strategic documents such as plans, programmes or strategies. The Strategic Environmental Assessment identifies the significant environmental effects that are likely to result due to the implementation of a plan, programme or strategy. Local strategies are statutory plans and Strategic Environmental Assessments are subject to the requirements of Strategic Environmental Assessment. LLFAs should take a proportionate approach to applying Strategic Environmental Assessment to local strategies particularly when environmental effects are not evident in the early stages of plan development. As the detail of plans develop, Strategic Environmental Assessment should be reviewed”*

In line with the Local Government Association Framework guidance, a proportionate Strategic Environmental Assessment of the Local Flood Risk Management Strategy has been undertaken that takes into consideration the high level nature, and limited structural elements, of the proposals, whilst noting the key environmental sensitivities of the district.

### **1.3 General Limitations of the Strategic Environmental Assessment Process**

There are general technical limitations associated with the Strategic Environmental Assessment process. These limitations along with measures to reduce their potential effect should be considered in order to increase the validity of the assessment. These limitations include the following:

1. Strategic Environmental Assessments cover large geographical areas making data collection and analysis time-consuming and complex;
2. Strategic Environmental Assessments are often subject to greater levels of uncertainty compared to project-scale Environmental Impact Assessments (EIAs) i.e. uncertainties relating to future conditions, developments and technologies;
3. Strategic Environmental Assessments are often limited by what information is available; and
4. Strategic Environmental Assessments are often not as detailed, rigorous or scientific as one would want as the Strategic Environmental Assessment process must be responsive and adaptable.

Section 7.1 identifies specific limitations encountered during this Strategic Environmental Assessment process along with the actions taken to reduce their potential effects.

### 1.4 Structure of the Strategic Environmental Assessment Environmental Report

Table 1.1 gives the structure of the Environmental Report including a summarised content for each section.

**Table 1.1 The structure of the Environmental Report.**

| Section  | Contents   |
|--|--|
| Non-technical summary  | Summarises the Strategic Environmental Assessment Environmental Report   |
| Section1: Introduction   | Provides an introduction to the Local Flood Risk Management Strategy, this Strategic Environmental Assessment, its structure and general limitations   |
| Section 2: Strategic Environmental Assessment Process  | Identifies relevant Strategic Environmental Assessment Guidance and provides detail on the Stages of Strategic Environmental Assessment  |
| Section 3: Local Flood Risk Management Strategy Action Plan  | Summarises the actions proposed as part of the Local Flood Risk Management Strategy and associates Surface Water Management Plan Actions   |
| Section 4: Reviewing Relevant Policies, Plans and, Programme   | Reviews relevant policies, plans and programmes  |
| Section 5: Assessing the Environmental Effects of the Local Flood Risk Management Strategy   | Provides the methodology for the assessment of potential environmental effects, followed by the assessment of the effects of the Local Flood Risk Management Strategy upon the environmental topics, along with any required mitigation and monitoring.                    |
| Section 6: Compatibility testing between the Local Flood Risk Management Strategy Objectives and Strategic Environmental Assessment Objectives | Tests the compatibility of the Local Flood Risk Management Strategy Objectives and Strategic Environmental Assessment Objectives   |
| Section 7: Conclusion  | Summarises the environmental effects of the Local Flood Risk Management Strategy, identifies the limitations encountered as part of this Strategic Environmental Assessment, and explains the next steps in the process. It also covers the consultation feedback process. |

## 2 Strategic Environmental Assessment Process

### 2.1 Strategic Environmental Assessment Guidance

The methodology applied to this Strategic Environmental Assessment incorporates the requirements described in Annex I of the 'Strategic Environmental Assessment Directive' (see Table 1.1).

This Strategic Environmental Assessment Environmental Report has been developed in accordance with the following guidance documents:

- *A Practical Guide to the Strategic Environmental Assessment Directive* (Office of the Deputy Prime Minister, 2006)
- *Guidelines for Cumulative Effects Assessment in Strategic Environmental Assessment of Plans* Environmental Policy and Management Group Occasional Paper 04/LMC/CEA (Imperial London College 2004)
- *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions* (European Commission, 1999)
- *Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners* (Countryside Council for Wales, English Nature, Environment Agency and RSPB 2004)
- Local Government Association (2011) Framework to Assist the Development of the Local Strategy for Flood Risk Management

### 2.2 Overview of Strategic Environmental Assessment Stages

The Strategic Environmental Assessment process is iterative and involves five sequential stages, which relate to each other (see Table 2.1). These stages are shown on Figure 2.1. The Strategic Environmental Assessment for the Local Flood Risk Management Strategy commenced in January 2012 in conjunction with the development of the Local Flood Risk Management Strategy. Table 2.1 also shows how the development of the Local Flood Risk Management Strategy has been linked to the Strategic Environmental Assessment tasks.

**Table 2.1 Stages in the Strategic Environmental Assessment process and how they have been addressed through the Strategic Environmental Assessment and Local Flood Risk Management Strategy development**

| Strategic Environmental Assessment Stages and Tasks  | Strategic Environmental Assessment Outputs  | Local Flood Risk Management Strategy Development  |
|--|---|---|
| <b>Stage A</b> <i>Setting the context and objectives, establishing the baseline and deciding on the scope</i>              |   |   |
| A1: Identifying other relevant policies, plans, programmes and environmental protection legislation                        | Stage A tasks were largely undertaken during the Scoping stage.<br>During the Stages B-D, feedback received during the scoping consultation process was used to refine the information gathered during Scoping stages A1-A4. Further information is provided in Section 6.  | Identifying pieces of linked legislation, planning documents and policies.<br><br>Setting the Local Flood Risk Management Strategy objectives |
| A2: Collection of baseline information   |   |   |
| A3: Identifying environmental issues and problems. Scoping in or out of topics -   |   |   |
| A4: Developing the Strategic Environmental Assessment objectives   |   |   |
| A5: Consultation on the scope of the Strategic Environmental Assessment  |   |   |
| <b>Stage B:</b> <i>Developing and refining options and assessing effects</i>   |   |   |
| B1. Testing the Local Flood Risk Management Strategy objectives against the Strategic Environmental Assessment Objectives. | Compatibility tests of the Local Flood Risk Management Strategy Objectives and Strategic Environmental Assessment Objectives have been undertaken throughout the Local Flood Risk Management Strategy development; refer to Section 5.  | Setting the Local Flood Risk Management Strategy Objectives   |
| B2. Developing strategic alternatives.   | There are no 'reasonable alternatives' to the objectives included in the Local Flood Risk Management Strategy. Scenarios of 'Do Nothing' or 'Business as Usual' were not appropriate because the Local Flood Risk Management Strategy is required by the Flood and Water Management Act 2010, which dictates a large proportion of its content ensuring that action is taken to manage local flood risk |   |
| B3. Predicting the effects of the plan or programme, including alternatives.   | During Stage A, potentially significant issues associated with the implementation of the Local Flood Risk Management Strategy were identified.  | Ensuring that the Action Plan avoids issues.  |

| Strategic Environmental Assessment Stages and Tasks  | Strategic Environmental Assessment Outputs   | Local Flood Risk Management Strategy Development                       |
|--|--|--|
| B4. Evaluating the effects of the plan or programme, including alternatives.   | During Stage B, the significance of environmental effects of the scenarios has been assessed fully in relation to each environmental topic. Further details of the Strategic Environmental Assessment methodology and the likely significant effects on the environment are set out in Sections 4 and 6. | Ensuring that the Action Plan avoids issues.                           |
| B5. Considering ways of mitigating adverse effects.  | The Strategic Environmental Assessment has identified potential measures to prevent and reduce likely adverse effects. Further details of mitigation measures are in Section 6.  |  |
| B6. Proposing measures to monitor the environmental effects of plan /programme implementation.   | Section 6 includes indicators for monitoring the environmental effects of the Local Flood Risk Management Strategy.  |  |
| <b>Stage C: Preparing the Environmental Report</b>   |  |  |
|  | The structure and content of this Environmental Report was outlined in the Scoping Report. The structure is summarised in Section 1.4.   | Preparing the Draft Local Flood Risk Management Strategy               |
| <b>Stage D: Consulting on the draft plan or programme and the Environmental Report</b>   |  |  |
| D1: Consulting on the draft Local Flood Risk Management Strategy and draft Environmental Report with the public and consultation Bodies. | This Draft Strategic Environmental Assessment Environmental Report will be issued for public consultation and feedback   | Consulting on the Draft Local Flood Risk Management Strategy           |
| D2: Assessing significant changes  | Any significant changes that are made to the Local Flood Risk Management Strategy from consultation will be taken into account within the Final Environmental Report.  | Finalising the Local Flood Risk Management Strategy                    |
| D3: Making decisions and providing information   |  |  |
| <b>Stage E: Monitoring the significant effects of implementing the Local Flood Risk Management Strategy</b>                              |  |  |
| E1: Developing the aims and methods for monitoring   | The draft Environmental Report has provided potential indicators for monitoring environmental effects of the Local Flood Risk Management Strategy. Following consultation these will be amended where appropriate.   | Monitoring the Local Flood Risk Management Strategy                    |
| E2: Responding to the adverse effects  | Review and update the Environmental Report   | Review and update the Local Flood Risk Management Strategy Action Plan |

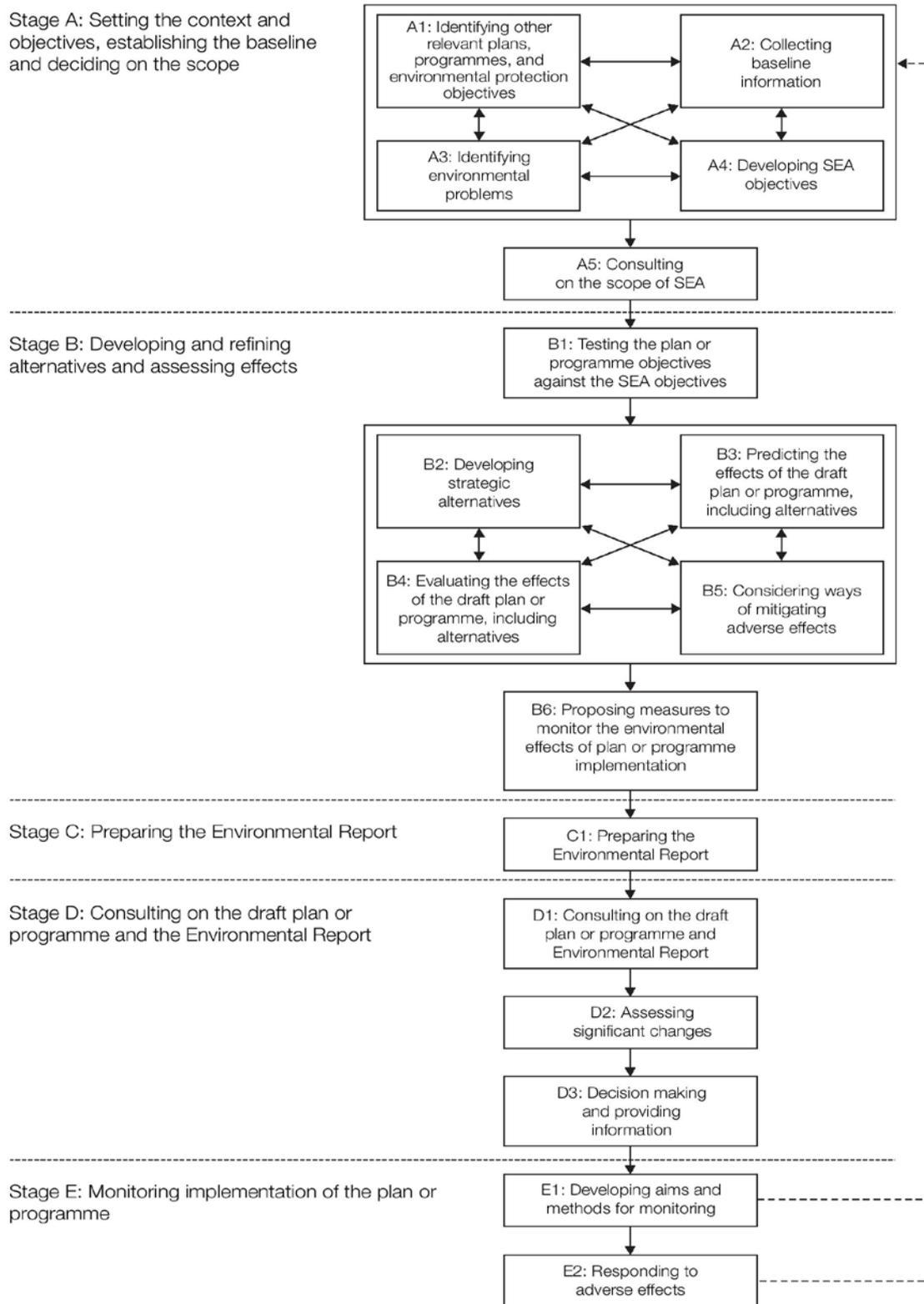


Figure 2.1 Relationship between tasks for each Strategic Environmental Assessment stages. Source: ‘A Practical Guide to the Strategic Environmental Assessment Directive’ (ODPM 2005).

## 2.3 Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope

### 2.3.1 Scoping Report

A Strategic Environmental Assessment Scoping Report was prepared and consulted upon with the three statutory consultees (Natural England, the Environment Agency and English Heritage (now Historic England)) in June 2013. A summary of the scoping exercise which incorporated Strategic Environmental Assessment Tasks A1 – A4 is provided below.

The Strategic Environmental Assessment Scoping Report was subject to a five week consultation period (Stage A; Task A5) during which the three statutory Strategic Environmental Assessment consultees (Environment Agency, Historic England (formerly English Heritage) and Natural England) had the opportunity to comment on the scope, content and level of detail of the Scoping Report. Feedback was received from each of the statutory consultees in July 2013 and is provided in Appendix A along with how this feedback has been considered in this Strategic Environmental Assessment process and Environmental Report.

### 2.3.2 Collection of Baseline Information

Baseline information was collected and examined for the governance area of Bath & North East Somerset during the Strategic Environmental Assessment scoping stage (see Chapter 4 for a summary of baseline conditions for each scoped-in Strategic Environmental Assessment topic). This dataset forms an evidence base against which potential environmental effects of the Local Flood Risk Management Strategy can be measured, assessed, mitigated against and monitored if necessary.

The baseline information collected relates to the broad topics outlined in the Annex 1(f) of the 'Strategic Environmental Assessment Directive'. These topics are as follows:

- Water;
- Flooding;
- Population and human health;
- Biodiversity and landscape;
- Climatic factors;

- Material assets (i.e. housing, economy, agriculture, mineral resources and transport);
- Cultural heritage; and
- Air.

Within each of these topics, information was collected based on its:

- Relevance and appropriateness to the spatial scale of the Local Flood Risk Management Strategy;
- Contribution to identifying key environmental issues for Bath & North East Somerset and environmental issues relevant to the Local Flood Risk Management Strategy; and
- Relevance to the Strategic Environmental Assessment objectives and indicators.

Where possible, trends in each topic were examined in order to assess potential future environmental issues.

Chapter 4 provides a summary of baseline information collected during the scoping stage of this Strategic Environmental Assessment for each scoped-in Strategic Environmental Assessment topic. More detailed baseline information is available in the Scoping Report. Where appropriate, additions to the description of the baseline environment have been made in this report following consultation comments and any key changes in conditions that have arisen between the Scoping Report and Environmental Report.

### 2.3.3 Scoping in or out of topics -

Information collected in the review of baseline conditions and other relevant policies, plans, and programmes at scoping stage was used to identify environmental issues and opportunities in Bath & North East Somerset and subsequently to take into consideration when determining the scope of the Strategic Environmental Assessment (Task A3).

The Strategic Environmental Assessment Regulations identify environmental topics which must be initially considered for all Strategic Environmental Assessments. This formed a starting point from which topics and receptors have been scoped out of, or into, the Strategic Environmental Assessment, depending on whether or not they are considered likely to affect or be affected by the Local Flood Risk Management Strategy. The topics include:

- Population and Human Health;
- Biodiversity, flora and fauna;
- Soil;
- Water;
- Air;
- Climatic factors;
- Material assets;
- Cultural, architectural and archaeological heritage;
- Landscape; and the
- Inter-relationship between the above factors.

The Strategic Environmental Assessment of the National Flood and Coastal Erosion Risk Management Strategy concluded that it is unlikely that any significant impacts on air quality would occur as a result of the national strategy. The topic of air quality was subsequently scoped out of the Strategic Environmental Assessment for the national strategy. Potential impacts on air quality arising from local flood risk and the Local Flood Risk Management Strategy were considered and it was concluded that significant impacts are unlikely to occur. As such air quality was scoped out of the Strategic Environmental Assessment. All other topics identified in the Strategic Environmental Assessment Regulations have been included in the Strategic Environmental Assessment, as shown in Table 2.2.

**Table 2.2 Strategic Environmental Assessment Topics scoped into or out of the Strategic Environmental Assessment**

| Strategic Environmental Assessment Topic | Strategic Environmental Assessment Topic Sub-division | Scoped In or Out? |
|--|---|-------------------|
| Water                                    | Water Quality and Resources                           | In                |
| Flooding                                 | Flood Risk  | In                |
| Population and Human Health              | Population  | In                |
|  | Deprivation and Human Health                          | In                |
| Biodiversity and Landscape               | Nature Conservation                                   | In                |
|  | Landscape Character                                   | In                |
| Cultural heritage                        | Cultural Heritage                                     | In                |
| Climatic Factors                         | Climatic Factors                                      | In                |
| Material Assets                          | Housing   | In                |

| Strategic Environmental Assessment Topic | Strategic Environmental Assessment Topic Sub-division | Scoped In or Out? |
|--|---|-------------------|
|  | Economy   | In                |
|  | Agriculture   | In                |
|  | Mineral Resources                                     | In                |
|  | Waste Management                                      | In                |
|  | Transport Infrastructure                              | In                |
| Air                                      | Air Quality   | Out               |

### 2.3.4 Development of the Strategic Environmental Assessment objectives

A total of ten Strategic Environmental Assessment objectives were proposed in the Scoping Report as part of Task A4. These Strategic Environmental Assessment objectives relate to the key Strategic Environmental Assessment topics and environmental issues within Bath & North East Somerset identified in the review of baseline conditions at Strategic Environmental Assessment scoping stage. The statutory consultees made no comments on the Strategic Environmental Assessment objectives, so these have not been modified since scoping stage. The Strategic Environmental Assessment objectives are provided in Table 2.3.

**Table 2.3 Strategic Environmental Assessment Objectives**

| Strategic Environmental Assessment Topic | Strategic Environmental Assessment Objective (s)   |
|--|--|
| Water Quality and Resources              | Objective 1: Protect and enhance the ecological and chemical status of watercourses and water bodies in Bath & North East Somerset in accordance with Water Framework Directive, whilst promoting the sustainable use of water as a natural resource |
| Flood Risk                               | Objective 2: Understand and manage flood risk from ordinary watercourses, surface water runoff, groundwater and artificial sources within Bath & North East Somerset.  |
| Population, Health and Deprivation       | Objective 3: Maintain and enhance a positive health profile for Bath & North East Somerset.  |
| Nature Conservation                      | Objective 4: Protect and enhance biodiversity and geodiversity across Bath & North East Somerset, especially in relation to statutory and non-statutory designated sites. Special consideration to be given to priority species.                     |
| Landscape Character                      | Objective 5: Maintain and enhance characteristic landscape features, with special emphasis on the landscape features of AONBs located within Bath & North East Somerset.   |
| Cultural Heritage                        | Objective 6: Protect and enhance features that define the cultural heritage of Bath & North East Somerset (i.e. listed buildings, scheduled monuments and registered parks and gardens).   |

| Strategic Environmental Assessment Topic  | Strategic Environmental Assessment Objective (s)   |
|---|--|
| Climatic Factors  | Objective 7: Manage, plan and adapt for the impacts of climate change.   |
| Material Assets (Housing, Economy, Agriculture, Mineral Resources, Waste Management and Transport Infrastructure) | Objective 8: Ensure that new development in Bath & North East Somerset is located with respect to the sequential test.<br>Objective 9: Maintain and enhance accessibility to essential services across Bath & North East Somerset by providing an efficient transport infrastructure.<br>Objective 10: Protect and enhance high quality agricultural land across Bath & North East Somerset. |

## 2.4 Stage B: Developing and refining options and assessing effects

An internal draft of the Local Flood Risk Management Strategy was produced in March 2012, which included a full set of draft objectives for the Local Flood Risk Management Strategy. An initial compatibility test of the Local Flood Risk Management Strategy objectives against the Strategic Environmental Assessment Objectives was undertaken, and the findings and recommendations were discussed with the Drainage and Flooding Team. As a result, the Local Flood Risk Management Strategy objectives were redrafted.

