# Derby City Council Local Flood Risk Management Strategy

Strategic Environmental Assessment - Environmental Report

March 2017

Derby City Council
Council House
Corporation Street
Derby DE1 2FS

# JBA Project Manager

Laura Thomas
JBA Consulting
Epsom House
Redhouse Interchange
Doncaster
DN6 7FE

# Revision History

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# Contract

This report describes work commissioned by Kevin Tozer, on behalf of Derby City Council, by an email dated 16th February 2017. Rob Dalziel of JBA Consulting carried out this work.

Prepared by ..... Robert Dalziel BSc MSc
Assistant Ecologist

Reviewed by ..... Laura Thomas BA MRes PGCert CEcol MCIEEM
Senior Ecologist

Reviewed by ..... Catherine Jones BSc MRes Grad CIEEM
Ecologist

# Purpose

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# Non-Technical Summary

Under the Flood and Water Management Act (2010) (FWMA) Derby City Council became a Lead Local Flood Authority (LLFA). The roles, responsibilities, duties and powers of the Derby City Council as LLFA support management of flood risk from localised sources across the City. A Local Flood Risk Management Strategy (LFRMS) has been produced, encompassing the risks associated with all sources of flooding. This must be maintained and monitored by the LLFA as required by Section 9 of the FWMA.

The LFRMS must undergo a Strategic Environmental Assessment (SEA) to identify potentially significant environmental effects created as a result of the implementation of the measures contained within the strategy. This document comprises the options appraisal and Environmental Report stages as detailed in Stages B and C of the SEA Process. This follows production of, and consultation on, a SEA Scoping Report by Derby City Council in February 2016.

Assessment of the SEA objectives against three alternative management options (Do Nothing, Maintain Current Flood Risk Strategy and Manage and Reduce Local Flood Risk) highlighted the potential impacts on the environment that these options would promote. Doing nothing is likely to cause overall negative impacts on the environment and it should be considered irresponsible in terms of managing flood risk. Although maintaining current flood risk management is unlikely to cause significant changes to baseline levels, it is also considered inappropriate as it fails to fully consider adaptation to climate change. The final alternative option encompasses the objectives and actions as stated in the LFRMS. This option is considered to be the only realistic option for managing flood risk in the City of Derby. The objectives and actions as set out in the LFRMS have been fully assessed in this report against the SEA objectives to identify aspects of the strategy that may require revising, as a result of potential impacts suggested.

In brief, the assessment of the LFRMS objectives and actions against the SEA objectives, developed at the scoping stage, suggests an overall positive or neutral impact for all SEA receptors, with potentially strong benefits for the local population, social infrastructure, biodiversity and the Water Framework Directive (WFD). Uncertainties have been raised under some of the LFRMS objectives regarding impacts on biodiversity and WFD, air quality and human health, as the impacts of some LFRMS actions on these SEA objectives is unknown, particularly with regards to following of environmental best practice.

From the assessment no negative effects on any of the SEA objectives were identified from any of the LFRMS objectives or actions at this stage.

The draft Environmental Report will be subject to public consultation and issued to statutory consultees (i.e. Historic England, Natural England and the Environment Agency).

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# Abbreviations

AQMA ..... Air Quality Management Area
BAP ..... Biodiversity Action Plan
DCC ..... Derby City Council
FRM ..... Flood Risk Management
FWMA ..... Flood and Water Management Act
GEP ..... Good Ecological Potential
HAP ..... Habitat Action Plan
HER ..... Historic Environment Record
HRA ..... Habitats Regulation Assessment