A key function of a Strategic Environmental Assessment is to assist in the development of reasonable options (or ‘alternatives’) for implementing a respective plan or programme (Stage B, Task B2-B4). However, in this instance there are no ‘reasonable alternatives’ to the objective and actions included in the Local Flood Risk Management Strategy. Scenarios of ‘Do Nothing’ or ‘Business as Usual’ were not appropriate because the Local Flood Risk Management Strategy is required by the Flood and Water Management Act, which dictates a large proportion of its content ensuring that action is taken to manage local flood risk..

An evaluation has been undertaken of the predicted effects of the Local Flood Risk Management Strategy on the identified environmental topics and receptors (Stage B: Task B4) and is included in Section 5.

Mitigation measures have been proposed for potential negative effects that may arise from the implementation of the Local Flood Risk Management Strategy (Stage B: Task B5) (Section 5). Monitoring indicators have been proposed (Stage B: Task B6) (Section 5). The nature and magnitude of a potential environmental effect may be uncertain and the proposed monitoring programmes will attempt to address this uncertainty.

The link between the Local Flood Risk Management Strategy action implementation and the achievement of wider environmental benefits is discussed in the draft Local Flood Risk

Management Strategy *Chapter 5.4 Maximising the wider benefits of flood risk management*).

## **2.5 Stage C: Preparing the Environmental Report**

This is the draft Strategic Environmental Assessment Environmental Report (Stage C), which will be finalised following public consultation.

## **2.6 Stage D: Strategic Environmental Assessment Consultation**

This draft Strategic Environmental Assessment Report is subject to a two month consultation period alongside the draft Local Flood Risk Management Strategy (see Section 7.3. for more details). Where necessary the Environmental Report will be amended following the results of the consultation exercise and then finalised.

## **2.7 Stage E: Strategic Environmental Assessment Monitoring**

The final stage in the Strategic Environmental Assessment process involves monitoring of any potential significant effects arising from the implementation of the Local Flood Risk Management Strategy. Monitoring is essential in order to:

- Track the environmental effects of the Local Flood Risk Management Strategy;
- Indicate whether or not the environmental effects of the Local Flood Risk Management Strategy are as predicted in the assessment;
- Identify the actual adverse effects; and
- Prepare for appropriate responses where adverse effects are identified.

The information will mostly be collected as part of pre-existing monitoring programmes. Therefore the reliability of the monitoring information will need to be considered when assessing the actual effects of the Local Flood Risk Management Strategy. If residual effects are identified, action should be taken to minimise their impact. The indicators listed in Section 6 will be used to monitor the actual effects of the implemented Local Flood Risk Management Strategy.

### 3 Summary of Local Flood Risk Management Strategy Action Plan

The overall aim of the Local Flood Risk Management Strategy is to ensure that flood risk is properly managed through a coordinated approach whereby communities, individuals, voluntary groups, and private and public sector organisations work together. The actions that form the Action Plan to implement this aim are summarised in in Table 3.1. Further details of the Local Flood Risk Management Strategy Action Plan are provided in the main Local Flood Risk Management Strategy (Bath & North East Somerset, 2015). Many of the actions are related to engagement with the public, developers and other partners and improving the recording of flood events.

**Table 3.1 Local Flood Risk Management Strategy Action Plan**

| Action Ref | Action   |
|------------|--|
| 1a         | Complete a regional Surface Water Management Plan  |
| 1b         | Continue to develop an updated flood reporting system  |
| 1c         | Improve the use of visual tools (e.g. GIS) to record and analyse flooding incidents  |
| 1d         | Continue to complete investigations of flood incidents, where the appropriate criteria is met                                  |
| 1e         | Ensure that appropriate data on flooding is shared between organisations, and between organisations and communities            |
| 2a         | Establish clearer routes for communicating with communities and businesses about the roles and responsibilities for flood risk |
| 2b         | Help communities understand their own flood risk and their responsibilities for managing flooding                              |
| 2c         | Raise awareness of land drainage and riparian responsibilities   |
| 2d         | Develop a network of Local Flood Representatives to act as a point of contact in the community on flooding issues              |
| 2e         | Ensure communities know what to do in the event of a flood   |
| 3a         | Continue to work with partners, including adjacent authorities, to develop long term approaches to manage flood risk           |
| 3b         | Deliver the actions in the regional Surface Water Management Plan  |
| 3c         | Continue to develop a register of assets which significantly affect local flood risk   |
| 3d         | Designate structures that effect local flood risk, to protect them from alteration or removal                                  |
| 3e         | Continue to assess applications for works on ordinary watercourses, through the land drainage consent process*                 |

| Action Ref | Action   |
|------------|--|
| 3f         | Identify catchments where improved land management could reduce flood risk and/or improve the wider environment  |
| 3g         | Identify critical highway drainage assets, in order to undertake targeted maintenance and respond to issues as the Local Highways Authority  |
| 3h         | Prioritise maintenance and clearance works to culverts and watercourses  |
| 3i         | Evaluate flood reports to identify where drainage improvements or other mitigation works are possible  |
| 4a         | Continue to review planning applications to make recommendations for surface water drainage and managing flood risk  |
| 4b         | Publish the West of England Sustainable Drainage Systems Guidance for developers, and work across the West of England to co-ordinate sustainable drainage system implementation      |
| 4c         | Include SuDS planning policy within the Council's Placemaking Plan/ Core Strategy  |
| 4d         | Continue to provide guidance at the pre-application stage on flooding issues   |
| 4e         | Consider the need for additional planning guidance on flooding specific to Bath & North East Somerset  |
| 4f         | Identify areas that are sensitive to surface water flood risk and develop appropriate surface water drainage and flood risk requirements for any proposed development in these areas |
| 5a         | Help develop a multi-agency flood plan for high risk areas in Bath & North East Somerset   |
| 5b         | Communicate information to communities, businesses and individuals on flood preparedness and recovery  |
| 5c         | Promote uptake of the Environment Agency's Floodline Warnings Direct service   |
| 5d         | Improve warnings and proactive mitigation in response to predicted rainfall  |

The Local Flood Risk Management Strategy Action 1a, to complete a regional Surface Water Management Plan (SWMP) for Bath & North East Somerset has been undertaken. A significant number of the wet-spots identified in the SWMP had common actions around improvements to highways and/or land drainage. For these 42 wet-spots the following five stage implementation plan was identified in the SWMP:

1. monitor flooding at this location;
2. check cyclic maintenance has been carried out;
3. investigate performance of highway/land drainage system, identifying any maintenance or design requirements;
4. carry out required maintenance or design and construct engineering scheme, and;
5. implement continued maintenance programme.

In addition, a further 15 wet-spots identified in the SWMP have been assigned specific actions and have been adopted for the Local Flood Risk Management Strategy. In these wet-spots the actions are bespoke to each area, and range from inspection and investigation, through to scheme design and build. The 15 wet-spots with specific actions are:

- Bath City Centre;
- Batheaston and Bathford;
- Chew Magna;
- Chew Stoke;
- Clandown;
- West Harptree;
- Whitchurch;
- Keynsham;
- Lower Bristol Road;
- Timsbury;
- Midsomer Norton;
- Weston and Upper Weston;
- Weston Village;
- Weston Park, and;
- White Cross Farm (Bristol Road).

## 4 Reviewing Relevant Policies, Plans, Programmes and Environmental Protection Legislation

The Local Flood Risk Management Strategy must comply with current relevant policies, plans, programmes (PPPs) and environmental protection legislation at international, national and local levels. A review of relevant PPPs was undertaken as part of the Strategic Environmental Assessment scoping process (Task A1). The review identified any potential inconsistencies or constraints between PPPs and the Local Flood Risk Management Strategy, which have been taken account of during the Local Flood Risk Management Strategy development. The relevant at international, national and local PPPs are listed in Tables 4.1, 4.2 and 4.3 respectively, and the full review is detailed in Appendix B. The list of PPPs is not definitive and will be up-dated throughout the Strategic Environmental Assessment process where possible.

The Local Flood Risk Management Strategy compliments or contributes towards the achievement of the objectives and requirements outlined in the relevant PPPs and complies with all environmental protection legislation. The key common links and themes identified between other relevant PPPs and the Local Flood Risk Management Strategy can be broadly summarised in the following categories:

- Protecting and enhancing the historic and natural environment. Ensuring that no harm is brought to nature conservation sites or heritage sites in the Bath & North East Somerset area designated at the European level;
- Sustainable consumption and use of natural resources,
- Protecting and enhancing open spaces and recreational opportunities, including access to the countryside;
- Achieving economic prosperity,

**Table 4.1 Relevant International policies, plans, programmes and environmental protection legislation along with related Strategic Environmental Assessment topic sub-divisions**

| Strategic Environmental Assessment Topic Sub-division | International Plans and Programmes   |
|---|--|
| Flood risk  | EU Floods Directive – Directive 2007/60/EC on the Assessment and Management of Flood Risk, 2007  |
| Water Quality and Resources, Nature Conservation      | EU Water Framework Directive – Directive 2000/60/EC of the European Parliament and of the Council Establishing a Framework for the Community Action in the Field of Water Policy, 2000<br>EU Habitats Directive – Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora. |

**Table 4.2 Relevant national policies, plans, programmes and environmental protection legislation along with related Strategic Environmental Assessment topic sub-divisions 1**

| Strategic Environmental Assessment Topic Sub-division                         | National Plans and Programmes  |
|---|--|
| All*  | National Planning Policy Framework (March 2012)  |
| Flood Risk, Water Quality and Resources, Nature Conservation, Material Assets | National Standards for Sustainable Drainage (Defra, 2011)                                  |
| All*  | The National Flood and Coastal Erosion Risk Management Strategy for England (May 2011)     |
| All*  | Flood and Water Management Act 2010  |
| Nature Conservation, Water Quality and Resources                              | Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services                |
| Water Quality and Resources, Flood Risk                                       | Water for People and the Environment; Water Resources Strategy for England and Wales, 2009 |
| Water Quality and Resources, Flood Risk, Material Assets                      | Future Water, The Government's water strategy for England, 2008                            |
| Flood Risk, Climatic Factors  | Adapting to Climate Change in England, A Framework for Action, 2008                        |
| Flood Risk  | Civil Contingencies Act 2004   |

<sup>1</sup> All\* Strategic Environmental Assessments topic sub-divisions are: water quality and resources, flood risk, population, deprivation and human health, nature conservation, landscape character, cultural heritage, climatic factors and material assets (housing, economy, agriculture, mineral resources, waste management and transport infrastructure).

| <b>Strategic Environmental Assessment Topic Sub-division</b>                  | <b>National Plans and Programmes</b>                                |
|---|---|
| Water Quality and Resources   | Water Act, 2003   |
| Flood Risk, Water Quality and Resources, Nature Conservation, Material Assets | Environment Agency Policy: Sustainable Urban Drainage Systems, 2002 |
| Flood Risk  | Land Drainage Act, 1991, (as amended 2004)                          |

**Table 4.3 Relevant sub-national, regional and local policies, plans, programmes and environmental protection legislation along with related Strategic Environmental Assessment topic sub-divisions**

| <b>Strategic Environmental Assessment Topic Sub-division</b>             | <b>Regional and local Plans and Programmes</b>   |
|--|--|
| Water Quality and Resources  | River Basin Management Plan Severn River Basin District (December 2009)  |
| Flood Risk   | Bath & North East Somerset Council Preliminary Flood Risk Assessment March 2011 (Bath & North East Somerset Council, 2011))<br>Bath & North East Somerset Council Surface Water Management Plan June 2015 (Bath & North East Somerset Council (2015)<br>Bristol Avon Catchment Flood Management Plan December 2009 (Environment Agency 2009b)<br>Somerset County Council Local Flood Risk Management Strategy (Somerset County Council, 2014)<br>South Gloucestershire Local Flood Risk Management Strategy (Draft in press)<br>City of Bristol Local Flood Risk Management Strategy November 2014 (City of Bristol, 2014)<br>Wiltshire Local Flood Risk Management Strategy (Wiltshire County Council, 2014)<br>North Somerset Local Flood Risk Management Strategy (North Somerset Council 2014) |
| Water Quality and Resources, Nature Conservation and Landscape Character | Bath & North East Somerset Draft Green Infrastructure Strategy (Bath & North East Somerset Council 2013)   |
| All*   | Bath & North East Somerset Core Strategy (July 2014) and Saved Local Plan Policies   |
| Flood Risk, Nature Conservation and Landscape Character, Material Assets | Bath & North East Somerset Flood Risk Management Strategy Report (June 2010)   |
| Flood Risk   | Bristol Avon Catchment Flood Management Plan (December 2009b)  |

| Strategic Environmental Assessment <b>Topic Sub-division</b>                                      | <b>Regional and local Plans and Programmes</b>  |
|---|---|
| Nature Conservation and Landscape Character, Cultural Heritage, Climatic Factors, Material Assets | Mendip Hills Area of Outstanding Natural Beauty Management Plan 2009-2014   |
| Nature Conservation and Landscape Character, Cultural Heritage, Climatic Factors, Material Assets | Cotswolds Area of Outstanding Natural Beauty Management Plan 2008-2013  |
| Flood Risk  | Strategic Flood Risk Assessment of Bath & North East Somerset Volume 1 Technical Report April 2008 (Bath & North East Somerset, 2008) |
| All   | Sustainable Communities Strategy  |
| Cultural Heritage   | City of Bath World Heritage Site Management Plan (The City of Bath World Heritage Site, 2010)   |

## 5 Assessing the Environmental Effects of the Local Flood Risk Management Strategy

### 5.1 Methodology for assessing potential effects

Task B3 of the Strategic Environmental Assessment is to predict the environmental effects of the Local Flood Risk Management Strategy. The predicted effects of the Local Flood Risk Management Strategy were assessed in terms of their significance. The detailed assessment tables are provided in Appendix C.

The assessment of significance has been made by reviewing the potential effects on each receptor against the criteria listed in Appendix II of the Strategic Environmental Assessment Directive (Box 1). These assessments were based upon both quantitative and qualitative information, as well as expert judgement. The criteria in Appendix II of the Strategic Environmental Assessment Directive are only explicitly defined for the purpose of determining whether or not Strategic Environmental Assessment is needed. However, as they principally relate to the nature of the effects arising from the plan, and the value and vulnerability of the receptors affected, they are also applicable to the assessment of significant environmental effects and have thus been used for this purpose during this Strategic Environmental Assessment. This is recognised in the UK Strategic Environmental Assessment Practical Guide.

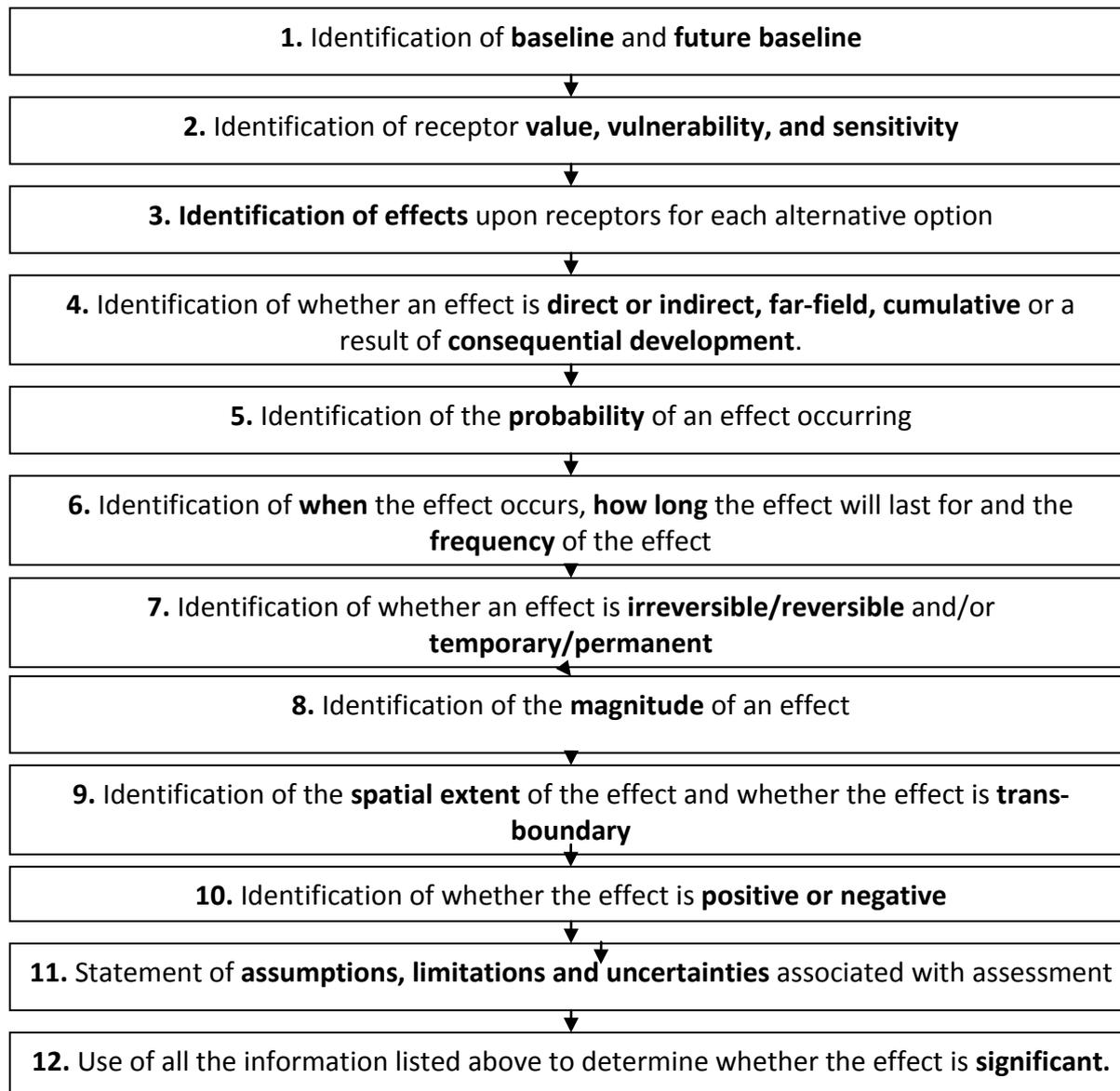
**Box 1: Criteria listed in Appendix II of the Strategic Environmental Assessment Directive**

When determining the likely significance of effects on the environment, the Appendix II of the Strategic Environmental Assessment Directive includes the following criteria:

2. *Characteristics of the effects and of the area likely to be affected, having regard, in particular, to*

- (a) the probability, duration, frequency and reversibility of the effects;*
- (b) the cumulative nature of the effects;*
- (c) the transboundary nature of the effects;*
- (d) the risks to human health or the environment (for example, due to accidents);*
- (e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected);*
- (f) the value and vulnerability of the area likely to be affected due to -*
- (g) special natural characteristics or cultural heritage;*
- (h) exceeded environmental quality standards or limit values; or*
- (i) intensive land-use; and*
- (j) the effects on areas or landscapes which have a recognised national, Community or international protection status.*

The flow chart below summarises the steps that have been undertaken to complete the significance assessment:



The following paragraphs explain in more detail how the steps set out in the flow chart above have been undertaken during the assessment of likely significant effects upon the environmental topics. The paragraphs below have been numbered to correspond with the numbers within the flow chart.

1. Identification of the baseline and future baseline

This is the approach taken to establish the characteristics of the area likely to be affected, or ‘baseline’, and its likely evolution in the absence of the proposed Local Flood Risk Management Strategy. Key to the approach is the development of an

understanding of the baseline, as defined by a series of ‘receptors’. A ‘receptor’ is an entity that may be affected by direct or indirect changes to an environmental variable. Relevant receptors were identified during the Strategic Environmental Assessment scoping stage.

## 2. Identification of receptor value

In forming a judgement on effect significance, it is necessary to assign the attributes of ‘value’, ‘vulnerability’ and ‘sensitivity’ to each receptor. For the purposes of this Strategic Environmental Assessment, the following definitions were used:

- Value: the value of a receptor (either high or low) is based on the scale of geographic reference, rarity, importance for biodiversity, social or economic reasons, and level of legal protection;
- Vulnerability: the vulnerability of a receptor (either high, medium, low or none) is based on likelihood of a receptor being exposed to an environmental effect from the implementation of the Local Flood Risk Management Strategy, and the receptor’s tolerance and resilience to a given environmental effect;
- Sensitivity: the sensitivity of a receptor is determined as being either high, medium, low or none, based on the combination of the receptor value and vulnerability as defined in Table 5.1.

## 3. Identification of effects upon receptors:

During the Scoping stage, key constraints and opportunities were identified for each environmental topic. These have been used as the starting point for the assessment of significant effects in this assessment stage of the Strategic Environmental Assessment.

**Table 5.1 Calculation of receptor sensitivity**

|                      |   | Value  |  |
|----------------------|---|--|--|
|                      |   | High – receptor is rare, important for social or economic reasons, legally protected, of international or national designation | Low – receptor is common, of local or regional designation |
| <b>Vulnerability</b> | <b>High</b> e.g. potential pathways exist for environmental change in receptors as a result of Local Flood Risk Management Strategy, receptor is in a declining condition, dependent on a narrow range of environmental conditions              | High   | Medium   |
|                      | <b>Medium</b> e.g. few pathways exist for environmental change in receptors as a result of Local Flood Risk Management Strategy, receptor is only expected to recover from disturbance over a prolonged period of time, if at all               | Medium   | Medium   |
|                      | <b>Low</b> e.g. limited or no pathways exist for environmental change in receptors as a result of Local Flood Risk Management Strategy, receptor is in stable or favourable condition &/ or dependent on wide range of environmental conditions | Medium   | Low  |
|                      | <b>None</b> e.g. no pathways exist between environmental changes and receptors, receptor is insensitive to disturbance  | None   | None   |

4. Identification of whether an effect is direct or indirect, far-field, cumulative or a result of consequential development.

The Strategic Environmental Assessment Directive specifies that the assessment of effects should include ‘secondary, cumulative, synergistic... effects’ (Appendix I (f)). The UK Practical Guide to Strategic Environmental Assessment recognises that some of these terms are not always mutually exclusive and for the avoidance of doubt, within this Strategic Environmental Assessment the following assessment approaches were undertaken.

- Indirect effects are those which are not a direct result of the implementation of the Local Flood Risk Management Strategy, but occur away from the original effect or as a result of a complex pathway. This Strategic Environmental Assessment does not use the term ‘secondary effects’ as this is covered by indirect effects.

- There is the potential for effects to extend large distances from the Local Flood Risk Management Strategy areas. The assessments of these ‘far-field’ effects have greater uncertainty attached and this should be described alongside the assessment of effects.
- Cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect. For the Strategic Environmental Assessment, cumulative effects are dealt with through the consideration of the implementation of the Local Flood Risk Management Strategy in relation to the future environmental baseline conditions and other policies, plans, programmes, and projects that are likely to act in combination with the Local Flood Risk Management Strategy. Therefore, the assessment of cumulative effects is embedded within the assessment of effects.
- This Strategic Environmental Assessment has not used the term ‘combined’ effects, as these are considered to be included within cumulative effects, nor has it used the term ‘synergistic’ effects, as these are contained within direct, indirect and cumulative effects.
- Improvement of flood risk management could facilitate or attract other developments, which may themselves pose significant environmental effects. These developments are described as ‘consequential developments’. These consequential developments are not well-defined and only a high-level qualitative assessment of the likely effects is possible.

5. Identification of the probability of an effect occurring:

The probability of whether an effect will happen has been recorded as high, medium, low or very low. Table 5.2 sets out the guideline framework which was used for these classifications.

**Table 5.2: Guidelines for determining probability of effect**

|                       | Probability of effect |        |        |          |
|-----------------------|-----------------------|--------|--------|----------|
| <b>Classification</b> | High                  | Medium | Low    | Very Low |
| <b>Guideline</b>      | >90%                  | 50-90% | 10-50% | <10%     |

6. Identification of when the effect occurs; how long the effect will last for; and frequency of effect.

The Strategic Environmental Assessment Directive specifies that the assessment of effects should include ‘...*short, medium and long-term...effects*’ (Appendix I (f)). The timing of effects relates to the period of the project lifecycle during which time an effect will happen. This is described as either the construction, operation or decommissioning stage. The duration is the length of time that effect would last. Table 5.3 sets out the guidelines for describing the project phase and duration of effects.

An indication of the frequency of predicted effects has been undertaken, through consideration of whether the effect will be continual or intermittent over the period of time identified.

**Table 5.3: Guidelines for determining the period of the project lifecycle**

| Classification | Duration of effect            |             |                                |                             |
|----------------|-------------------------------|-------------|--------------------------------|-----------------------------|
|                | Long Term                     | Medium Term | Short Term                     | Very Short Term             |
| Guideline      | 10+ years                     | 3-10 years  | 1-3 years                      | <12 months                  |
| Project phase  | Operation and Decommissioning | Operation   | Construction (or part thereof) | Part of construction period |

7. Identification of whether the effect is irreversible / reversible and temporary / permanent:

The Strategic Environmental Assessment Directive specifies that the assessment of effects should include ‘...*permanent and temporary...effects*’ (Appendix I (f)).

Effects have been described as reversible or irreversible referring to whether the effect could be removed if deliberate action were taken to do so. This judgement has been based on the timescale for a receptor’s return to baseline conditions following removal of the source of the effect, in relation to a human lifetime. If the timescale for a receptor’s return to baseline condition is greater than 50 years then it has been considered irreversible, if it is less it has been considered reversible.

Effects have been described as temporary or permanent, according to whether or not the effect is expected to last for an indefinite period of time. Note that it is possible for an effect to be reversible-permanent (such as the visual effects of a water control structure, as it would be a permanent fixture that could be removed; which would thereby reverse the effect).

**8. Identification of the magnitude of an effect**

The assessment of the magnitude of an effect considers the percentage of the receptor affected and is categorised as high, medium, low or very low. Where no effect was predicted, this has been recorded as ‘no change’. The definitions for thresholds of magnitude of effect are classified as high, medium, low, very low or none, and are provided Table 5.4 below.

**Table 5.4: Guidelines for determining the magnitude of effects**

|                | Magnitude of effect        |                              |                              |                            |                       |
|----------------|----------------------------|------------------------------|------------------------------|----------------------------|-----------------------|
| Classification | High                       | Medium                       | Low                          | Very low                   | None                  |
| Guideline      | Change to 90%+ of receptor | Change to 50-90% of receptor | Change to 10-50% of receptor | Change to <10% of receptor | No change in receptor |

**9. Identification of the spatial extent of the effect**

The spatial scale of the effect has been defined as whether the effect is local, unitary authority regional or national. Definitions of the spatial scales used within the Strategic Environmental Assessment are provided in Table 5.5. The area or location of the effect has been identified where relevant. Where there is a trans-boundary effect on an adjacent county, this has also been identified.

**Table 5.5: Definitions of spatial scale**

| Spatial extent of effects | Definitions  |
|---------------------------|--|
| National (England)        | Effects extending beyond region                              |
| Regional                  | Effects on the adjacent unitary authority areas              |
| Unitary Authority         | Effects within Bath & North East Somerset                    |
| Local                     | Effects confined to a local area, typically <1km from source |

**10. Identification of whether the effect is positive or negative**

The Strategic Environmental Assessment Directive specifies that the assessment of effects should include ‘...positive and negative effects’ (Appendix I(f)).

A positive effect has been defined as one that is favourable or otherwise beneficial to the condition of a receptor. A negative effect is one that is unfavourable or otherwise adverse to the condition of a receptor.

11. Statement of assumptions, limitations and uncertainties associated with assessment

The Strategic Environmental Assessment Directive also specifies that ‘...a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the information’ is provided in the Environmental Report.’

Where assumptions have been made, limitations observed, and/or uncertainty remained, this has been recorded. Confidence limits, or other suitable approaches, have been applied during environmental topic assessments to ensure that relevant uncertainties are acknowledged.

12. Use all the information to determine whether the effect is significant

This is the final stage of the assessment process. A decision on whether or not an effect on a receptor is significant has been made based on all the preceding criteria, expert judgement, and feedback from consultation. A conclusion was made as to whether a significant effect was likely, or not. Gradations of significance are not provided for within the Strategic Environmental Assessment Directive.

If a negative effect is identified, potential mitigation measures have been examined.

Where positive effects have been identified, enhancement measures will be examined. .

## 5.2 Assessment of Effects of the Local Flood Risk Management Strategy

### 5.2.1 Water Quality and Water Resources

#### *Baseline Conditions*

Information on water quality and water resources in Bath & North East Somerset was collected and presented in the Strategic Environmental Assessment Scoping Report. The baseline conditions have been updated below where appropriate.

#### Water Framework Directive Waterbodies

The Water Framework Directive (WFD) (2000/60/EC) is implemented in England and Wales by The Water Environment (WFD) (England and Wales) Regulations 2003 (SI 3242/2003.). River Basin Management Plans (RBMP) set out measures to achieve the aims of the WFD, to ensure that by 2015 water bodies within England and Wales achieve 'Good Status'.

Good status is defined as being 'Good Ecological Status' for natural water bodies and 'Good Ecological Potential' for Heavily Modified Water Bodies (HMWB) or artificial waterbodies. Overall ecological status (or potential) is made up of a number of biological, hydromorphological and chemical quality characteristics called quality elements. The overall status is determined by the lowest quality element status. The Environment Agency is the competent authority in England and Wales responsible for delivering the WFD. The WFD needs to be taken into account in the planning of all new activities in the water environment.

The Severn River Basin District RBMP (2009) incorporates the Bath & North East Somerset authority area (EA, 2009a). The RBMP stated that:

- Four water bodies out of the 27 (15%) covering the Main Rivers in Bath & North East Somerset are in Good Ecological Status/Potential. Eight out of the 27 (30%) are in poor ecological status/potential.
- 22% of surface water bodies in the Bristol Avon and North Somerset catchment (of which Bath & North East Somerset is part) have good or better ecological status.

- 78% of groundwater water bodies in the Bristol Avon and North Somerset catchment have good chemical status.
- 75% of groundwater water bodies in the Bristol Avon and North Somerset catchment have good quantitative (i.e. water level) status.

Nationally in 2011, 33% of water bodies in England had a Good Ecological Status (EA 2012a), which means that the ecological status of waterbodies in Bath & North East Somerset are potentially below the national average as only 15% have Good Ecological Status/Potential.

The Severn RBMP included a target for the percentage of surface water bodies in Bristol Avon and North Somerset catchment with Good Ecological Status to increase by 27% being in good or better ecological status by 2015.

The Chew Valley Lake is a heavily modified water body and is classified in the RBMP as having Poor Ecological Potential.

The first cycle of the RBMP was completed in 2015, with new RBMPs awaited. It is not yet known whether targets in the current Severn RBMP have been met.

### Surface Water

Bath & North East Somerset contains two notable lakes, Chew Valley and Blagdon Lake. Chew Valley Lake is a freshwater reservoir and functions as a major water source for the Bristol Area. Some of the water in the lake is used to maintain the flow in the River Chew. The lake is an important wildlife and recreational resource. Blagdon Lake provides drinking water and acts as a fishing lake and nature reserve. The Kennet and Avon Canal flows through the eastern part of Bath & North East Somerset.

### Ground Water

Six aquifers in the Bath & North East Somerset area are at risk of groundwater pollution due to the leaching potential of their overlain soil. The only hot springs found in Britain are located in the City of Bath to the north of the River Avon. At this location, thermal water rises up from three hot springs (King's Spring, Hetling Spring and Cross Bath Spring) through a geological fault in the limestone beneath (Bath & North East Somerset Council, 2012)

## Assessment Results

### *Likely Effects*

There is potential for the actions identified in the Local Flood Risk Management Strategy to cause indirect pollution of WFD water bodies, leading to a reduction in ecological status of water bodies and contributing to failures in regional targets. Nevertheless, any negative effects are likely to be of low probability and very low magnitude, as any engineering scheme will be designed to ensure compliance with the WFD and any construction activities will be done under the Environment Agency's Pollution Prevention Guidelines. As a result, no significant effects upon the ecological status of WFD waterbodies are anticipated. Indeed, the implementation of effective flood risk management and SuDS throughout the district would potentially positively contribute to achieving WFD water quality targets (as noted below).

There is likely to be a direct, low magnitude positive effect on surface and ground water quality across the district arising from the implementation of the Local Flood Risk Management Strategy due to a likely reduction in the mobilisation of pollutants. It is likely these effects would be realised in the short term and would continue to benefit water quality in the long term. Effective flood risk management would reduce the likelihood of contaminated land, sewerage networks and agricultural land being flooded, which would subsequently reduce the mobilisation of pollutants, fertilisers and pesticides and their discharge into nearby watercourses and groundwater bodies. The Local Flood Risk Management Strategy Action Local Flood Risk Management Strategy-4c is for the publication of regional SuDS guidelines and an approval process, which will ensure the proper implementation of SuDS across Bath & North East Somerset. These combined measures will promote the sustainable use of water as a resource and is anticipated to have a significant effect upon the overall enhancement of water quality in Bath & North East Somerset through the reduction in diffuse pollution from urban runoff. In terms of cumulative effects from associated plans and projects that also aim to improve water quality and resources, good communication, collaboration of efforts and information sharing between partners within and outside Bath & North East Somerset would further contribute to the improvement of water quality and resources for the entire Bristol Avon catchment - while managing flood risk in the most effective way.

There is the potential for short term localised negative effects on surface and ground water quality and resources from construction of engineering solutions arising from the Local Flood Risk Management Strategy. The use of certain hard engineering solutions or land disturbance in flood risk management may adversely affect the physical nature of water bodies in Bath & North East Somerset and subsequently their water quality and resource capacity. This may lead to indirect effects upon ecology and geomorphological regime. For instance, hard structures or barriers in watercourses designed to control flow and reduce flood risk can affect the supply and transport of sediments. This in turn can indirectly affect the watercourse's water quality and associated ecology (Environment Agency 2012). Due to the localised nature of these likely negative upon water quality, they are not anticipated to be significant.

### *Proposed Mitigation Measures*

To minimise effects on water quality and resources, capital works or maintenance implemented by the Council, its partners or developers under the Local Flood Risk Management Strategy will be done in compliance with the Environment Agency's Pollution Prevention Guidelines. Where appropriate, flood defence consent or land drainage consent will be obtained for engineering schemes. Environmental issues including flood risk, wildlife conservation, fisheries and reshaping of rivers and landscape must be considered in the process of obtaining consents. Larger projects may be subject to statutory Environmental Impact Assessment which would identify any additional mitigation (for example SuDS) needed to minimise the risk of pollutants entering a watercourse or water body as a consequence of construction work undertaken.

The consideration of measures that incorporate natural processes into flood risk management (e.g. the creation of wetlands for SuDS) may benefit water quality and positively contribute to the achievement of the WFD targets. These measures may avoid the negative impacts associated with other hard engineering solutions in flood risk management and instead enhance current water quality in the medium to long term in Bath & North East Somerset. Good communication between partners in the Bristol Avon catchment may facilitate opportunities to effectively manage flood risk, while benefiting water quality, across the catchment.

The Local Flood Risk Management Strategy has outlined the preferred surface water management strategy following the development of the regional Surface Water Management Plan. This plan has led to the improved management of surface water flood risk in Bath & North East Somerset which in turn is likely to result in a reduction in the amount of pollution entering watercourses. The Surface Water Management Plan provides a framework for the management of flood risk and water quality.

### *Proposed Monitoring*

The actual effects arising from the implementation of Local Flood Risk Management Strategy on water quality and resources can be monitored by measuring the following indicators:

- Changes in the water quality and ecological / chemical status of watercourses and water bodies in Bath & North East Somerset; and
- Changes in the quantitative status (i.e. water levels) of water bodies and watercourses in Bath & North East Somerset

The EA undertake an annual water quality monitoring programme for the main rivers, lakes, surface water and groundwater in the Severn River Basin District (of which Bath & North East Somerset is part of). This monitoring programme is a function of the WFD and will continue on until 2027 over three six-year cycles, the first of which ends in 2015. It assesses the current condition of watercourses and water bodies in England and Wales and identifies where improvements need to be made (Environment Agency 2009a). British Waterways also contributes to this monitoring programme. The Drinking Water Inspectorate (DWI) is responsible for regulating drinking water quality in England and Wales. The water suppliers Wessex Water and Bristol Water are responsible for monitoring the water quality of their sites and the environmental impacts associated with their activities. They also must provide monthly reports to the DWI.

It is anticipated that current and future monitoring programmes would sufficiently monitor any potential effects on water quality and resources arising from the implementation of the Local Flood Risk Management Strategy. These monitoring programmes are completed by other organisations outlined above and not Bath & North East Somerset. However, the sharing of information will ensure that Bath & North East Somerset will be informed of any adverse effects identified.

## 5.2.2 Flood Risk

### Baseline Conditions

Information on current baseline conditions for flood risk in Bath & North East Somerset was collected and presented in Section 4.2 of the Scoping Report. Since the Scoping Report, the Surface Water Management Plan has been produced along with the Level 2 Strategic Flood Risk Assessments for Bath (Captia Symons, 2009a and 200b), Keynsham (Capita Symonds 2009c), Midsomer Norton and Radstock (Capita Symonds 2009c). The paragraphs below provide a summary of the flood risk in Bath & North East Somerset:

According to the Preliminary Flood Risk Assessment (PFRA) river flooding accounts for approximately 82% of the total recorded flood incidents in Bath & North East Somerset. Surface water flooding is estimated to account for the remaining 18% (Bath & North East Somerset, 2011).

The main areas listed in the Bath & North East Somerset SWMP affected by surface water flooding are Chew Magna, West Harptree, Compton Martin, Priston and Midsomer Norton. The SWMP identifies 57 Wet Spots in Bath & North East Somerset where action is required to address flood risk.

Critical areas at risk from flooding from main rivers, sewers, surface water, groundwater and artificial sources are Bath, Keynsham, Midsomer Norton and Radstock.

### Assessment Results

#### *Likely Effects*

There are likely to be significant direct, positive effects on flood risk management in Bath & North East Somerset arising from the implementation of the Local Flood Risk Management Strategy. The Local Flood Risk Management Strategy proposes actions to greatly increase the understanding of, and response to, flood risk within Bath & North East Somerset, and control flood risk through structural measures as well as improved water resources management. The effect is likely to be felt through the Bath & North East Somerset Area in the long term. It should be noted that there is uncertainty over whether water resources will be consistently managed across the district to reduce flood risk. As noted in Section 3.5 of the Local Flood Risk Management Strategy, under common law, land or property owners are responsible for the drainage of their own land. Therefore it is not possible to guarantee

that landowners will take measures to control runoff rates in carrying out their land drainage practices.