HMWB..... Heavily Modified Water Body
IMD ..... Index of Multiple Deprivation
LFRMS..... Local Flood Risk Management Strategy
LGA..... Local Government Association
LLFA ..... Lead Local Flood Authority
LNR..... Local Nature Reserve
LWS ..... Local Wildlife Site
NCA ..... National Character Area
NERC..... Natural Environment and Rural Communities
NGR ..... National Grid Reference
NNR ..... National Nature Reserve
NPPF ..... National Planning Policy Framework
ODPM ..... Office of the Deputy Prime Minister
RBMP..... River Basin Management Plan
RMA..... Risk Management Authority
SAC..... Special Area of Conservation
SAP..... Species Action Plan
SEA..... Strategic Environmental Assessment
SoEP..... Statement of Environmental Particulars
SPA..... Special Protection Area
SSSI..... Site of Special Scientific Interest
SuDS..... Sustainable Drainage Systems
SWMP..... Surface Water Management Plan
WFD..... Water Framework Directive

# 1 Introduction

Derby City Council (DCC) is currently in the process of developing a Local Flood Risk Management Strategy (LFRMS) for the City. As Lead Local Flood Authority (LLFA) under the Floods and Water Management Act 2010 they are responsible for the management of local flood risk from surface run-off, groundwater and ordinary watercourses (smaller rivers and streams). JBA Consulting has been commissioned by DCC to undertake the Environmental Reporting stage of the Strategic Environmental Assessment (SEA) for the proposed Derby LFRMS.

The purpose of this Environmental Report is to assess the likely significant environmental impacts of implementing the LFRMS, along with a number of alternatives, to inform strategy development.

## 1.1 Purpose of SEA

The purpose of SEA is to systematically identify and evaluate potential environmental impacts of implementing a strategic plan or programme. It aims to inform the selection of a preferred option(s) that is economically viable, meets environmental objectives and legal requirements, and provides the best social outcomes. It aims to identify potentially significant environmental effects created as a result of the implementation of the plan or programme on issues such as "*biodiversity, population, human health, fauna, flora, soil, water, air, climate, material assets including architectural and archaeological heritage, landscape and the interrelationship between the above factors*" (Annex 1(f), European Directive 2001/42/EC).

## 1.2 Legislative Regime

In 2001, European Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the 'SEA Directive') was introduced. The Directive 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. It requires that an Environmental Report be produced for those plans or programmes requiring SEA which includes information on the "*relationship [of the plan or programme] with other relevant plans and programmes*" (Annex I(a)), in addition to relevant "*environmental protection objectives, established at international, [European] community or [national] level*" (Annex I (e)).

The Directive was transposed into English legislation by the Environmental Assessment of Plans and Programmes Regulations 2004 (the 'SEA Regulations'). The SEA Regulations form the basis by which all SEAs are carried out in England. In conjunction with the SEA Regulations, an Office of the Deputy Prime Minister (ODPM) publication, *A Practical Guide to the Strategic Environmental Assessment Directive* (ODPM, 2005) was issued.

This SEA Environmental Report will address these legislative requirements through the completion of Stages B and C as referred to within the Practical Guide and Table 1-1 below, and follows the completion of the scoping exercise conducted at Stage A (DDC, 2016). It will assess the potential environmental effects of the strategy, along with a number of alternatives, in a form suitable for public consultation and use by decision-makers, taking into account the objectives and geographical scope of the strategy.

## 1.3 Stages in the SEA process

This report has been produced in conjunction with the SEA Regulations and follows the guidance contained within the OPDM Guide (ODPM, 2005). The stages of the SEA process are outlined in Table 1-1 below.

Table 1-1. The stages of SEA stages from (ODPM, 2005)

| SEA stages | Purpose |
|---|---|
| Stage A | Setting the context and objectives, establishing the baseline and deciding on the scope |
| **Stage B** | **Developing and refining options and assessing effects** |
| **Stage C** | **Preparing the Environmental Report** |
| Stage D | Consulting on the draft LFRMS and the Environmental Report<br>Presentation to and adoption by the Council's Cabinet of the LFRMS |
| Stage E | Monitoring the significant effects of implementing the LFRMS |

## 1.4 The Local Flood Risk Management Strategy

The Flood and Water Management Act 2010 determined the need for flood risk to be managed within the framework of National Strategies for England and Wales and within Local Strategies for each Local Flood Authority Area. The national strategy for England sets out the principles for flood risk management and which organisations are responsible for implementation.