The implementation of the Local Flood Risk Management Strategy could result in engineering schemes constructed within the flood plain; this could lead to negative in-direct effects on flood plain storage and flood water movement. This effect is not considered to be significant as the likelihood of its occurrence is very low considering the nature of the actions proposed in the Strategy. Any potential project effects would ensure any effects are mitigated via the implementation of flood risk assessments.

One of the Local Flood Risk Management Strategy Objectives is to prevent inappropriate development which creates or increases flood risk. The actions which achieve this objective will lead to a direct, positive, long term effect on flood risk management throughout Bath & North East Somerset.

This Local Flood Risk Management Strategy is being developed alongside similar planning initiatives to manage and alleviate flood risk (for example Multi-agency flood plans and Catchment Flood Management Plans), summarised in Section 1.6 of the Strategy. The cumulative effect of these initiatives being enacted in combination will cause the magnitude and probability of effects upon flood risk to be increased, with resulting collective improvements in flood risk management on a regional scale.

### Proposed Mitigation Measures

As the potential significant effects arising from the implementation of the Local Flood Risk Management Strategy on flood risk are all positive, it is not necessary to propose mitigation measures.

### Proposed Monitoring

The actual effects arising from the implementation of Local Flood Risk Management Strategy on flood risk can be monitored by measuring the following indicators:

- Changes in the number of incidences of flooding in Bath & North East Somerset and their sources;
- Changes in the number of residential or non-residential properties and critical services at risk of flooding;

- Number of flood defence schemes developed;
- Number of Sustainable Drainage Schemes (SuDS) implemented since the publication of Local Flood Risk Management Strategy

The monitoring will be completed by Bath & North East Somerset Drainage and Flooding Team and other organisations such as the Environment Agency. If any adverse effects are identified by other organisations or individuals, Bath & North East Somerset FRM and Drainage Team will be informed, for example through the Local Resilience Forums or Strategic Flood Board & Operational Working Group that are being set up as part of the Local Flood Risk Management Strategy.

### 5.2.3 Population and Human Health

#### Baseline Conditions

Information on current baseline conditions for population and human health in Bath & North East Somerset was collected and presented in Section 4.3 of the Scoping Report. This information has been updated where applicable in the following paragraphs:

The 2011 census states that the population of Bath & North East Somerset is approximately 179,700 residents. Extrapolating from recent population increases, it is anticipated that the population of Bath & North East Somerset will rise by 12% to 198,800 people by 2026. Bath & North East Somerset has a higher population density than the rest of the south west of England and England as a whole (South West Observatory, 2012). The most densely occupied wards are in Bath (i.e. Abbey, Westmorland, Kingsmead and Walcot).

The health profile of Bath & North East Somerset is positive when compared to the national health profile of England. Bath & North East Somerset is also considered to be one of the least deprived authorities in England. However the areas of Twerton West, Whiteway, Twerton, Fox Hill North and Whiteway West are considered deprived areas when looking at a more local scale (Bath & North East Somerset, 2011).

## Assessment Results

### *Likely Effects*

There are likely to be significant, permanent direct benefits from implementation of the Local Flood Risk Management Strategy on human health in Bath & North East Somerset. Effects will result from the improved management of flood risk and better education regarding property level flood protection measures. This in turn will result in less flood events causing significant property damage which can be stressful and potentially lead to injury.

There will also be positive, medium magnitude effects from the indirect effects of flooding through the improved management of sewer flooding preventing the risk of untreated water entering homes which could lead to ill health. Reducing flooding in areas could mean that the risk of potable water supplies being affected is minimised.

### Proposed Mitigation Measures

As the potential significant effects arising from the implementation of the Local Flood Risk Management Strategy on population and human health are all positive, it is not necessary to propose mitigation measures.

### Proposed Monitoring

Population and human health can be monitored by measuring the following indicators:

- Changes in the occurrence and severity of flooding events;
- Changes in the number of residential and commercial properties at risk of flooding;
- Changes in the number of flood related health issues, injuries and fatalities.

It is anticipated that current and future monitoring programmes would sufficiently monitor any potential effects on population and human health arising from the implementation of the Local Flood Risk Management Strategy. These monitoring programmes will be completed by other organisations as well as Bath & North East Somerset Drainage and Flooding Team.

## 5.2.4 Biodiversity and Landscape

### Baseline Conditions

Information on current baseline conditions for biodiversity and landscape in Bath & North East Somerset was collected and presented in Section 4.3 of the Scoping Report. This baseline information has been updated following changes to the local planning framework and the implementation of the Post-2010 Biodiversity Framework', (2012) which has succeeded the UK Biodiversity Action Plan. The paragraphs below provide a summary of the identified receptors.

#### Landscape Character

Bath & North East Somerset is a richly varied District in the South West of England. It stretches from the edge of Bristol, south into the Mendip Hills and east to the southern Cotswolds Hills and Wiltshire border. Over 90% of the district is rural and it contains 47 rural parishes.

The District's main urban centre is the city of Bath which is a key economic centre and a World Heritage Site, designated for its rich cultural and built heritage.

Keynsham is a significant town in Bath & North East Somerset which has retained its identity and is surrounded by countryside and is protected by the Bristol / Bath Green Belt.

The Somer Valley houses around 25% of the population of Bath & North East Somerset and covers the urban areas of Midsomer Norton, Westfield and Radstock, together with a rural hinterland containing the principal villages of Peasedown, St John and Paulton. The Somer Valley was formally part of the North Somerset Coalfield and retains a rich industrial heritage.

#### Areas of Outstanding Natural Beauty (AONB)

Approximately one third of Bath & North East Somerset is within the Cotswolds AONB and Mendip Hills AONB.

#### Habitats and Species

Bath & North East Somerset Planning Services has a key role in protecting and enhancing the environmental through the Wildthings Partnership. The partnership has developed a long list of species and habitat within Bath & North East Somerset. The short list of priority

habitats and species in Table 5.6 has been agreed with the Species and Habitats Working Group.

**Table 5.6: Short list of Priority Species and Habitats**

| <u>Species</u>  | <u>Habitats</u>   |
|---|---|
| <ul style="list-style-type: none"> <li>• All bat species</li> <li>• Bath asparagus</li> <li>• Bee-fly</li> <li>• Blue carpenter bee</li> <li>• Chalkhill blue butterfly</li> <li>• Dormouse</li> <li>• Great crested newt</li> <li>• Red hemp-nettle</li> <li>• Skylark</li> <li>• Water vole</li> <li>• White clawed crayfish</li> </ul> | <ul style="list-style-type: none"> <li>• Ancient and / or species rich hedgerows</li> <li>• Broadleaved woodlands</li> <li>• Post-industrial sites</li> <li>• Species-rich arable farmland</li> <li>• Species-rich grassland</li> </ul> |

Statutory Nature Conservation Sites

Designated sites within Bath & North East Somerset include;

- The Bath and Bradford on Avon Bats Special Area of Conservation (SAC)
- North Somerset and Mendip Bats SAC
- Chew Valley Lake Special Protection Area (SPA)
- 22 Sites of Special Scientific Interest (SSSI),
- Seven Local Nature Reserves.

According to the PFRA (Bath & North East Somerset, 2011):

- The Chew Valley Lake SPA and three SSSIs are at risk from future groundwater flood events;
- The Bath and Bradford on Avon and North Somerset and Mendips Bat SACs, the Chew Valley Lake SPA and 17 SSSIs are at risk from surface flooding in a 1 in 200 year (annual probability of occurrence) event.
- The Chew Valley Lake SPA and six SSSIs are at risk from flooding from ordinary watercourses in a 1 in 100 year (annual probability of occurrence) event.

### Ancient Woodlands

Ancient woodlands are found in scattered locations across Bath & North East Somerset. They account for approximately 1.1% of the total area.

### Green Belt

Approximately two thirds of the overall area of Bath & North East Somerset is classed as the Avon Green Belt. The Green Belt circles the city of Bath and protects the setting of the World Heritage Site. Keynsham is isolated from Bristol by the Bristol/Bath Green Belt.

## 5.2.5 Assessment Results

### *Likely Effects*

There are unlikely to be any significant effects from the implementation of the Local Flood Risk Management on the landscape of Bath & North East Somerset or the AONBs. This is due to the fact that the proposed actions which may lead to engineering schemes are of a very small scale and are likely to be located within highways and therefore the probability and magnitude of any effect is considered to be very low.

There could be negative effects on species and their habitats through the implementation of engineering schemes. These effects could be either very short term (e.g. dispersal, damage or death) to medium term (e.g. loss of bat commuting corridor whilst reinstatement planting stabilises) and could affect species of medium sensitivity; however, negative effects would be a low probability and magnitude considering the limited scale of the engineering schemes which are likely to occur through the implementation of the Strategy.

There are likely to be positive, long term effects on biodiversity associated with the implementation of the Local Flood Risk Management Strategy. The use of natural flood

alleviation measures such as SuDS will provide direct opportunities to develop new habitats and enhance biodiversity across the district, with associated positive effects of medium magnitude. This will enable a more sustainable approach to flood risk management and an effective use of resources in Bath & North East Somerset – i.e. coupling flood risk management with improvements in biodiversity.

There will be significant positive effect on statutory nature conservation sites from measures to manage flood risk as part of the Local Flood Risk Management Strategy. The statutory nature conservation sites within Bath & North East Somerset are of medium sensitivity and it is known from the PFRA that many of the SSSIs, the Chew Valley SPA, the Bath and Bradford on Avon Bats SAC and the North Somerset and Mendip Bats SAC are at risk from local flooding; therefore the probability of permanent positive effects is high and magnitude is medium.

Managing flood risk could lead to a positive, long term effect from reduction in the risk of pollution entering watercourses indirectly i.e. from highways which can often be sources of hydrocarbon pollutants or from sewer floods. The probably of this effect being realised is high as the actions in the Local Flood Risk Management Strategy are focussed around highway flooding issues and sewer flooding.

### *Proposed Mitigation Measures*

Any significant engineering schemes will require consent, a proportionate environmental assessment and potentially a statutory Environmental Impact Assessment (EIA) before commencement. The need for a statutory EIA will be decided via a screening exercise to determine the likelihood of significant impacts resulting from a scheme. If any impacts are identified, mitigation strategies will be developed to ensure that there are no residual effects on species and habitat, for example by avoiding the area or through ecological supervision.

Although effects are considered unlikely, if engineering schemes are required in the AONBs, the respective AONB partners must be consulted in order to ensure that no potential negative impacts on Bath & North East Somerset's landscape character and AONBs occur.

### *Proposed Monitoring*

Biodiversity can be monitored by measuring the following indicators:

- Numbers and distributions of the short list of Priority Species and Habitats;
- Status of SACs, SPA, SSSIs, Ancient Woodlands and Nature Reserves within Bath & North East Somerset; and
- Number of designated sites potentially at risk from future flood event.

It is anticipated that current and future monitoring programmes would sufficiently monitor any potential effects on biodiversity and landscape character arising from the implementation of the Local Flood Risk Management Strategy. These monitoring programmes will be completed by organisations such as Natural England and the Bath & North East Somerset Planning Department.

Predicted impacts on the designated cultural heritage sites which form part of the landscape character of Bath & North East Somerset will be monitored using the impacts described in Section 5.2.6.

The monitoring of AONBs is set out in the management plans produced by the respective AONB partnerships for the Cotswolds and Mendip Hills.

## 5.2.6 Cultural Heritage

### *Baseline Conditions*

Information on current baseline conditions for cultural heritage in Bath & North East Somerset was collected and presented in Section 4.5 of the Scoping Report. English Heritage (now Historic England) felt that the baseline conditions given in the Scoping Report required further development (as noted in the comments on the Scoping Report provided in Appendix A. Therefore the baseline conditions have been reviewed below and a new plan has been produced to show the geographical spread of cultural heritage features within the district; the plan is provided in Appendix D.

### Bath World Heritage Site

The city of Bath was designated in 1987 as a UNESCO World Heritage Site owing to its special culture and historic interest. The City of Bath World Heritage Site Management Plan (The City of Bath World Heritage Site, 2010) seeks to protect the Outstanding

Universal Value of the site and its setting. The significance of the World Heritage Site derives from the city’s Hot Springs, its Roman Archaeology, Georgian Town Planning; Georgian Architecture; and the green setting of the City within a landscape bowl. The World Heritage Site status provides the city of Bath with international importance and all proposed plans, programme and projects must ensure that its historical and cultural features are not undermined. According to the PFRA, the World Heritage Site is at risk from surface water, ordinary watercourse and groundwater flooding (Bath & North East Somerset 2011).

Conservation Areas

There are 36 designated Conservation Areas in the Bath & North East Somerset district. These are listed in Table 5.7 below.

Conservation Areas are *'areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance'* - Planning (Listed Buildings and Conservation Areas) Act 1990. Planning permission is required for certain external works to dwellings which would not normally be required elsewhere. Consent is also required for tree works in Conservation Areas. .

**Table 5.7 Conservation Areas in Bath & North East Somerset**

|                             |                               |   |
|-----------------------------|-------------------------------|---|
| Bath                        | Fresford (incl Sharpstone)    | Queen Charlton                          |
| Bathampton                  | Hinton Blewett                | Radstock (incl. Braysdown/<br>Clandown) |
| Batheaston (incl. Northend) | Hinton Charterhouse           | Saltford                                |
| Bathford                    | (incl.The Green)              | Southstoke                              |
| Charlcombe                  | Kelston                       | Stanton Drew                            |
| Chew Magna                  | Keynsham (Dapps Hill)         | Timsbury                                |
| Chew Stoke                  | Keynsham (High Street)        | Ubley                                   |
| Claverton                   | Midsomer Norton & Welton      | Upper Swainswick                        |
| Combe Hay                   | Monkton Combe                 | Wellow                                  |
| Compton Martin              | Newton St Loe                 | West Harptree                           |
| Corston                     | North Stoke                   | Woollard                                |
| East Harptree               | Paulton (incl. Paulton Basin) |   |
| Englishcombe                | Pensford                      |   |

National Heritage Sites

There are a significant number properties and items in Bath & North East Somerset including in the National Heritage List for England (as shown on the plan in Appendix D).

These can be divided into:

- 3,728 Listed Buildings
- 57 Scheduled Monuments
- 16 registered Parks and Gardens
- One Historic Battlefield

Historic England produces an annual ‘heritage at risk’ survey, which assesses the current condition of cultural interest features in England. The findings of this survey contribute to official government statistics. According to the risk register, a total number of 25 cultural heritage features in Bath & North East Somerset are considered to be ‘at risk’, i.e. in poor condition and vulnerable to further deterioration.

The PFRA, using data supplied by the Environment Agency, assessed the number of heritage sites at risk from future flood events in Bath & North East Somerset (excluding flooding from Main Rivers). The results of the assessment are given in Table 5.8.

**Table 5.8 Potential Number of National Heritage Sites in Bath & North East Somerset at risk from future flood events in Bath & North East Somerset**

| Feature Potentially impacted | Data set                                  |  |   |
|------------------------------|---|--|---|
|                              | Flood Map for Surface Water 1 in 200 deep | Flood Map Zone 3 Ordinary Watercourses | Areas Susceptible to Groundwater Flooding |
| Scheduled Monument           | 18  | 3                                      | 4   |
| Listed Building              | 148                                       | 11                                     | 597                                       |
| Registered Parks and Gardens | 10  | 1                                      | 5   |

## Assessment Results

### *Likely Effects*

Structural engineering schemes could result in a negative effect from direct damage to sites which are features of the World Heritage Site, or could lead to negative in-direct effects from changing the setting of these features. For example, without mitigation an engineering project could lead to damage of an unknown archaeological site leading to a direct, long term, high magnitude effect. The probability of this effect occurring is low as the wet spots where action is proposed in the World Heritage Site are within roads primarily. The setting of the landscape bowl of Bath could be affected by tree removal to enable a scheme. This effect is thought to have a low probability considering the nature of the proposed actions and the magnitude of change is very low as removing trees will not change the bowl shape of the City of Bath which is a geographical feature.

The World Heritage Site and its features will benefit from continued and increased protection from flooding. The effect will be highly probable and have a medium magnitude as areas in the centre of Bath where flood risk management measures are proposed lie within the World Heritage Site (e.g. Larkhall, Bathwick, South Twerton).

Engineering schemes could, if inappropriately implemented, lead to a negative impact on Conservation Areas in BANES which have a medium sensitivity. Engineering schemes are proposed in the following 12 Conservation Areas: Bath; Batheaston (incl. Northend); Bathford; Chew Magna; Chew Stoke; Keynsham; (Dapps Hill); Keynsham (High Street); Midsomer Norton & Welton; Paulton (incl. Paulton Basin); Radstock (incl. Braysdown/Clandown); Timsbury; and West Harptree. Effects from the disturbance to structures or removal of trees may occur, however any effects are considered to be insignificant, with a low probability and magnitude, considering the location of the wet spots where schemes may result and the likely scale of proposed works. .

There is likely to be a positive effect on National Heritage Sites arising from the implementation of the Local Flood Risk Management Strategy. A reduction in flooding and its severity would reduce the likelihood of damage to cultural heritage features (e.g. listed buildings, scheduled monuments and registered parks and gardens) occurring.

There is the potential for negative effects on cultural heritage features arising from the implementation of the Local Flood Risk Management Strategy. No scheduled monuments,

registered parks and gardens or listed buildings are likely to be directly affected by structural engineering works. Nevertheless, vibration caused by construction activities at wet spots could potentially cause indirect damage to cultural heritage features (notably listed buildings) in proximity to proposed works. Any effect would be long term and of a high magnitude and probability.

#### *Proposed Mitigation Measures*

Consents must be obtained from Bath & North East Somerset Planning Department prior to undertaking construction work for any engineering schemes which could affect Conservation Areas. In addition, Listed Building Consent is required where proposals are likely to affect a listed building. This procedure of obtaining consent will reduce the likelihood of construction works negatively impacting any cultural heritage features. A statutory Environmental Impact Assessment would be required for major works or works that could significantly impact a sensitive area.

Appropriate mitigation measures would be identified as part of consenting, for example, avoidance of the heritage asset or sensitive design and construction to complement the heritage offered by the site.

#### *Proposed Monitoring*

The effects of the Local Flood Risk Management Strategy on cultural heritage can be monitored by measuring the following indicator:

- Numbers of cultural heritage features at risk from flooding i.e. listed buildings, scheduled monuments, registered parks and gardens.

It is anticipated that current and future monitoring programmes would sufficiently monitor any potential effects on cultural heritage arising from the implementation of the Local Flood Risk Management Strategy. These monitoring programmes will be completed by the Environment Agency and not Bath & North East Somerset. However, Bath & North East Somerset will be notified if any adverse effects are identified.

## 5.2.7 Climatic Factors

### *Baseline Conditions*

Information on current baseline conditions for climatic factors in Bath & North East Somerset was collected and presented in Section 4.3 of the Scoping Report. The paragraphs below provide a summary of the identified receptors.

### Climatic Factors

By 2050 (South-West England) under the medium emissions scenario (UK Climate Change Projections 2009) the following changes in climatic factors are predicted:

- Average summer temperature to increase by 2.7°C;
- Average winter temperature to increase by 2.1°C;
- Average summer rainfall rate decrease by 20%; and
- Average winter rainfall rate to increase by 17%.
- Sea level at Cardiff Bay and the Severn Estuary is predicted to rise by 21.8cm.

Climate change is likely to result in an increase in the occurrence of more extreme flood events across the UK. Climate change may indirectly result in water scarcity issues as a consequence of decreased rainfall levels and increased temperature in the summer time.