In accordance with the national strategy for England, LLFAs have been allocated responsibility for developing independent LFRMSs to address sources of local flooding. Each LFRMS identifies which local organisation is accountable for managing flood risk and establishes partnership agreements, as well as undertaking an assessment of flood risk and developing plans / actions, for tackling these risks.

Derby City Council as a LLFA has a responsibility to produce a LFRMS to manage water within the Borough to address local flooding issues.

## 1.5 Study Area

Derby City Council is a local authority in Derbyshire, in the East Midlands as shown in Figure 1-1. A total of 17 wards comprise the city.

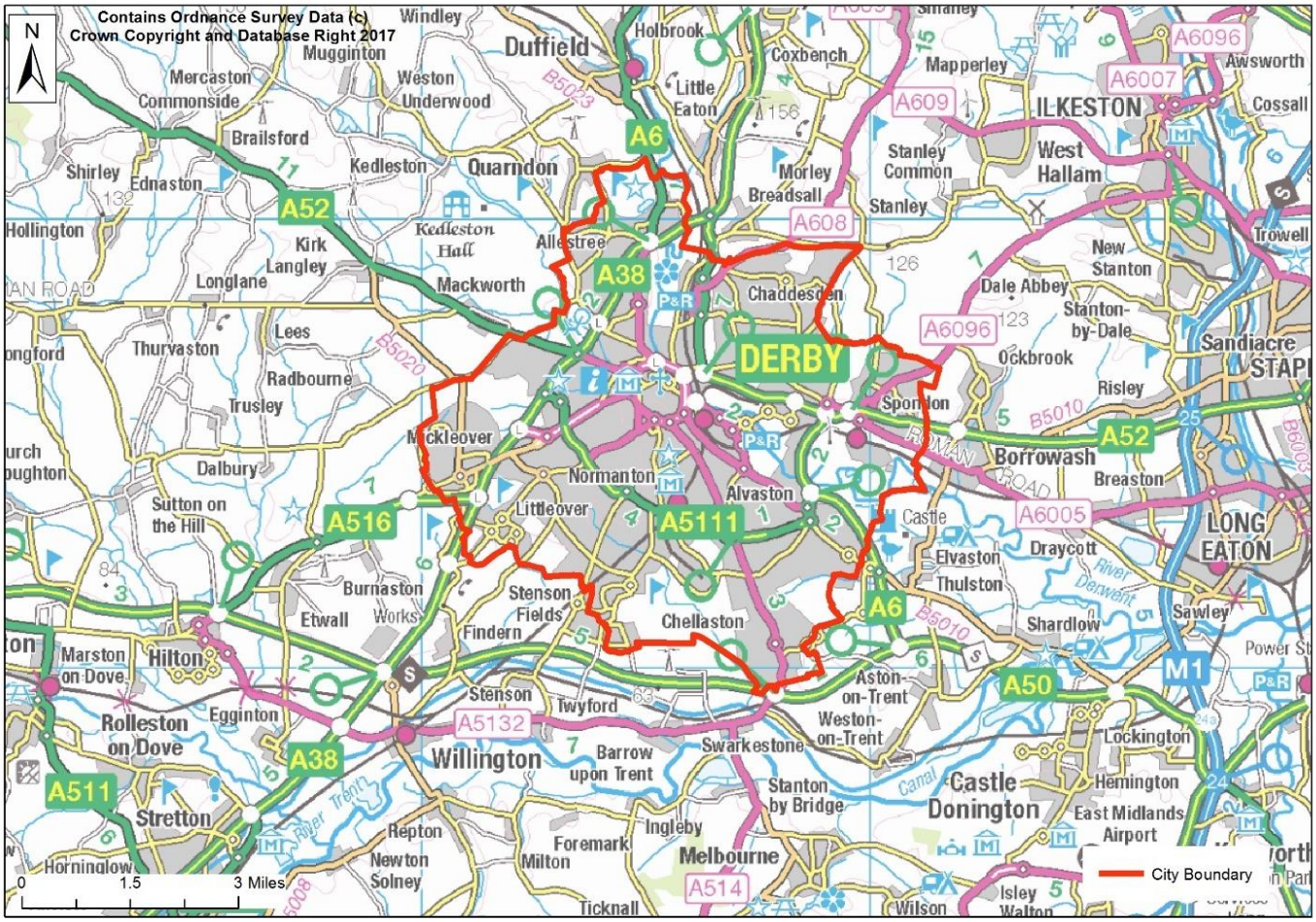


Figure 1-1. Extent of Study Area

## 1.6 SEA Scoping

The Scoping Report for the SEA of the Derby City Council LFRMS (DCC, 2016) was issued for consultation in February 2016 to the required consultation bodies (i.e.. Natural England, Historic England and the Environment Agency) in December 2016. Comments received on the Scoping Report during the consultation period have been addressed in this Environmental Report, as detailed in Table 1-2.

Table 1-2. SEA Scoping Consultation Responses

| Consultee | Comments received | Action Taken in SEA Environmental Report |
|---|---|---|
| Historic England | All references to 'Heritage England' (draft LFRMS) and 'English Heritage' (LFRMS SEA) should be amended throughout to 'Historic England'. | Historic England referred to throughout this report. |
| | References to 'Culture' heritage in the objectives in the documents should be amended to read 'cultural heritage' for clarity as the wording appears to differ between, and within, documents at present. | 'Cultural Heritage' referred to throughout this report. |
| | Historic England welcomes the opportunity to engage in the assessment and preparation of the LFRMS for the following reasons:<br>- The vulnerability of most heritage assets (designated and non-designated) to flooding, including occasional flooding, and the potential harm to, or loss of, significance;<br>- The potential impact of flood risk management measures on heritage assets and their settings, including impacts on water-related or water dependent heritage assets;<br>- The potential impact of changes in groundwater flows and chemistry on preserved organic and palaeo-environmental remains: where ground water levels are lowered as a result of measures to reduce flood risk, this may result in the possible degradation of remains through de-watering, whilst increasing groundwater levels and the effects of re-wetting could also be harmful;<br>- The potential impact of hydro-morphological adaptations on heritage assets: this can include the modification/ removal of historic in-channel structures, such as weirs, as well as physical changes to rivers with the potential to impact on archaeological and palaeo-environmental remains;<br>- The potential implications of flood risk on securing a sustainable use for heritage assets, including their repair and maintenance;<br>- The opportunities for conserving and enhancing heritage assets as part of an integrated approach to flood risk management and catchment based initiatives, this includes sustaining and enhancing the local character and distinctiveness of historic townscapes and landscapes;<br>- The opportunity for increasing public awareness and understanding of appropriate responses for heritage assets in dealing with the effects of flooding as well as the design of measures for managing flood risk and improving resilience; and,<br>- The opportunities for improving access, understanding or enjoyment of the historic environment and heritage assets as part of the design and implementation of flood risk management measures. | Comment noted and no actions required. |
| | A general comment in respect of the Scoping report is that the topic sections lack analysis of the LFRMS objectives in relation to the SEA objectives. At present, the historic environment does not feature on the LFRMS objectives which results in a limited scope in any case. This also results in a lack of analysis of synergistic effects between topic headings and issue outcomes and it is recommended that further work be undertaken on this to ensure that all environmental effects are considered appropriately within the SEA. | Analysis of the LFRMS objectives in relation to the SEA objectives is conducted at this Environmental Reporting stage and not the Scoping stage. Further details on cultural, architectural and archaeological heritage are included in section 2.3.4. |
| | It is recommended that LFRMS Objective 5 text should | Comment noted and |