### Carbon Footprint

The carbon footprint of Bath & North East Somerset in 2008 was calculated to be over 1 million tonnes of CO<sub>2</sub> (or 5.8 tonnes of CO<sub>2</sub> per person). This had dropped by 7.9% since 2005 despite an increase in population size (Bath & North East Somerset, 2009).

## Assessment Results

### *Likely Effects*

There is unlikely to be any effects on climatic factors from the implementation of the Local Flood Risk Management Strategy.

The Local Flood Risk Management Strategy includes actions to ensure that development takes into account the potential risk of changes in climatic factors for example, the

promotion of SuDS which could manage increased surface run off from potential increased frequency of extreme weather events.

### *Proposed Monitoring*

Impacts on climatic factors will be monitored through the future updates of the Local Flood Risk Management Strategy, which will consider any changes in flood risk in Bath & North East Somerset and the latest government climate change predications.

## **5.2.8 Material Assets**

### *Baseline Conditions*

Information on current baseline conditions for material assets in Bath & North East Somerset was collected and presented in Section 4.3 of the Scoping Report. The paragraphs below provide a summary of the identified receptors.

#### Housing

There is a shortage of housing in Bath & North East Somerset which is due to be met by the construction of 11,205 new dwellings to be built by 2026.

#### Economy

The 2011 census reveals that 5.5% of the local working population are unemployed which is very slightly less than the national average which was 5.6% from April 2015 to June 2015 (Office of National Statistics, 2015)

The majority of employed people living in Bath & North East Somerset work in public sector related activities, with other important sectors being retail, leisure and tourism. This is to be expected due to the rich cultural heritage of Bath.

The large majority of people working in Bath & North East Somerset do so in Bath, with others working in rural areas and Keynsham.

#### Mineral Resources and Extraction

Bath & North East Somerset is geologically complex with a number of bedrock types. The main commercial mineral extracted in Bath & North East Somerset is limestone. One mine is currently active near Limpley Stoke and one has been stabilised near Combe Down. There are also coal resources which could be extracted using surface mining techniques. There are two designated Mineral Consultation Ares in Bath & North East Somerset which

are safeguarded from development that could negatively impact the commercial value of the mineral resource.

### Soils

The main soil type in Bath & North East Somerset is clayey soils with a high organic content. These soils are characteristic of poorly drained area and have an inherent risk of agricultural run-off. Also present are well drained calcareous soils which have a low risk of agricultural run-off. Pockets of slowly permeable calcareous clayed soils, reddish loamy soils and Strategic Environmental Assessments on ally waterlogged fine loam clayey soils are also found.

### Waste Management

Currently there are two waste transfer stations, one railhead, two materials recycling facilities, three recycling centres and two refuse collection and cleaning depots. At present, Bath & North East Somerset does not dispose of any of its waste in the local authority area and instead the waste is compacted at the waste transfer station in Bath and transferred to landfills in Buckinghamshire, Somerset, South Gloucestershire, Somerset and Wiltshire.

### Transport Infrastructure

The city of Bath is accessible by bus and car via the A4, A36 and A46 and links are provided to the M4 motorway via the A46. To the southwest of Bath the A368, A39 and A367 are major roads. Bath & North East Somerset has a good rail service covering the north, north-east and east.

## **Assessment Results**

### *Likely Effects*

The Local Flood Risk Management Strategy will improve the flood risk management in areas allocated for development in the Core Strategy (Bath & North East Somerset, 2014). This will lead to a positive, long term effect on the delivery of housing.

The effective management of flood risk in Bath & North East Somerset will lead to positive, long term, medium magnitude effects on the local economy through increasing confidence for new investments and expansion. Managing flood risk will also allow the continued extraction of minerals at Limpley Stoke. This effect is of a high probability and magnitude.

There are unlikely to be significant effects upon fertility of agricultural fields from reduced flooding. This is because the implementation of actions to address wet spots will not affect the amount of flooding in agricultural fields as they are primarily targeted in areas where flooding affects highways. In addition any effects from soil erosion are not likely to be significant as the magnitude of change will be very low following the implementation of the strategy and there is a very low probability of the effect occurring.

There will be positive, direct effects upon waste management through the management of flood risk in Bath, Midsomer Norton and Keynsham, as waste management sites will be able to continue operating.

Further positive effects will result from effective flood risk management throughout the road infrastructure throughout Bath & North East Somerset. Reducing the amount and duration of road closures during flooding will enable the population to mobilise throughout the county maintaining society. This effect is likely to occur as the wet spots are located on highways so is of a high probability. Not all the roads in Bath & North East Somerset are affected so the magnitude of change will be low.

### Proposed Mitigation Measures

As the potential significant effects arising from the implementation of the Local Flood Risk Management Strategy on population and human health are all positive, it is not necessary to propose mitigation measures.

### Proposed Monitoring

Material Assets can be monitored by measuring the following indicators:

- Changes in the numbers/area at flood risk of properties; land and transport infrastructure.

It is anticipated that current and future monitoring programmes would sufficiently monitor any potential effects on material assets arising from the implementation of the Local Flood Risk Management Strategy. The monitoring programmes will be completed by other organisations as well as Bath & North East Somerset Drainage and Flooding Team.

## 6 Compatibility testing between Local Flood Risk Management Strategy and Strategic Environmental Assessment objectives

### 6.1 Introduction

Testing the compatibility of the Local Flood Risk Management Strategy objectives against the Strategic Environmental Assessment objectives falls into Stage B of the Strategic Environmental Assessment process (Task B2). It helps to identify any potential synergies or inconsistencies between the Local Flood Risk Management Strategy and Strategic Environmental Assessment objectives.

A compatibility assessment has been performed during development of the Local Flood Risk Management Strategy to determine how compatible the Local Flood Risk Management Strategy objectives are with the Strategic Environmental Assessment objectives.

### 6.2 Testing the compatibility of Local Flood Risk Management Strategy objectives against Strategic Environmental Assessment objectives

The compatibility of the Local Flood Risk Management Strategy objectives (listed in Section 1 1) is discussed in relation to each of the Strategic Environmental Assessment objectives below. Table 6.1 summarises the compatibility assessment.

#### **SEA Objective 1: Protect and enhance the ecological and chemical status of watercourses and water bodies in BANES in accordance with Water Framework Directive, whilst promoting the sustainable use of water as a natural resource**

As noted in Section 3.5 of the Local Flood Risk Management Strategy, under Objective 2 to promote community awareness and build capability for appropriate action, *all property and land owners are encouraged to adopt good land use practices and adequately maintain their drainage systems to avoid surface-water runoff from causing problems for neighbouring property and land.* This measure would have the additional benefit of protecting and enhancing the ecological status of water bodies that might surface water would subsequently flow into. Nevertheless, as also noted in Section 3.5 of the Local Flood Risk Management Strategy, under common law, land or property owners are responsible

for the drainage of their own land. Therefore it is not possible to guarantee that landowners will take measures to protect the quality of waterbodies in carrying out their land drainage practices, which may result in the Local Flood Risk Management Strategy and Strategic Environmental Assessment objectives being incompatible in this instance.

It is assumed that the Council in its capacity as Planning Authority or Lead Local Flood Authority will ensure that capital works or maintenance implemented by the Council, its partners or developers under Local Flood Risk Management Strategy Objectives 3 and 4 are done in compliance with the Environment Agency's Pollution Prevention Guidelines. This measure will ensure compliance with the Strategic Environmental Objective to protect and enhance water quality of watercourses and waterbodies, and thereby ensuring compatibility of objectives.

**SEA Objective 2: Understand and manage flood risk from ordinary watercourses, surface water runoff, groundwater and artificial sources within BANES**

All of the Local Flood Risk Management Strategy objectives relate to maintaining and improving flood risk management, so it is anticipated that these will be compatible with this Strategic Environmental Assessment objective to a large extent. The only area of possible non-compliance is for drainage of properties and land. As noted for Objective 1 above, land and property owners are responsible for drainage of their own land, so it cannot be guaranteed that flood risk from surface runoff will be managed effectively.

**SEA Objective 3: Maintain and enhance a positive health profile for BANES**

All of the Local Flood Risk Management Strategy objectives are compatible with this Strategic Environmental Assessment objective as they all offer opportunities to enhance the health and wellbeing of people living and working in BANES. The actions to be implemented under the Local Flood Risk Management Strategy will improve the management of flood risks, which will lead to reduced stress, injury and / or ill health caused as a result of actual flooding or the perceived risk of flooding.

**SEA Objective 4: Protect and enhance biodiversity and geodiversity across BANES especially in relation to statutory and non-statutory designated sites. Special consideration to be given to priority species**

Only the Local Flood Risk Management Strategy objectives with proposed structural actions for capital work or maintenance (Objectives 3 and 5) are related to this Strategic Environmental Assessment objective, as they have potential to cause direct effects upon biodiversity and geodiversity. It is determined that through the good practice measures and mitigation that are proposed (identified in Section 5), diversity will be protected and enhanced, and these objectives will be mutually compatible.

**SEA Objective 5: Maintain and enhance characteristic landscape features, with special emphasis on the landscape features of AONBs located within BANES**

As with the biodiversity and geodiversity objective above, only the Local Flood Risk Management Strategy objectives with proposed actions for capital work or maintenance (Objectives 3 and 5) are relevant. As above, through the proposed good practice measures and mitigation, landscape features be maintained and enhanced, and these objectives will be mutually compatible.

**SEA Objective 6: Protect and enhance features that define the cultural heritage of BANES (i.e. listed buildings, scheduled monuments and registered parks and gardens)**

As above, through the proposed good practice measures and mitigation identified to protect and enhance cultural heritage assets, the objectives of the Local Flood Risk Management Strategy that propose structural works will be compatible with and this Strategic Environmental Assessment.

**SEA Objective 7: Manage, plan and adapt for the impacts of climate change**

There is clear compatibility of this Strategic Environmental Assessment objective and Local Flood Risk Management Strategy Objectives 3, 4 and 5, as several of the actions to be implemented these Local Flood Risk Management Strategy objectives will take account of the possible impacts of climate change.

**SEA Objective 8: Ensure that new development in BANES is located with respect to the sequential test**

This objective is directly compatible Local Flood Risk Management Strategy objective 4, which aims to prevent inappropriate development that creates increased flood risk. Local Flood Risk Management Strategy Objectives 1 and 2 are also compatible, as they seek to raise community awareness of flood risks through greater data availability and community-led forums; this greater awareness will encourage individuals and developers to target proposals for development in areas with lower risk of flooding.

**SEA Objective 9: Maintain and enhance accessibility to essential services across BANES by providing an efficient transport infrastructure.**

Local Flood Risk Management Strategy Objective 2 is compatible with this Strategic Environmental Assessment objective as the Local Highways Authority can issue notice under Section 163 of the Highways Act to adjoining occupiers to take measures to prevent, so far as is reasonably practicable, surface water from the premises flowing onto, or over, the footway of the highway.

Proposed capital works and maintenance actions to alleviate flooding under Local Flood Risk Management Strategy Objective 3 will improve accessibility to essential services in floodplain areas, and thereby ensure compatibility of this objective. In addition, it is anticipated that Local Flood Risk Management Strategy objective 4 will also be compatible as new development will incorporate Sustainable Drainage Systems where necessary to avoid increased flood risk to essential services and infrastructure.

**SEA Objective 10: Protect and enhance high quality agricultural land across BANES.**

In a similar way to Strategic Environmental Assessment Objective 9 above, it is anticipated that Local Flood Risk Management Strategy Objectives 3 and 4 will be compatible with this objective, as they will incorporate measures to reduce flooding and minimise runoff from new development. Nevertheless, as noted for Objective 1 above, land and property owners are responsible for drainage of their own land, so it cannot be guaranteed that flood risk from surface runoff to agricultural land will be managed effectively.

**Table 6.1 Compatibility of the Strategic Environmental Assessment objectives and Local Flood Risk Management Strategy Objectives**

| SEA OBJECTIVE \ LFRMS OBJECTIVE   | 1 Improve understanding of local flood risk | 2 Promote community awareness and build capability for appropriate action | 3 Manage local flood risk through capital /maintenance investment | 4 Prevent inappropriate development that creates or increases flood risk | 5 Improve flood preparedness, warning and ability to recover |
|---|---|---|---|--|--|
| 1 Protect and enhance the ecological and chemical status of watercourses and water bodies in BANES                          | 0   | +/-   | +   | +  | 0  |
| 2 Understand and manage flood risk  | +   | +/-   | +   | +  | +  |
| 3 Maintain and enhance positive health profile for BANES  | +   | +   | +   | +  | +  |
| 4 Protect and enhance biodiversity and geodiversity   | 0   | 0   | +   | +  | 0  |
| 5 Maintain and enhance characteristic landscape features,   | 0   | 0   | +   | +  | 0  |
| 6 Protect and enhance features that define the cultural heritage of BANES   | 0   | 0   | +   | +  | 0  |
| 7 Manage, plan and adapt for the impact of climate change.  | 0   | 0   | +   | +  | +  |
| 8 Ensure that new development in BANES is located with respect to the sequential test.                                      | +   | +   | 0   | +  | 0  |
| 9 Maintain and enhance accessibility to essential services across BANES by providing an efficient transport infrastructure. | 0   | +   | +   | +  | 0  |
| 10 Protect and enhance high quality agricultural land across BANES.   | 0   | + / -   | +   | +  | 0  |

**Key**

|     |   |
|-----|---|
| 0   | Not related                             |
| +   | Compatible                              |
| +/- | Compatibility depends on implementation |

### 6.3 Overall Compatibility

Several of the Local Flood Risk Management Strategy objectives were found to be unrelated to the Strategic Environmental Assessment objectives; particularly those that are linked with non-structural actions such as raising public awareness of flood risks. The majority of related Local Flood Risk Management Strategy objectives and Strategic Environmental Assessment objectives are compatible and will ensure maintenance and enhancement of environmental features whilst promoting structural works to manage flood risk. For Local Flood Risk Management Strategy Objective 2, as good land use practices to control runoff cannot be guaranteed, there is potential that compatibility will depend upon how this action is implemented by landowners.

## 7 Conclusion

### 7.1 Likely Environmental Effects Identified

The Strategic Environment Assessment has been undertaken alongside the development of the Local Flood Risk Management Strategy, as is described in Section 2. This has enabled the Strategy to develop what is considered to be the most environmental acceptable objectives and actions, which are currently in the draft Strategy document. This is evident in Section 5 of this report where the only significant negative impacts likely to arise from the Strategy are from any engineering schemes which could lead to effects on water resources, habitats and species and cultural heritage assets. Where engineering schemes are proposed, project level environment assessment will be undertaken to determine if impacts are likely and whether any mitigating actions are required. Through the numerous actions proposed to identify and manage flood risk, the Strategy is likely to result in a variety of positive effects on water quality, flood risk, human health, statutory nature conservation sites, cultural heritage sites, housing, economy, waste management and infrastructure.

Cumulative positive effects upon flood risk management are anticipated as this Local Flood Risk Management Strategy is being developed alongside similar planning initiatives to manage and alleviate flood risk (for example Multi-agency flood plans and Catchment Flood Management Plans). In addition, good communication, collaboration of efforts and information sharing between partners within and outside Bath & North East Somerset will lead to cumulative positive effects upon water quality and resources for the entire Bristol Avon.

### 7.2 Limitations Encountered

Limitations encountered during this Strategic Environmental Assessment process are outlined in Table 7.1 along with the proposed actions taken to reduce their potential effect. Implementation of these actions will increase the strength of this assessment. Section 1.3 details general limitations of the Strategic Environmental Assessment process.

**Table 7.1 Limitations encountered during the Strategic Environmental Assessment process and actions taken to reduce the effects of these**

| Strategic Environmental Assessment Task   | Limitation  | Effect of limitation  | Action   |
|---|---|---|--|
| Task A1: Review of Policies, Plans and Programmes (PPPs)                            | A thorough review has been completed of key PPPs; but this is unlikely to be definitive and it is possible that PPPs have been overlooked.      | Omission of effects associated with missed PPPs (especially cumulative effects) may not be assessed.  | Consultation process will address the possibility of gaps in the PPP review.   |
| Task A2: Collecting baseline information  | Gaps in current knowledge of Strategic Environmental Assessment topics.   | Data gathered during scoping and preparing this report may be no longer relevant.   | Update baseline dataset when new information becomes available from:<br>(a) Consultation process,<br>(b) Monitoring results.   |
| Task B6 and E1: Measures to monitor effects of Local Flood Risk Management Strategy | It may be difficult to ascertain changes in the future baseline attributable to the implementation of the Local Flood Risk Management Strategy. | A limited monitoring programme is proposed by Bath & North Somerset Council, so there is potential that it may not determine effects fully. | Good communication, and information sharing, across partners and the public will identify, and make available, all relevant monitoring programmes that may support the Strategy. |

### 7.3 Wider Environmental Benefits

Measures that incorporate natural processes into flood risk management such as Sustainable Drainage Systems (SuDS) will be promoted through the implementation of the Local Flood Risk Management Strategy. The use of SUDs within any engineering scheme proposed could help to mitigate the potential negative impacts of the Strategy on biodiversity and lead to additional enhancements such as the creation of wetland areas. In addition, promotion of SuDS into new and existing developments in Bath & North East Somerset would offer opportunities to enhance biodiversity and water quality while managing flood risk, creating a more sustainable area.

### 7.4 Next Steps in the Local Flood Risk Management Strategy

Following the consultation process, the findings of the Strategic Environmental Assessment will continue to contribute to the development of the Local Flood Risk Management Strategy. This will be undertaken via the following mechanisms:

- Consultation feedback on this Strategic Environmental Assessment will be integrated into the development, finalisation and adoption of the Local Flood Risk Management Strategy.
- The outcomes of the Strategic Environmental Assessment will be included in Chapter 5.4 of the Local Flood Risk Management Strategy 'Maximising the wider benefits of flood risk management'.
- The monitoring programmes outlined in the Strategic Environmental Assessment will be developed and implemented as part of the Local Flood Risk Management Strategy. Should significant adverse upon environmental receptors be identified through monitoring or as part of the periodic review of the Strategy, the associated Action Plan may need to be revised to minimise effects.

## 7.5 Consultation

This Draft Strategic Environmental Assessment Report is subject to a two month consultation process from the 1<sup>st</sup> September 2015 until the 26<sup>th</sup> October 2015 in accordance with the Strategic Environmental Assessment Regulations. The consultation will be undertaken alongside the consultation on the draft Local Flood Risk Management Strategy.

It will be sent to the statutory Strategic Environmental Assessment consultees (Environment Agency, Historic England and Natural England), and made available online for the general public. This consultation process is very important task in the Strategic Environmental Assessment process (Task D) as it will facilitate the:

- Opportunity for the consultation bodies and members of the public to express their opinions and concerns on the findings of the Environmental Report;
- Collection of more information applicable to the implementation of the Local Flood Risk Management Strategy on environmental, social and economic conditions in Bath & North East Somerset; and
- Assessment and consideration of environmental implications associated with the implementation of the Local Flood Risk Management Strategy.

We are specifically seeking comments on the following information contained within this Draft Environmental Report:

- Assessment of the environmental impacts
  - Proposed mitigation measures;
  - Proposed monitoring programmes.
- 

The feedback responses from this consultation process will be considered and used to make amendments to the final Environmental Report. These consultation responses and how these responses were considered will be described in the final Environmental Report as an appendix.

#### 7.5.1 How to comment on this Report

Please address any comments relating to this Draft Environmental Report to:

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Drainage and Flooding Team

Bath and North East Somerset Council

Keynsham Civic Centre

Market Walk

Keynsham

BS31 1FS.