| Consultee | Comments received | Action Taken in SEA Environmental Report |
|---|---|---|
| | include reference to the historic environment as set out in earlier comments above. | passed on to LFRMS team. |
| | Refers to 'Our City Our River' being expected to be approved in Autumn 2015 - it is suggested that this should be updated to reflect the current situation. | Comment noted and updated situation referred to in this Environmental Report. |
| | It is suggested that the situation with regard to the Local Plan Part 1 needs to be updated. | Comment noted and updated situation regarding Local Plan included. |
| | 'Culture' should be changed to 'Cultural' here and throughout the document in line with SA/SEA terminology. | This Environmental Report uses the requested terminology. |
| | Environmental Protection Objectives - The list is a list of legislation not objectives and it is suggested that the heading be revised accordingly as it is currently misleading. A separate list of objectives could then be included if that is the Council's expectation but would need to be done for all subject sections | Comment noted and updated in this Environmental Report. |
| | Baseline Review - This should also include reference to Historic Environment Records for other non-designated heritage assets, and also assets included on the Heritage at Risk Register. | The Historic Environment Record is referenced in section 2.3.4 of this Environmental Report. |
| | Future Considerations - The single sentence is considered to be a weak approach since it goes no further than offer the provisions of current legislation, in terms of heritage asset conservation/protection, or the requirements of NPPF. Historic England would expect much more detailed consideration of how the draft flood risk management strategy is likely to influence cultural heritage i.e. the historic environment, heritage assets and setting, at the local level. This should then feed the Key Environmental Issues at Para 3.2.4.5. Due to the insufficient analysis of information in 3.2.4.4, the issues set out in 3.2.4.5 are also insufficient in relation to the historic environment. The scoping should go much further than it already does. For example, it could consider the information set out in our general comments on engagement at the beginning of this letter as a starting point. You may also wish to discuss with the Council's Conservation team to establish whether there are any other local aspects which need to be taken into account. | The section on cultural, architectural and archaeological heritage has been expanded significantly from the Scoping stage to reflect these comments (see section 2.3.4 of this Environmental Report). |
| | Baseline Review for Material Assets - the last bullet point text should be revised to read Heritage assets and their setting. | Comment noted and taken forward into this Environmental Report. |
| | Material Assets Future Considerations - It is considered that the single sentence and its content is a weak approach and limits the scope of the SEA in respect of the historic environment. Material assets and overall public realm can impact on heritage assets whether, structures or places, negatively and positively and this should be addressed in the SEA. | The section on material assets has been expanded from the Scoping stage to reflect this comment (see section 2.3.7 of this Environmental Report). |
| | Key Environmental Issues for Material Assets - the fifth bullet point which currently reads 'Development close to heritage locations must be developed to complement the existing buildings' does not provide for all heritage assets and setting and may not offer the most appropriate solution to a situation. It is suggested that alternative wording be discussed with your Policy Team colleagues who are best placed to advise on text which would be in line with the Local Plan Part 1 requirements and policy | This comment has been noted and the text amended in section 2.3.7 of this Environmental Report. |