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## Appendix A Scoping Report Consultation Comments

| Consultee  | Consultee Comments  | Bath and North East Somerset Response   |
|--|---|---|
| Environment Agency (July 2013; Dave Pring, Sustainable Places - Planning Specialist) | Overall the Environment Agency believed that the objectives in the Scoping Report were sufficiently broad enough to assess the impact of the Local Flood Risk Management Strategy on the environment.   | No action required  |
|  | The report contained a significant number of statistics however; there was no clear linkage of the baseline environmental to the purpose of the strategy.   | The baseline environment has been reviewed and updated as required.   |
|  | The Strategic Environmental Assessment should have a more defined understand of the process of soil erosion and the interactions/projected changes resulting from the Local Flood Risk Management Strategy.   | The impacts from the Local Flood Risk Management Strategy on soil erosion have been considered in Section 5.2.8   |
|  | More information should be included on the impact of water resources management on flood risk within the study area.  | Consideration of the effects on Water Resources is given in Section 5.2.1   |
|  | Further details will be required on how the Local Flood Risk Management Strategy will impact on individual species and habitats. The Environment Agency advice that the impact will need to be assess on a site by site basis.  | Impacts from implementing engineering schemes on individual species and habitats are unknown at this strategic stage. EIA will be undertaken on projects as required and these will include detailed ecological assessments.  |
|  | Six river sections are associated with white clawed crayfish in Bath and North East Somerset. The Bath and North East Somerset ecologist is aware of some safe haven (Arc) sites for crayfish in the region and plans to introduce crayfish as part of the South West Crayfish Project. | White clawed crayfish are listed on the short list of notable species identified by the Wildthings Partnership. Any engineering scheme likely to have an impact on known Arc sites will ensure no impact on crayfish.   |
|  | Ensure that the latest data on flood risk is used in the Local Flood Risk Management Strategy.  | The Flood Risk data used in the Local Flood Risk Management Strategy uses that gathered for our SWMP. Specifically, recorded Local Flooding incidents dating from 2009-2014 have been used to inform a Local Flooding Incident register. This info has been gathered from Council records, Wessex Water records and the Environment Agency. |

| Consultee   | Consultee Comments   | Bath and North East Somerset Response  |
|---|--|--|
|   | Consult with Bristol Water and Wessex Water on the surface water assessment.   | Both organisations were consulted on the Surface Water Management Plan and are key stakeholders in the development of the Local Flood Risk Management Strategy.  |
| English Heritage<br>(July 2013;<br>Rohan<br>Torkildsen)   | Scoping report requires further development as English Heritage believe that there are significant deficiencies in its content   | Noted - The baseline section for the Cultural Heritage receptor has been completely rewritten in this Environmental Report (Section 5.2.6)   |
|   | Section 3 does not consider the NPPF, the emerging Bath and North East Somerset Strategy, World Heritage Site Legislation etc.   | Relevant Plans, Policies and Programme and Environmental Legislation has been reviewed in Appendix B of this Environmental Report  |
|   | Section 4.5 provides limited commentary on Cultural Heritage   | The baseline section for the Cultural Heritage receptor has been rewritten in this Environmental Report (Section 5.2.6)  |
|   | Table 4.7 fails to mention Conservation Areas, Historic Parks and Gardens and Registered Battlefields.   | The baseline section for the Cultural Heritage receptor has been rewritten in this Environmental Report (Section 5.2.6)  |
|   | English Heritage provides guidance on how to prepare an Strategic Environmental Assessment in relation to the historic environment.  | This guidance has been followed to in this Environmental Report (Section 5.2.6)  |
|   | Recommends that the Bath and North East Somerset Conservation and Archaeology teams are consulted on the baseline environment.   | Local archaeological groups (e.g. Bath Heritage Watchdog, Bath Preservation Trust) will be consulted on the draft Environmental Report.  |
|   | Recommends that local heritage groups and society are consulted.   | Will be consulted on the draft Environmental Report.   |
| Natural England<br>(July 2013;<br>Amanda Grundy<br>Lead<br>Advisor,<br>Sustainable<br>Land Use) | Encourages Bath and North East Somerset to use the guidance from the Environment Agency on the preparation of the Local Flood Risk Management Strategy   | The Environment Agency is a key stakeholder in the Local Flood Risk Management Strategy. They are part of our Operational Flood Working Group and Strategic Flood Board and have been consulted fully on our draft Local Flood Risk Management Strategy. |
|   | Generally satisfied that the Scoping Report is based on robust evidence and information and it demonstrates a reasonable understanding of the context of the strategy in terms of relevant key issues and trends for water management. | No action required   |

| Consultee | Consultee Comments  | Bath and North East Somerset Response  |
|-----------|---|--|
|           | <p>Expects consideration of the Core Strategy modifications will be taken into account as part of the Local Flood Risk Management Strategy.</p>   | <p>Core Strategy Policy CP5 is concerned with Flood Risk Management and utilises a sequential approach to development. This approach is backed up in the development sections of the Local Flood Risk Management Strategy and Surface Water Management Plan.</p>   |
|           | <p>Encourage Bath and North East Somerset to consider any emerging or adopted Local Plans or programme of neighbouring authorities and water companies. This will enable the Local Flood Risk Management Strategy to contribute to any actions proposed to avoid / mitigate adverse effects elsewhere on the natural environment.</p> | <p>Relevant Plans, Policies and Programme and Environmental Legislation has been updated and reviewed in Appendix B of this Environmental Report<br/>The emerging Placemaking Plan includes a specific policy on the prioritisation of sustainable drainage systems all major new development. Wessex Water and Bristol Water are part of the Strategic Flood Board and our Drainage and Flooding team are part of the West of England Flood risk Working Group.</p> |
|           | <p>Expect green infrastructure to feature strongly in the Local Flood Risk Management Strategy.</p>   | <p>The Local Flood Risk Management Strategy includes a section on development, highlighting the Council's policy to prioritise sustainable drainage systems that may include Green Infrastructure.</p>   |

## Appendix B Review of Relevant Plans, Plans and Programmes and Environmental Protection Legislation

**Table B.1 International Policies, Plans, Programmes and Environmental Protection Legislation**

| Plan/Programme  | Objectives and/or requirements of the plan or programme  | How objectives and requirements might be taken into account in the Local Flood Risk Management Strategy   |
|---|--|---|
| <p>EU Floods Directive - Directive 2007/60/EC on the assessment and management of flood risks, 2007</p> | <p><i>Overall objective:</i><br/>Establish a common framework for assessing and reducing the risks that floods within the European Union pose to human health, the environment, cultural heritage, property and economic activity.</p> <p><i>Requirements:</i></p> <ul style="list-style-type: none"> <li>• By 2011, Member States must carry out a preliminary flood risk assessment (PFRA) on their river basins and associated coastal zones to identify areas where potential significant flood risk exists. The assessment and resulting categories assigned to river basins must be published and reviewed by December, 2018.</li> <li>• By December, 2013, flood hazard and flood risk maps must be developed for the identified areas where flood risks exist</li> <li>• By December, 2015, flood risk management plans must be drawn up for these zones.</li> <li>• These steps will be reviewed every six years, in a cycle coordinated and synchronised with the Water Framework Directive (WFD) implementation cycle.</li> </ul> | <p>The Local Flood Risk Management Strategy complements the objectives and requirements of the Directive. It aims to reduce and manage flood risk in Bath &amp; North East Somerset, while considering the requirements of the WFD.</p> <p>It will refer to the findings of the Bath &amp; North East Somerset PFRA, catchment management plan and the flood risk and hazard maps.</p> <p>Through its Strategic Environmental Assessment, the Local Flood Risk Management Strategy has considered any potential impacts arising from its implementation on human health, environment, property, cultural heritage and economic activity, while avoiding/mitigating where appropriate.</p> |
| <p>EU Water Framework Directive -</p>   | <p><i>Overall objective:</i><br/>Establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries),</p>  | <p>The Local Flood Risk Management Strategy will implement management plans that will enhance rather than diminish the status of aquatic environments (e.g.</p>   |

| Plan/Programme   | Objectives and/or requirements of the plan or programme   | How objectives and requirements might be taken into account in the Local Flood Risk Management Strategy   |
|--|---|---|
| <p>Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy, 2000</p> | <p>coastal waters and groundwater; ensuring that all aquatic ecosystems, wetlands and, with regards to their water needs, terrestrial ecosystems meet 'good status' by 2015.</p> <p><i>Requirements:</i></p> <ul style="list-style-type: none"> <li>• Member States to establish river basin districts and for each of these a river basin management plan.</li> <li>• Prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters.</li> <li>• Achieve at least 'good status' for all waters. Where this is not possible, 'good status' should be achieved by 2021 or 2027.</li> <li>• Promote sustainable use of water as a natural resource.</li> <li>• Conserve habitats and species that depend directly on water.</li> <li>• Progressively reduce or phase out release of individual pollutants or groups of pollutants that pose a significant threat to the aquatic environment.</li> <li>• Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.</li> <li>• Contribute to mitigating the effects of floods and droughts.</li> </ul> | <p>Sustainable Drainage Systems – SuDS).</p> <p>The Local Flood Risk Management Strategy will promote the sustainable use of water as a resource by describing how the implementation of SuDS will be managed across the local authority.</p> <p>The Strategic Environmental Assessment for the Local Flood Risk Management Strategy has ensured that the objectives, requirements and targets of the WFD have been considered within the Local Flood Risk Management Strategy and mitigation measures incorporated where appropriate..</p> |

**Table B.2 National Policies, Plans, Programmes and Environmental Protection Legislation**

| Plan/Programme  | Objectives and/or requirements of the plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
|---|---|---|
| <p>National Planning Policy Framework (March, 2012)</p> | <p>Document comprises twelve ‘Core Planning Principles’ which will underpin plan-making and decision-making to contribute to sustainable development:</p> <ol style="list-style-type: none"> <li>1. Genuinely plan-led, empowering local people to shape their surroundings, with succinct local and neighbourhood plans setting out a positive vision for the future of an area.</li> <li>2. Ensure it is not simply about scrutiny, but instead be a creative exercise in finding ways to enhance and improve areas.</li> <li>3. Drive and support sustainable economic development, in line with the area’s requirements.</li> <li>4. Secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings.</li> <li>5. Consider the different roles and character of different areas, promoting vitality of main urban areas, while protecting the surrounding green belts; recognising intrinsic character and beauty of countryside and support thriving rural communities within it.</li> <li>6. Support the transition to a low carbon future, taking into account flood risk and coastal change, but also encouraging reuse of existing resources and use of renewable resources.</li> <li>7. Contribute to conserving and enhancing the natural environment and reducing pollution. Allocation of land for development, with preference to areas of lesser environmental value (where consistent with other policies in this framework).</li> <li>8. Encourage reuse of brownfield land, provided it is not of high environmental value.</li> <li>9. Promote mixed use development and encourage multiple</li> </ol> | <p>The Local Flood Risk Management Strategy will promote the twelve ‘Core Planning Principles’ of the National Planning Policy Framework where applicable - especially in relation to flood risk.</p> <p>The Local Flood Risk Management Strategy will encourage appropriate development in flood risk areas across Bath &amp; North East Somerset. This will ensure that planning decisions are properly informed of flood risk issues and the future impact of planning on flood risk is considered in Bath &amp; North East Somerset.</p> <p>Through its Strategic Environmental Assessment, the Local Flood Risk Management Strategy has considered any potential impacts arising from its implementation on human health, environment, cultural heritage, climate change, economic activity and accessibility, while avoiding/mitigating where appropriate.</p> <p>The implementation of the Local Flood Risk Management Strategy will promote biodiversity where possible, by implementing natural flood defences which benefit biodiversity.</p> |

| Plan/Programme  | Objectives and/or requirements of the plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
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|   | <p>benefits from land use in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production).</p> <p>10. Conserve heritage assets in a manner appropriate to their existence.</p> <p>11. Actively manage patterns of growth to make fullest possible use of public transport, walking and cycling. Focus significant development in locations that can be made sustainable.</p> <p>12. Consider and support local strategies to improve health, social and cultural wellbeing for all, and deliver sufficient community and cultural facilities and services to meet local needs.</p> |   |
| <p>National Standards for Sustainable Drainage Systems: Designing, constructing, operating and maintaining drainage for surface runoff (Defra 2011)</p> | <p>Overall <i>objective</i> of SuDS:</p> <ul style="list-style-type: none"> <li>To manage the flow rate and volume of surface runoff and to reduce the risk of flooding and water pollution.</li> </ul> <p>SuDS also reduce pressure on the sewerage network and can therefore improve biodiversity and local amenity.</p>  | <p>To fulfil the local authority's role as a SuDS Approval Body (SAB), the Local Flood Risk Management Strategy will describe how the implementation of SuDS will be managed across the authority area. The Local Flood Risk Management Strategy will promote sustainability across Bath &amp; North East Somerset.</p> |
| <p>The National Flood and Coastal Erosion Risk Management Strategy for</p>  | <p>Overall Objective:</p> <ul style="list-style-type: none"> <li>Ensure the risk of flooding and coastal erosion is well-managed and co-ordinated in an appropriate way, so that their impacts are minimised.</li> </ul> <p>Communities, individuals, voluntary groups, as well as private</p>  | <p>This is a key guidance document for the Local Flood Risk Management Strategy.</p>  |

| Plan/Programme   | Objectives and/or requirements of the plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy  |
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| England: Session 2010-2012 (May 2011)  | and public sector organisations, will work together to: <ul style="list-style-type: none"> <li>• Manage the risk to people and their property.]</li> <li>• Facilitate decision-making and action at their appropriate level – individual, community, or local authority, river catchment, coastal cell or national.</li> <li>• Achieve environmental, social and economic benefits, consistent with the principles of sustainable development.</li> </ul>   |  |
| Flood and Water Management Act 2010  | Requirements: <ul style="list-style-type: none"> <li>• Lead Local Flood Authority (LLFA) must develop and implement a Local Flood Risk Management Strategy. This includes flood risk from surface runoff, groundwater and ordinary watercourses.</li> <li>• SuDS Approving Body (SAB) is responsible for approval, adoption and maintenance of SuDS systems.</li> </ul>   | This primary reason for the Local Flood Risk Management Strategy is to adhere to Flood and Water Management Act.<br>To fulfil the local authority's role as a SuDS Approval Body (SAB), the Local Flood Risk Management Strategy has described how the implementation of SuDS will be managed across the authority area.   |
| Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services (2011) | Four priority 'Areas for Action': <ul style="list-style-type: none"> <li>• More integrated large-scale approach to conservation on land and at Strategic Environmental Assessment.</li> <li>• Putting people at heart of biodiversity policy.</li> <li>• Reducing environmental pressures.</li> <li>• Improving our knowledge.</li> </ul> These four priority areas are based on the five strategic goals of the 'Convention on Biological Diversity (CBD) Strategic Plan 2011-2020, but re-cast and re-ordered to better fit the priorities here in England. | The actions in the Local Flood Risk Management Strategy comply with the policies outlined in this strategic document.  |
| UK Biodiversity Framework (2012)   | Sets out a broad enabling structure for action across the UK up until 2020. The 'UK Post-2010 Biodiversity Framework' succeeded the UK Biodiversity Action Plan. This was required following devolution and the creation of country-level biodiversity strategies, the framework particularly sets out the priorities for UK-level work to support the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity   | The UK BAP lists of priority species and habitats remain, however, important and valuable reference sources. Notably, they have been used to help draw up statutory lists of priority species and habitats in England, Scotland, Wales and Northern Ireland (see NI species and NI habitats lists), as required under Section 41 (England) and Section 42 (Wales) of the |

| Plan/Programme  | Objectives and/or requirements of the plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
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|   | <p>2011-2020 and its five strategic goals and 20 'Aichi Targets', agreed at the CBD meeting in Nagoya, Japan, in October 2010; and the EU Biodiversity Strategy (EUBS), launched in May 2011.</p>  | <p>Natural Environment and Rural Communities (NERC) Act 2006, Section 2(4) of the Nature Conservation (Scotland) Act 2004, and Section 3(1) of the Wildlife and Natural Environment Act (Northern Ireland) 2011.</p> <p>The following pages give further information about the lists of UK BAP priority species and habitats.</p> |
| <p>Water for People and the Environment; Water Resources Strategy for England and Wales, 2009</p> | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>• Reduce level of abstraction by introducing water pricing for abstraction and use to ensure its future sustainability, while also resolving any environmental problems which have been caused by historic unsustainable abstractions.</li> <li>• Minimise greenhouse gas emissions produced from using water resources.</li> <li>• Increase the resilience of supplies and critical infrastructure to reduce future impact of climate change.</li> <li>• Careful management of water resources: <ul style="list-style-type: none"> <li>(a) Reduce average amount of water used per person;</li> <li>(b) Introduction of near-universal metering of households by water companies;</li> <li>(c) Reduce leakages from mains and supply pipes;</li> <li>(d) Make homes and buildings more water efficient;</li> <li>(e) Efficient allocation of water resources.</li> </ul> </li> <li>• Consider the needs of wildlife, navigation, fisheries and recreation, environment and abstractors when allocating water resources.</li> <li>• Implement measures to ensure water bodies achieve WFD objectives.</li> <li>• Integration of catchment management to ensure impacts on water resources and environment are managed together.</li> </ul> | <p>The Local Flood Risk Management Strategy considers other plans and programmes at local, regional and national levels in order to provide an integrated management of flood risk, the water environment and water resources.</p>  |

| Plan/Programme   | Objectives and/or requirements of the plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
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| <p>Future Water, The Government's water strategy for England, 2008</p> | <p>Overall vision for 2030:</p> <ul style="list-style-type: none"> <li>• A sustainable supply-demand balance across England with no seriously water stressed areas.</li> <li>• People, businesses and industry using water resources sustainably, with no interruptions to essential supply during drought.</li> <li>• Large majority of water bodies in England to have a good ecological and chemical status.</li> <li>• People maximising sustainable use and amenity benefits gained from safe, healthy and attractive waters and water environments.</li> <li>• Healthy rivers, lakes, estuaries, coasts and groundwaters which provide maximum resilience to climate change and sustain biodiversity.</li> <li>• Major improvements achieved from tackling problems of nutrient pollution, chemical pollution, water resources, litter and microbial contamination.</li> <li>• Land increasingly flexibly managed for flood storage.</li> <li>• Reduced adverse impact of agriculture on the water environment through continued evolution of the EU's Common Agricultural Policy to deliver more environmental benefit.</li> <li>• More adaptable drainage systems delivering reduced flood risk, improved water quality, and decreased burdens on the sewer system.</li> <li>• Flood and coastal erosion risk management which contributes to sustainable development, combining the delivery of social and environmental benefits with the protection of economic assets.</li> <li>• Consistent and holistic management of urban flood risk, with strategic planning, partnerships of responsible bodies</li> </ul> | <p>The Local Flood Risk Management Strategy provides the strategic driver to implement management plans that will enhance rather than diminish the ecological and chemical status of water bodies (e.g. Sustainable Drainage Systems – SuDS).</p> <p>The Local Flood Risk Management Strategy promotes the sustainable use of water as a resource by describing how the implementation of SuDS will be managed across the authority area.</p> |

| Plan/Programme  | Objectives and/or requirements of the plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy  |
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|   | and clear understanding of various flood risk responsibilities.  |  |
| Adapting to Climate Change in England, A Framework for Action, 2008 | <p>Overall Objectives of Phase 1 of the programme are to:</p> <ul style="list-style-type: none"> <li>• Develop robust and comprehensive evidence base about the impacts and consequences of climate change on the UK.</li> <li>• Raise awareness of the need to take action now and help others to take action.</li> <li>• Measure success and take steps to ensure effective delivery.</li> <li>• Work across Government at the national, regional and local level to embed adaptation into Government policies, programme and systems.</li> </ul>                    | <p>The Local Flood Risk Management Strategy will plan for potential future flooding impacts caused by climate change across Bath &amp; North East Somerset. The actions will inform the public of the flood risk – especially in areas of flood risk. The Local Flood Risk Management Strategy is consistent with NFCERMS and aim to minimise the gap between national and local flood risk management.</p>  |
| Civil Contingencies Act 2004  | <p>Main points:</p> <ul style="list-style-type: none"> <li>• Legal obligation of emergency services and local authorities (category 1 responders) to assess the risk of, plan and exercise for emergencies.</li> <li>• Category 1 responders are responsible for informing and warning the public, in relation to emergencies.</li> <li>• Local authorities are responsible for providing business continuity advice to local businesses.</li> <li>• Increased co-operation and information sharing between different emergency and non-emergency services.</li> </ul> | <p>The Local Flood Risk Management Strategy complies with the duties and powers resulting from this Act. The Local Flood Risk Management Strategy improves upon the current flood emergency warning system in place in Bath &amp; North East Somerset and will contribute to the development of a flood emergency plan for Bath &amp; North East Somerset. The Local Flood Risk Management Strategy involves a thorough consultation process with statutory bodies, emergency services and general public. This will ensure that a comprehensive emergency plan will be developed between the local authority and relevant emergency services in Bath &amp; North East Somerset.</p> |
| Water Act, 2003   | <p>Main points:</p> <ul style="list-style-type: none"> <li>• Provides for regulation by EA for: <ul style="list-style-type: none"> <li>(a) Water resource management, abstraction and impounding.</li> <li>(b) Water quality standards and pollution control.</li> </ul> </li> </ul>   | <p>The Local Flood Risk Management Strategy complies with the duties and powers resulting from this Act.</p>   |

| Plan/Programme                                       | Objectives and/or requirements of the plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy  |
|--|---|--|
|  | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>• Amend Water Resources Act 1991 and the Water Industry Act 1991.</li> <li>• Make provisions with respect to compensation under section 61 of the Water Resources Act 1991.</li> <li>• Change how water abstraction and impoundment are regulated.</li> <li>• Improve protection of environment and provide more flexible process of regulation.</li> <li>• Resolve significant problem areas and achieve sustainable water resource management.</li> <li>• Encourage responsible abstractors.</li> </ul> |  |
| <p>EA Policy: Sustainable Drainage Systems, 2002</p> | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>• Increase awareness of environmental problems arising from conventional surface water urban drainage.</li> <li>• Present drainage options that are effective in reducing these environmental problems at new or re-development sites – i.e. sustainable drainage systems.</li> <li>• Promote more sustainable urban development.</li> </ul>  | <p>To fulfil the local authority’s role as a SuDS Approval Body (SAB), the Local Flood Risk Management Strategy describes how the implementation of SuDS will be managed across the local authority.</p> |
| <p>Land Drainage Act, 1991, (as Amended 2004)</p>    | <p>Main points:</p> <ul style="list-style-type: none"> <li>• Watercourses are to be maintained by the owner in such a way that the free flow of water is not impeded.</li> <li>• If the land owner does not comply with his responsibilities, or if anyone else causes a watercourse to become blocked or obstructed, the unitary council have the power of enforcement by serving a notice.</li> </ul>   | <p>The Local Flood Risk Management Strategy complies with the duties and powers resulting from this Act.</p>   |