| Consultee | Comments received | Action Taken in SEA Environmental Report |
|---|---|---|
| | wording. | |
| | Landscape - Environmental Protection Objectives - Again, this is a list of legislation and does not set out any objectives and should be revised accordingly. If the legislation list is retained it is recommended that the Ancient Monuments and Archaeological Areas Act 1979 be included since Scheduled Monuments and their setting lie within the landscape and can form parts of open space. | Comment noted and updated in this Environmental Report. Ancient Monuments and Archaeological Areas Act 1979 included in section 2.2. |
| | Landscape - Baseline Review - Historic Characterisation studies, Conservation Area Appraisals and Management Plans, and the Historic Environment Records should all inform the review of landscape information within the SEA. | The section on landscape has been expanded from the Scoping stage to reflect this comment (see section 2.3.1 of this Environmental Report). |
| | Landscape - Future Considerations - Again, it is considered that the information provided is a weak approach and limits the scope of the SEA in respect of the historic environment. | The section on landscape has been expanded from the Scoping stage to reflect this comment (see section 2.3.1 of this Environmental Report). |
| | Landscape - Key Environmental Issues - Again, there is no analysis of the statements made in the current iteration of the SEA. For example, if the need for new housing will place additional pressure on greenfield land in and around Derby what LFRMS issues in respect of the historic environment arise as a result of this and how are these addressed in the SEA? | The section on landscape has been expanded from the Scoping stage to reflect this comment (see section 2.3.1 of this Environmental Report). |
| | Water - Legislation list - It is recommended that the Town and Country Planning (Listed Building and Conservation Areas) Act 1990 is included in the list since some water related structures are heritage assets e.g. Darley Abbey weir. | The Town and Country Planning (Listed Building and Conservation Areas) Act 1990 has been included in section 2.2. |
| | Water - Key Environmental Issues - It is recommended an additional bullet point be added to set out that positive and negative effects on cultural heritage, especially buried archaeology may also occur as a result of any flood risk management works. | This is included in the key environmental issues part of section 2.3.4 of this Environmental Report. |
| | SEA Objectives - SEA Topic 3 - The reference to 'culture' should be amended to read 'cultural' as set out previously in this response. In line with wording elsewhere in the SEA and LFRMS and also NPPF, it is recommended that the text be added to, to read: 'conserve, protect and enhance the assets and their setting.' | Objective amended as requesting in this Environmental Report. |
| | In the third column it is suggested that the phrase 'Does the strategy damage or threaten the assets or their setting?' be amended to use NPPF terminology, and the City Council Local Plan Part 1, in relation to harm to significance of heritage assets and subsequent assessment. E.g. 'Does the strategy harm the significance of heritage assets and their setting' or similar alternative. | Text amended as requested in this Environmental Report. |
| | In addition, it is recommended that the second bullet point be added to, to read as follows: 'Does it provide any opportunities to enhance and/or better reveal the assets and their setting?' | Text amended as requested in this Environmental Report. |

| Consultee | Comments received | Action Taken in SEA Environmental Report |
|---|---|---|
| | It is considered that the scope of the bullet points is limited, as a result of the limited scope of the SEA, and more could be made of this section in respect of the historic environment. For example, additional bullet points could ask:<br>- 'Does the strategy include measures for conserving and enhancing heritage assets as part of an integrated approach to flood risk management?';<br>- 'Does the strategy offer opportunity for increasing public awareness and understanding of appropriate responses for heritage assets in dealing with the effects of flooding as well as the design of measures for managing flood risk and improving resilience'; and,<br>- 'Does the strategy offer opportunities for improving access, understanding or enjoyment of the historic environment and heritage assets as part of the design and implementation of flood risk management measures?'<br>The Historic England advice note on Strategic Environmental Assessment may assist with these aspects:<br><https://content.historicengland.org.uk/images-books/publications/sustainabilityappraisal-<br>and-strategic-environmental-assessment-advice-note-8/heag036-<br>sustainability-appraisal-strategic-environmental-assessment.pdf/> | Comment noted and has been taken into account in this Environmental Report through expansion of the cultural, architectural and archaeological heritage section and through the monitoring strategy. |
| | Appendix A - It is recommended that the Historic England technical guidance on Flooding and Historic Buildings be included in the list of national guidance. The information is designed to assist those who live in, own or manage historic buildings that are threatened by flooding. It includes information on preventative measures as well as inspection, conservation and repair following a flooding event. Should you find the HE SEA advice note 8 of assistance with the documents at this time you may wish to reference that in the national guidance section too. It is recommended that the correct terminology is used in respect of the City Council's Local Plan Part 1 since the current iteration includes out of date information. | Added in section 2.2. |
| | Section 7.5 - Appendix D - SEA Objectives and Measures of Success - It is suggested that the Objectives are numbered for clarity and cross referencing with those included in Section 4 of the SEA. Historic England does not support the proposed measure of success to 'average, annually, remove 1% of defined assets from one flood zone to another by mitigation measures to reduce flood risk' since this could have negative effects on heritage assets, in particular the watering or de-watering of buried remains. | This Environment Report includes the SEA objectives and Measures of Success in the same section for clarity (Table 3-2). |
| The Royal National Institute of Blind People | Consider the vital importance of vision rehabilitation. Given that numbers of blind and partially sighted people are increasing, we believe that ensuring the right resources for vision rehabilitation now will prepare Derby's local services for the future. | Comment noted, particularly in relation to section 2.3.6. |