**Table B.3 Sub-national, Regional and Local Policies, Plans, Programmes and Environmental Protection Legislation.**

| Plan/Programme  | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
|---|--|---|
| River Basin Management Plan Severn River Basin District (December 2009) | <p>The plan has been prepared under the WFD, which requires all countries throughout the EU to manage the water environment to consistent standards. Each country has to:</p> <ul style="list-style-type: none"> <li>• Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological conditions of waters.</li> <li>• Aim to achieve at least a 'good status' for all water bodies by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve 'good status' by 2021 or 2027.</li> <li>• Meet the requirements of the WFD Protected areas.</li> <li>• Promote sustainable use of water as a natural resource.</li> <li>• Conserve habitats and species that depend directly on water.</li> <li>• Progressively reduce or phase out the release of individual/groups of pollutants that present a significant threat to the aquatic environment.</li> <li>• Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.</li> <li>• Contribute to mitigating the effects of floods or droughts.</li> </ul> <p>Overall objectives (to be met by 2015):</p> <ul style="list-style-type: none"> <li>• 17% of surface waters (rivers, lakes and estuaries) in the Severn River Basin District to be improved for at least one biological, chemical or physical element.</li> <li>• 34% of surface waters will be at a good or better ecological status/potential and 65% of groundwater bodies will be at a good status.                             <ul style="list-style-type: none"> <li>(a) At least 38% of assessed surface waters will be at good or better biological status</li> </ul> </li> </ul> | <p>The Local Flood Risk Management Strategy will lead to the implementation of measures to prevent flooding that will enhance rather than diminish the status of aquatic ecosystems (e.g. SuDS).</p> <p>Through the Strategic Environmental Assessment process the Local Flood Risk Management Strategy has considered any potential impacts arising from its implementation on water quality and quantity across Bath &amp; North East Somerset and will avoid/mitigate where appropriate.</p> |

| Plan/Programme   | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy  |
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| <p>City of Bristol Local Flood Risk Management Strategy November 2014 (City of Bristol 2014)</p>         | <p>Objectives:</p> <ul style="list-style-type: none"> <li>• Gain a greater understanding of the flood risks posed to Bristol and its people and places.</li> <li>• Actively manage flood risk infrastructure to reduce the likelihood of flooding causing harm to people and damage to society, the economy and the environment.</li> <li>• Increase public awareness and encourage communities to take action to manage the risks that they face.</li> <li>• Understand communities flooding concerns and priorities, and gather knowledge based on their perception of flooding.</li> <li>• Promote sustainable development that seeks to reduce flood risk and includes a consideration of climate change.</li> <li>• Improve preparedness for flood events and post flood recovery.</li> </ul>   | <p>There is a direct overlap in places covered with the Local Flood Risk Management Strategy and City of Bristol Local Flood Risk Management Strategy. In certain locations the responsibility for local flood risk management has been agreed to be covered by the City of Bristol as LLFA. This is detailed within the SWMP.</p> |
| <p>South Gloucestershire Local Flood Risk Management Strategy (South Gloucestershire Draft in press)</p> | <p>Objectives:</p> <ul style="list-style-type: none"> <li>• Prioritise and implement improvements to local flood infrastructure to reduce the likelihood of flooding causing harm to the communities, businesses and the environment of South Gloucestershire.</li> <li>• Increase public awareness of the level of flood risk affecting communities and businesses and how they can better protect themselves and their property.</li> <li>• Actively work with other Lead Local Flood Authorities and Risk Management</li> <li>• Authorities to coordinate management and reduce flood risk across South Gloucestershire.</li> <li>• Contribute to wider social, economic and environmental benefits by encouraging sustainable multi-benefit solutions and maximizing use of resources</li> <li>• Improve our understanding of drainage assets, flood risk and</li> </ul> | <p>No interaction</p>  |

| Plan/Programme  | Objectives and/or requirements of the other plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy |
|---|---|---|
|   | <p>how climate change will influence future flood risk.</p> <ul style="list-style-type: none"> <li>• Ensure future development considers all known flood risks and climate change projections for South Gloucestershire.</li> </ul>   |   |
| <p>North Somerset Local Flood Risk Management Strategy (Local Flood Risk Management Strategy):</p>        | <p>The six strategic objectives for the Local Flood Risk Management Strategy are:</p> <ul style="list-style-type: none"> <li>• Improve our understanding of flood and coastal erosion risks in North Somerset</li> <li>• Develop plans and policies to manage these risks sustainably;</li> <li>• Work in partnership with other flood Risk Management Authorities and lead by example;</li> <li>• Maintain and improve flood and coastal erosion risk management infrastructure and systems to reduce risk;</li> <li>• Avoid inappropriate development in areas of flood and coastal erosion risk, and ensure that development does not increase risks elsewhere, and;</li> <li>• Increase public awareness of flooding and promote individual and community level flood resilience.</li> </ul> <p>Under each of these strategic objectives the Somerset Local Flood Risk Management Strategy has set out specific goals and anticipated outcomes to help interpret them into actions.</p> | <p>No interaction</p>   |
| <p>Somerset County Local Flood Risk Management Strategy February 2014 (Somerset County Council, 2014)</p> | <p>Objectives:</p> <ul style="list-style-type: none"> <li>• Develop, maintain, apply and monitor a strategy for local flood risk management in Somerset. Set local strategy for local flood risk management. Examine alternatives to reduce risk to life and property, while minimising economic and environmental impacts of flood risk management actions and programmes.</li> <li>• Enhance the internal technical capabilities for flood risk management.</li> </ul>  | <p>No interaction</p>   |

| Plan/Programme | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy |
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|                | <ul style="list-style-type: none"> <li>• It is expected that lead local flood authorities will form partnerships with the other risk management authorities in their area to manage local flood risk.</li> <li>• Investigate flooding incidents to identify which authorities have relevant functions to deal with the flood and whether each of them intends to respond. The lead local flood authority will then be required to publish the results of any investigation, and notify any relevant authorities.</li> <li>• Continue a countywide public education and outreach program to improve flood awareness that includes actions people can take to reduce risks (e.g. flood insurance, flood proofing).</li> <li>• Identify possible funding sources for implementing the recommended flood risk management activities.</li> <li>• Management and delivery of the Pitt Recommendations.</li> <li>• Prioritise projects and programmes of work based on the level of risk, benefit, and cost-effectiveness over the life of the plan or facility. In collaboration with others, develop a three-year rolling programme of works associated with ordinary watercourses, surface water run-off and groundwater to tackle flooding.</li> <li>• Involve stakeholders in the assessment of acceptable risks, evaluation of alternatives, and natural resource management issues.</li> <li>• Coordinate among internal and external stakeholders to seek consistency in flood risk management and flood disaster response and recovery.</li> <li>• Work with and support Planning Authorities to limit new development in flood risk areas and to minimise new risks to life and property.</li> <li>• Identify opportunities to work with environmental organisations</li> </ul> |   |

| Plan/Programme | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy |
|----------------|--|---|
|                | <p>to integrate flood management with environmental management.</p> <ul style="list-style-type: none"> <li>• Incorporate information about climate change into flood risk management decision-making.</li> <li>• Collate and map the main flood risk management and drainage assets. Evaluate the risks to existing development in flood risk areas.</li> <li>• Prepare preliminary flood risk assessment reports.</li> <li>• Identify flood risk areas.</li> <li>• Maintain a register of structures or features which they consider to have a significant effect on flood risk in their area, at a minimum recording ownership and state of repair with the intention to inform and promote capital programmes through Somerset Transport Plan or other means.</li> <li>• Identify current and establish future “Levels of Service” for existing and new flood protection assets. Use principles established in the Transport Asset Management Plan (TAMP).</li> <li>• Review internal working practices to align aims, objectives and outcomes contained in this Plan.</li> <li>• Work with the Association of British Insurers to identify repetitive-loss properties to assist in developing the flood risk maps and consequential programme of works.</li> <li>• Continuously review implementation to learn from successes, develop cost-effective approaches and reduce the need for costly solutions.</li> <li>• Adopt a robust technical approach in developing and evaluating alternatives and to monitor implementation both for flood risk and biodiversity.</li> <li>• Promote the uptake of sustainable land management techniques that will reduce surface water run-off.</li> </ul> |   |

| Plan/Programme  | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy |
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|   | <ul style="list-style-type: none"> <li>• To accord with the Act, commence a programme of review and designation of structures and features that affect flooding.</li> <li>• Cooperate with the Environment Agency and Met Office in interpreting and using data derived by the existing network of river flow and weather gauges.</li> <li>• Examine the connections between flood risk management, river corridors, biodiversity, open space, public access and agricultural resources to take advantage of efficiencies in addressing multiple objectives.</li> <li>• Prepare flood risk management plans.</li> <li>• Maintain, repair and retrofit existing flood protection assets in a cost-effective manner that makes the facilities less susceptible to future damage.</li> <li>• Consider removal or retrofit existing flood protection facilities to protect, restore, or enhance critical riparian or water borne habitat that benefits threatened or endangered species.</li> <li>• Identify important or vulnerable riparian and biodiversity sites.</li> </ul> |   |
| <p>Wiltshire Local Flood Risk Management Strategy: October 2014 (Wiltshire Council, 2014)</p> | <p>Objectives</p> <p>Wiltshire Council has adopted the following objectives to:-</p> <ul style="list-style-type: none"> <li>• Improve knowledge regarding flood risk</li> <li>• Improve protection from flooding</li> <li>• Improve resilience to flooding</li> <li>• Improve the environment</li> <li>• Improve communications about flooding issues</li> </ul> <p>Wiltshire Council will seek to:</p> <ul style="list-style-type: none"> <li>• Improve the level of understanding of local flood risk amongst partners and stakeholders,</li> <li>• Ensure that local communities, residents and businesses</li> </ul>   | <p>No interaction</p>   |

| Plan/Programme  | Objectives and/or requirements of the other plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy  |
|---|---|--|
|   | <p>understand their responsibilities with regard to local flood risk management,</p> <ul style="list-style-type: none"> <li>• Maximise the partnership working with flood risk partners and stakeholders,</li> <li>• Actively manage flood risk associated with new development proposals</li> <li>• Ensure the approach to Flood Risk Management is sustainable and balance the economic, environmental and social benefits from policies and programmes,</li> <li>• Improve or maintain the capacity of existing drainage systems by targeted maintenance where appropriate,</li> <li>• Encourage responsible maintenance of privately owned flood defence and drainage assets,</li> <li>• Establish a policy on water management, and use available information on flood risk to assess the suitability of the allocation of sites for different land uses through the local development framework,</li> <li>• Maximise opportunities to reduce surface water runoff from catchments,</li> <li>• Identify projects and programmes which are affordable and maximise capital funding from external sources,</li> <li>• Ensure environmental consequences are considered in the design, construction and implementation of proposed flood risk management measures.</li> </ul> |  |
| <p>Bath and North East Somerset Council Preliminary Flood Risk Assessment (PFRA) (March 2011)</p> | <p>Overall objective:</p> <ul style="list-style-type: none"> <li>• Understand of local flood risk within Bath &amp; North East Somerset from local sources, including both surface and ground water flooding, , ordinary watercourses flooding and flooding from man-made structures (excluding Main Rivers).</li> </ul>  | <p>The Local Flood Risk Management Strategy has incorporated the findings of the PFRA. The six local flood risk areas identified in the PFRA have been examined in further detail in terms of flood risk management in Bath &amp; North East Somerset.</p> |

| Plan/Programme  | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
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|   |  | The Local Flood Risk Management Strategy is applicable to flooding types from the following sources: ordinary watercourses, surface water, groundwater and artificial sources. It will also consider the interaction between these and main rivers. |
| Bath and North East Somerset Council Surface Water Management Plan (2015) | <p>Overall objective:</p> <ul style="list-style-type: none"> <li>The main aim of the SWMP is to produce a long term, area wide high level Action Plan to manage local sources of flooding within the Bath and North East Somerset area.</li> </ul>   | The Local Flood Risk Management Strategy has used the actions outlined in the SWMP to manage the flood risk of wet spots identified.  |
| Bath and North East Somerset Green Infrastructure Strategy (2013)         | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>Support healthy lifestyles by encouraging more people to use Green Infrastructure (GI).</li> <li>Improve the quality, function and management of Council owned green spaces by establishing a culture and processes for long term management.</li> <li>Encourage more people to connect with nature and foster sense of place.</li> <li>Improve the network of green travel routes.</li> <li>Respect and enhance the local landscape.</li> <li>Safeguard and enhance access of local built heritage.</li> <li>Maintain and create robust ecological networks by reducing fragmentation and delivering habitat restoration, re-creation and biodiversity enhancements.</li> <li>Secure the multiple benefits that trees and woodland can provide.</li> <li></li> <li>Recognise the importance of healthy ecosystems and protect/enhance the natural services they provide.</li> </ul> | Where possible, the implementation of the Local Flood Risk Management Strategy will incorporate GI measures into the management of flood risk across Bath & North East Somerset.  |

| Plan/Programme   | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
|--|--|---|
|  | <ul style="list-style-type: none"> <li>• Achieve more sustainable management of water resources, flood mitigation and flood risk.</li> <li>• Provide natural solutions to help tackle the impacts of climate change.</li> <li>• Contribute to a vibrant local community.</li> </ul>  |   |
| <p>Bath and North East Somerset Core Strategy (July 2014)</p>  | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>• Pursue a low carbon and sustainable future in a changing climate.</li> <li>• Protect and enhance the district’s natural built and cultural assets and provide green infrastructure.</li> <li>• Encourage economic development, diversification and prosperity.</li> <li>• Invest in our city, towns and local centres.</li> <li>• Meet housing needs.</li> <li>• Plan for development that promotes health and well-being.</li> </ul> <p>Deliver well-connected places, accessible by sustainable means of transport.</p>                                  | <p>The Local Flood Risk Management Strategy will promote a more sustainable approach to managing flood risk, by describing how the implementation of SuDS will be managed across the authority area.</p> <p>Core Strategy Policy CP5 is concerned with Flood Risk Management and utilises a sequential approach to development. This approach is backed up in the development sections of the Local Flood Risk Management Strategy and Surface Water Management Plan.</p> |
| <p>Bath and North East Somerset Flood Risk Management Strategy Report (Bath &amp; North East Somerset, 2010)</p> | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>• Identify how development sites within flood risk zones can be made more viable and deliverable through strategic or site-specific mitigation and compensation whilst seeking amenity value for users.</li> <li>• Protect and, where possible, enhance biodiversity, water quality and resources, existing material assets and cultural heritage features.</li> <li>• Improve the quality of the landscape and visual amenities as well as recreational amenities.</li> <li>• SuDS installations to be used for all new developments.</li> <li>•</li> </ul> | <p>The Local Flood Risk Management Strategy will promote appropriate development in flood risk areas Bath &amp; North East Somerset by ensuring that planning decisions are properly informed by flood risk issues and that the future impact of planning on flood risk is considered in Bath &amp; North East Somerset.</p> <p>It will promote a more sustainable approach to managing flood risk, by describing how the implementation of SuDS will be managed</p>      |

| Plan/Programme  | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
|---|--|---|
|   |  | across the authority area.  |
| <p>Bristol Avon Catchment Flood Management Plan Summary Report June 2012 (Environment Agency, 2012)</p> | <p>Overall objectives:</p> <ul style="list-style-type: none"> <li>• Understand scale and extent of flooding now and in the future.</li> <li>• Set policies for managing flood risk within catchment.</li> <li>• Promote more sustainable approaches to managing flood risk.</li> </ul> <p>Policies described:</p> <ul style="list-style-type: none"> <li>• Six flood management policies were described for the Bristol Avon catchment; three of which apply to Bath &amp; North East Somerset as the sub-areas are located within the boundaries of Bath &amp; North East Somerset.</li> <li>• These policies are as follows:                             <ul style="list-style-type: none"> <li>(a) Sub-area of Bath: Policy 5. Flood risk is moderate to high and further action is required to reduce flood risk.</li> <li>(b) Sub-area of Lower Avon: Policy 3. Flood risk is low to moderate and is being managed effectively.</li> </ul> </li> <li>• Sub-area of Mendip Slopes and Long Ashton: Policy 4. Flood risk from low to high. It is being managed effectively, but may require further actions due to climate change.</li> </ul> | <p>The Local Flood Risk Management Strategy will contribute to the understanding of the scale and extent of flooding in Bath &amp; North East Somerset. It will refer to and develop the policies described in the catchment management plan that apply to Bath &amp; North East Somerset.</p> <p>It will promote a more sustainable approach to managing flood risk, by describing how the implementation of SuDS will be managed across the authority area.</p> <p>It will involve consultation with councils and partners that share the responsibility of sub-areas Bath &amp; North East Somerset, as well as councils and partners in other sub-areas of the Bristol Avon catchment. This consultation process will improve the co-ordination of flood risk management activities across the catchment and will facilitate the agreement of the most effective way to manage flood risk. It will also ensure that the safe-guarding of a particular area from flood risk does not have knock on negative effects in another location. There are seven local authorities and nine partners responsible for flood risk management across the catchment.</p> |

| Plan/Programme  | Objectives and/or requirements of the other plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
|---|---|---|
| Strategic Flood Risk Assessment of Bath and North East Somerset Volume 1 Technical Report April 2008 (Bath and North East Somerset, 2008) | <p>Underlying objective of the risk-based sequential allocation of land:</p> <ul style="list-style-type: none"> <li>• Reduce exposure of new development to flooding and reduce the reliance on long-term maintenance of built flood defences.</li> </ul> <p>Overall objective of the B&amp;NES SRFA is to provide flood information;</p> <ol style="list-style-type: none"> <li>(a) So that an evidence-based and risk-based sequential approach can be adopted when making planning decisions, in line with PPS25.</li> <li>(b) That is strategic in that it covers a wide-spatial area and looks at flood risk today and in the future.</li> <li>(c) That supports sustainability appraisals of the local level documents (including the LDF).</li> <li>(d) That identifies what further investigations may be required in detailed flood risk assessments (FRAs) for specific development proposals.</li> </ol> | The Local Flood Risk Management Strategy will incorporate the findings of the SFRA. It will also consider the flood risk management options described in the SFRA. Flood risk management will also be considered in terms of areas of new development and existing flood defences, as well as the maintenance that will be required for built flood defences. |
| Bath and North East Somerset Local Plan Saved Policies Including Minerals and Waste Policies - Adopted October 2007                       | This plan was the previous planning document for all planning decisions within the district. The Core Strategy is now the main document however some policies from the Local Plan have been retained.   | The objectives and actions described in the Local Flood Risk Management Strategy does not contradict any of the saved policies.   |
| Mendip Hills AONB Management Plan 2014-2019   | <p>Biodiversity and Geodiversity objectives:</p> <ul style="list-style-type: none"> <li>• Ensure that there is no net loss of characteristic habitats and species.</li> <li>• Promote a landscape scale approach to the conservation and expansion of coherent and resilient ecological networks within and adjoining the AONB.</li> <li>• Increase monitoring and awareness of the biodiversity resource of the Mendip Hills AONB so that it is sufficiently</li> </ul>  | The implementation of the Local Flood Risk Management Strategy will refer to AONB management plans where applicable.  |

| Plan/Programme                                | Objectives and/or requirements of the other plan or programme   | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy  |
|---|---|--|
|   | <p>understood to continue to guide the successful conservation of the characteristic habitats and species.</p> <ul style="list-style-type: none"> <li>• Promote a holistic approach to implementing AONB Management Plan objectives, National Character Area Statements of Opportunity and a locally designated Nature Improvement Area’s objectives.</li> <li>• Recognise and celebrate geological sites and features of the Mendip Hills AONB to ensure the successful conservation both of the geology and wildlife habitat they provide.</li> <li>• Increase awareness of the Mendip Hills geology; particularly cave systems in relation to the importance they play in water management and water supply.</li> </ul> <p>Natural resources objectives:</p> <ul style="list-style-type: none"> <li>• Recognise and promote the benefits and relevance of the AONB as a valuable source of ecosystem services, economic and health benefits.</li> <li>• Promote conservation of water resources and enhance their quality taking measures to reduce low flows and flooding by appropriate management and use.</li> <li>• Promote sustainable management of soils in accordance with best practice to minimise erosion and water pollution and maximise resilience to drought.</li> </ul> |  |
| Cotswolds AONB Management Plan, – 2013 – 2018 | <p>Conserving and enhancing objectives:<br/>By 2014:</p> <ul style="list-style-type: none"> <li>• Relevant organisations have strengthened landscape-scale restoration and the re-linking and management of habitats to reverse ecological fragmentation and to improve the resilience of the Cotswold landscape, habitats and water environment to the effects of climate change.</li> <li>• National and local development management and transport</li> </ul>  | <p>Through its Strategic Environmental Assessment, the Local Flood Risk Management Strategy has consider any potential impacts arising from its implementation on the character and special features of the AONBS located within Bath &amp; North East Somerset and will avoid/mitigate where appropriate.</p> |

| Plan/Programme | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy   |
|----------------|--|---|
|                | <p>authorities and agencies have policies and guidance to make decisions which conserve and enhance the special qualities of the AONB, maintain local distinctiveness, provide services and support a buoyant rural economy.</p> <p>By 2016:</p> <ul style="list-style-type: none"> <li>National and local agencies have put in place policies and guidance to implement the sustainable provision and use of natural resources in the Cotswolds AONB.</li> </ul> <p>By 2018:</p> <ul style="list-style-type: none"> <li>It can be demonstrated that organisations and individuals responsible for land management and development management have conserved and enhanced the special qualities of the Cotswold landscape.</li> <li>Sustainable farming and forestry remain the primary means by which the distinctive landscapes of the Cotswolds are managed.</li> <li>Relevant organisations have demonstrably better identified, recorded and promoted, the distinctive historic and cultural and natural heritage of the Cotswolds AONB, which is better understood by residents and visitors.</li> </ul> <p>Understanding and enjoying objectives:</p> <p>By 2016:</p> <ul style="list-style-type: none"> <li>The Cotswolds is widely recognised and valued as a sustainable visitor destination, where local communities benefit, businesses prosper and the environment is sustained through the co-ordinated delivery of quality and enriching visitor experiences.</li> </ul> <p>By 2018:</p> <ul style="list-style-type: none"> <li>It can be shown that residents and visitors demonstrably value the natural beauty, historic character and cultural heritage of the Cotswolds and understand the need to invest</li> </ul> | <p>The Local Flood Risk Management Strategy will involve a thorough consultation process with the general public, partners that share the responsibility of the AONBs with Bath &amp; North East Somerset and relevant statutory bodies. Workshops with the general public will also discuss the role of land management in flood risk.</p> |

| Plan/Programme | Objectives and/or requirements of the other plan or programme  | How objectives and requirements might be taken on board in Local Flood Risk Management Strategy |
|----------------|--|---|
|                | <p>in and sensitively manage the special qualities of the area.</p> <ul style="list-style-type: none"> <li>• Relevant organisations make the Cotswolds a landscape available for all to explore and enjoy, which is demonstrably regarded by residents and visitors as a place for positive, high-quality experiences.</li> </ul> <p>Fostering economic and social well-being objectives:<br/>By 2018:</p> <ul style="list-style-type: none"> <li>• National and local agencies recognise the value and relevance of the AONB as a valuable source of “ecosystem services”, economic and health benefits.</li> </ul> |   |

## Appendix C Assessment of Effects

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N) | Description of effect  | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/ intermittent) | Irreversible / reversible; temporary/ permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/ Regional/ Unitary Authority/ Local) | Positive/ Negative | Assumptions, Limitations, Uncertainties                                   | Significant (Yes/No) | Proposed Mitigation  |
|--|--|---|------------------------|---|---|----------------------|--|--------------------|---|----------------------|--|
| <b>Water Resources</b>   |  |   |                        |   |   |                      |  |                    |   |                      |  |
| Water Framework Directive Waterbodies Value (H) Vulnerability(H) Sensitivity (H)     | Physical modification or pollution of water courses leading to a reduction in ecological/ chemical statuses of water bodies. Contributing to failures in regional targets. | Direct effect   | L                      | Construction – S<br>Continual frequency<br>Operation- L   | Reversible;<br>Permanent                        | VL                   | Regional   | Negative           | Any engineering scheme will be designed to ensure compliance with the WFD | No                   |  |
| Surface and Ground Water Resources Value (H) Vulnerability (L) Sensitivity (M)       | Improved surface and ground water quality from reductions in mobilisation of pollutants, through effective flood risk management and SuDS                                  | Direct effect, in local watershed only.   | L                      | Construction - S  | Reversible;<br>Temporary                        | L                    | Regional   | Positive           |   | Yes                  | Work will be undertaken in compliance with Pollution Prevention Guidelines |
| Surface and Ground Water Resources Value (H) Vulnerability (L) Sensitivity (M)       | Disturbance to physical nature of water bodies from construction of engineering solutions arising from the LFRMS, with effects upon water quality and resource capacity    | Direct effect, in local watershed only.   | M                      | Construction - L  | Reversible;<br>Permanent                        | L                    | Local  | Negative           |   | No                   | As above   |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N) | Description of effect   | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties  | Significant (Yes/No) | Proposed Mitigation   |
|--|---|---|------------------------|--|--|----------------------|---|-------------------|--|----------------------|---|
| <b>Flood risk</b>  |   |   |                        |  |  |                      |   |                   |  |                      |   |
| Flooding<br>Value (L)<br>Vulnerability (H)<br>Sensitivity (M)                        | More effective management of local flood risk throughout BANES  | Direct  | H                      | Operation - L  | Reversible, Permanent                          | H                    | Unitary Authority   | Positive          | It is uncertain if landowners will take measures to control runoff rates in carrying out land drainage practices | Yes                  |   |
|  | Implementing engineering schemes could alter flood passage and storage dynamics e.g. through the requirements for material storage. | Direct effect, in local watershed only.   | VL                     | Construction S   | Reversible; Permanent                          | VL                   | Local   | Negative          | Applicable where scheme would be constructed within a floodplain   | No                   | Flood risk assessments undertaken and mitigation proposed followed. |
|  | New flood risk management structures (e.g. pumping stations) could alter flood passage and storage dynamics.                        |   | VL                     | Operation – L  | Reversible; permanent                          | VL                   | Local   | Negative          | Applicable where scheme would be constructed within a floodplain   | No                   | Flood risk assessments undertaken and mitigation proposed followed. |
|  | Increased implementation of SUDs will reduce flood risk from new development  | Indirect  | M                      | Operation – L  | Reversible, permanent                          | H                    | Unitary Authority   | Positive          | Assumes SUDs promoted on all new developments  | Yes                  |   |
|  | Preventing inappropriate development creating or increasing flood risk in BANES   | Direct  | H                      | Operation – L  | Irreversible, permanent                        | H                    | Unitary Authority   | Positive          |  | Yes                  |   |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N) | Description of effect  | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties | Significant (Yes/No) | Proposed Mitigation |
|--|--|---|------------------------|--|--|----------------------|---|-------------------|---|----------------------|---------------------|
| <b>Population and Human Health</b>   |  |   |                        |  |  |                      |   |                   |   |                      |                     |
| Population Value (L)<br>Vulnerability (M)<br>Sensitivity (M)                         | No direct effects on the population of BANES are likely.   |   |                        |  |  |                      |   |                   |   |                      |                     |
| Health Value (M)<br>Vulnerability (L)<br>Sensitivity (M)                             | Reduction in flood risk and providing better information of how to manage flood risk at a property level leading to less stress for affected property owners   | Direct  | M                      | Operation – L  | Irreversible. Permanent                        | M                    | Unitary Authority   | Positive          |   | Yes                  |                     |
|  | Managing flooding from sewers will ensure less risk of contaminated water entering homes causing illness. Potable water supplies are less likely to be interrupted with better flood risk management | Indirect  | M                      | Operation – L  | Irreversible. Permanent                        | M                    | Unitary Authority   | Positive          |   | Yes                  |                     |
| <b>Biodiversity and Landscape</b>  |  |   |                        |  |  |                      |   |                   |   |                      |                     |
| Landscape Character of BANES Value (L)<br>Vulnerability (L)<br>Sensitivity (L)       | Engineering schemes leading to an alteration of the landscape character of BANES   | Direct; far-field   | VL                     | Operation – L<br>Term<br>Continual frequency   | Irreversible, permanent                        | VL                   | Local   | Negative          |   | No                   |                     |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N)) | Description of effect   | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties   | Significant (Yes/No) | Proposed Mitigation   |
|---|---|---|------------------------|--|--|----------------------|---|-------------------|---|----------------------|---|
| Landscape Character of the AONBs<br>Value (H)<br>Vulnerability (L)<br>Sensitivity (M) | Engineering schemes leading to damage to the AONB via change to the setting of its features   | Direct, far-field   | VL                     | Operation – L<br>Continual frequency   | Irreversible, permanent                        | VL                   | Unitary Authority   | Negative          |   | No                   |   |
| Notable Habitats and Species<br>Value (H)<br>Vulnerability (L)<br>Sensitivity (M)     | Structural engineering schemes could damage species and habitats (including important wildlife corridors, ancient woodlands, crayfish sites and fish/eel migration sites) | Direct  | L                      | Construction and Operation– M<br>Continual frequency   | Irreversible, temporary                        | L                    | Local   | Negative          | Assumed that ecological assessments/ surveys are undertaken for projects where likely effects are anticipated.<br><br>No engineering schemes for wet spots involve permanent barriers to fish migration | No                   | Avoidance of areas deemed ecologically sensitive, translocation of habitats / species or compensatory habitat creation. |
|   | An increase in the wetland habitats in BANES through the promotion of SuDS for new developments and local flood risk management   | Direct  | H                      | Operation - L  | Irreversible, permanent                        | M                    | Unitary Authority   | Positive          | Assumes SUDs will be designed to create additional wetland areas  | Yes                  |   |
|   | Improved flood risk management resulting in less risk of pollution of habitats through runoff.  | Indirect  | H                      | Operation – L  | Irreversible, permanent                        | M                    | Unitary Authority   | Positive          |   | No                   |   |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N)     | Description of effect   | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties                           | Significant (Yes/No) | Proposed Mitigation  |
|--|---|---|------------------------|--|--|----------------------|---|-------------------|---|----------------------|--|
| Statutory Nature Conservation Sites<br>Value (H)<br>Vulnerability (L)<br>Sensitivity (M) | Management of local flood risk resulting in reduced flood risk and a reduction in pollutants reaching Chew Valley Lake. | Indirect  | H                      | Operation – L  | Irreversible, permanent                        | M                    | Regional  | Positive          | Assumes hydrologic link between local drains and Chew Valley Lake | Yes                  |  |
| Green belt<br>Value (L)<br>Vulnerability (M)<br>Sensitivity (M)                          | No effects identified   |   |                        |  |  |                      |   |                   |   |                      |  |
| <b>Cultural Heritage</b>   |   |   |                        |  |  |                      |   |                   |   |                      |  |
| Bath World Heritage Site<br>Value (H)<br>Vulnerability (M)<br>Sensitivity (M)            | Engineering schemes could damage the features in the WHS e.g. archaeology.  | Direct  | VL                     | Operation – L  | Reversible, permanent                          | H                    | National  | Negative          |   | Yes                  | Identification of any features which are at risk and avoidance where possible. If significant effects are likely, undertake EIA to identify mitigation measures which could include using different construction methods and monitoring. |
|  | Engineering schemes could affect the setting of features in the WHS through tree loss.                                  | Indirect  | VL                     | Construction – M   | Irreversible, temporary                        | L                    | National  | Negative          |   | No                   |  |
|  | Protection of WHS features from flooding  | Direct  | M                      | Operation – L Term   | Reversible, permanent                          | M                    | National  | Positive          |   | Yes                  |  |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N) | Description of effect  | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties  | Significant (Yes/No) | Proposed Mitigation  |
|--|--|---|------------------------|--|--|----------------------|---|-------------------|--|----------------------|--|
| Conservation areas<br>Value (L)<br>Vulnerability (M)<br>Sensitivity (M)              | Engineering schemes leading to the loss of trees, removal of features or using inappropriate finishes which affect the setting of conservation areas | Direct  | L                      | Operation – L Term   | Reversible, permanent                          | L                    | Unitary Authority   | Negative          |  | No                   | Conservation Area Consent will be required for any demolition in Conservation Areas and notices are required for tree works. Mitigation measures will be specified in these permissions e.g. tree replanting |
| National Heritage Sites<br>Value (H)<br>Vulnerability (L)<br>Sensitivity (M)         | Engineering schemes leading to damage to sites   | Indirect  | H                      | Operation – L Term   | Reversible, permanent                          | H                    | Unitary Authority   | Negative          | No scheduled monuments, registered gardens will be affected. Listed Buildings could be affected through vibration. | Yes                  | Identification of any at risk sites and avoidance where possible. If likely effects are unavoidable mitigation such as different methods or reinforcing site may be required.                                |
|  | Protection of sites from flooding  | Direct  | M                      | Operation – L Term   | Reversible, permanent                          | M                    | Unitary Authority   | Positive          |  | Yes                  |  |
| <b>Climatic Factors</b>  |  |   |                        |  |  |                      |   |                   |  |                      |  |
| Climatic factors<br>Value (H)<br>Vulnerability (L)<br>Sensitivity (M)                | No anticipated effects on climatic factors   |   |                        |  |  |                      |   |                   |  |                      |  |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N) | Description of effect  | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties                                    | Significant (Yes/No) | Proposed Mitigation |
|--|--|---|------------------------|--|--|----------------------|---|-------------------|--|----------------------|---------------------|
| <b>Material Assets</b>   |  |   |                        |  |  |                      |   |                   |  |                      |                     |
| Housing Value (L)<br>Vulnerability (L)<br>Sensitivity (L)                            | Improved flood risk management in areas where housing allocations are proposed leading to more efficient development of the sites.         | Direct  | M                      | Operation – L  | Reversible, permanent                          | M                    | Unitary Authority   | Positive          |  | Yes                  |                     |
| Economy Value (L)<br>Vulnerability (L)<br>Sensitivity (L)                            | Reduce flood risk will encourage economic development in Bath & North East Somerset and provide confidence to existing companies to expand | Direct  | L                      | Operation - Long   | Irreversible, permanent                        | M                    | Local   | Positive          |  | Yes                  |                     |
| Mineral extraction Value (L)<br>Vulnerability (L)<br>Sensitivity (L)                 | The management of flood risk on nearby roads will enable Limpley Stoke mine to continue to operate.  | Indirect  | H                      | Operation – L  | Irreversible, permanent                        | H                    | Local   | Positive          | No wet spots are directly affecting the mine                               | No                   |                     |
| Soils Value (M)<br>Vulnerability (L)<br>Sensitivity (M)                              | Reduction in the fertility of agricultural land through the reduction of flooding  | Indirect  | VL                     | Operation – L  | Irreversible, permanent                        | VL                   | Local   | Negative          | There are no areas where flooding will be prevented in agricultural areas  | No                   |                     |
|  | Reduction in the amount of flooding of soils which will reduce soil erosion  | Indirect  | VL                     | Operation – L  | Irreversible, permanent                        | VL                   | Local   | Positive          | There are no areas where flooding will be prevented in agricultural areas. | No                   |                     |

| RECEPTOR<br>(Value (H/M/L)<br>Vulnerability<br>(H/M/L/N)<br>Sensitivity<br>(H/M/L/N)) | Description of effect   | Direct or indirect; Far-field effect; Cumulative effect; or effect resulting from Consequential Development | Probability (H/M/L/VL) | Duration (during construction, operation or decommission) Term (L/M/S/VS) and Frequency (continual/intermittent) | Irreversible / reversible; temporary/permanent | Magnitude (H/M/L/VL) | Spatial extent & trans-boundary (National/Regional/Unitary Authority/Local) | Positive/Negative | Assumptions, Limitations, Uncertainties | Significant (Yes/No) | Proposed Mitigation |
|---|---|---|------------------------|--|--|----------------------|---|-------------------|---|----------------------|---------------------|
| Waste management<br>Value (L)<br>Vulnerability (L)<br>Sensitivity (L)                 | Management of flood risk in Bath, Midsomer Norton and Keynsham will ensure continued access and operation of waste management sites | Direct  | M                      | Operation – L  | Irreversible, permanent                        | M                    | Unitary Authority   | Positive          |   | Yes                  |                     |
| Transport infrastructure<br>Value (L)<br>Vulnerability (L)<br>Sensitivity (L)         | Effective flood risk management leading to a reduction in road closures following flood events                                      | Direct  | H                      | Operation - L  | Irreversible, permanent                        | L                    | Unitary Authority   | Positive          |   | Yes                  |                     |

## Appendix D Cultural Heritage Plan