# 2 Environmental Baseline

## 2.1 Introduction

This chapter of the Environmental Report presents the findings of the Scoping Report (DCC, 2016) which identified the context and objectives of the LFRMS and identified and the scope of the assessment. The baseline has been updated, where necessary, to address the comments raised at the scoping stage (see Table 1-2).

## 2.2 Other relevant plans, programmes and environmental protection objectives

As part of the SEA process, an assessment of existing policies, plans and programmes, and their impact on and integration with the LFRMS, has been undertaken. This is to address the requirement within the European Directive 2001/42/EC to determine the "relationship [of the plan or programme] with other relevant plans and programmes" (Annex I (a)), including, "environmental protection objectives, established at international, [European] community or [national] level" (Annex I (e)).

The ODPM SEA guidance recognises that no list of plans or policies can be definitive. As a result all policies, plans and legislation which are considered relevant to the development of the LFRMS have been identified in Table 2-1, with a more detailed review and assessment of the implications for the LFRMS detailed in Appendix A.

Table 2-1. Key Policies, Plans and Legislation

| Policy, Plan or Programme |
|---|
| **International** |
| Bern Convention on the Conservation of European Wildlife and Natural Habitats, 1979 |
| Bonn Convention on the Conservation of Migratory Species of Wild Animals, 1979 |
| **EC Birds Directive** – Council Directive 2009/147/EEC on the conservation of wild birds |
| **EC Habitat Directive** - Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora |
| **EU Floods Directive** - Directive 2007/60/EC on the assessment and management of flood risks, 2007 |
| **EU Groundwater Directive** – Directive 2006/118/EC on the protection of groundwater against pollution and deterioration |
| **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) |
| The convention for the Protection for the Architectural Heritage of Europe (The Granada Convention) |
| The European Convention on the Protection of Archaeological Heritage (The Valetta Convention) |
| The European Landscape Convention (2000) |
| European Commission, Nitrates Directive (91/676/EEC) |
| European Commission, Ambient Air Quality Directive (2008/50/EC) |
| European Union Seventh Environmental Action Plan |
| European Union Strategic Environmental Assessment Directive |
| The Water Framework Directive (2000/60/EC) |
| The World Heritage Convention (1972) |
| **National** |
| Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) |
| Ancient Monuments and Archaeological Areas Act (1979) |
| Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems (2011) |
| Building Regulations Approved Document H - Drainage and Waste Disposal |
| Cabinet Office, National Strategy Action Plan for Neighbourhood Renewal (2001) |
| Civil Contingencies Act (2004) |
| Conservation of Habitats and Species Regulations (2010) |
| Contaminated Land (England) Regulations (2006) |
| Countryside and Rights of Way Act (2000) |
| Draft Water Bill (2012) |

| Policy, Plan or Programme |
|---|
| England Biodiversity Framework (2008) |
| Environment Act (1995) |
| Flood and Water Management Act (2010) |
| Flood Risk Regulations (2009) |
| Future Water: the Government's water strategy for England (2008) |
| Groundwater (England and Wales) Regulations 2009 |
| Heritage Protection for the 21st Century, White Paper (2007) |
| Historic England technical guidance on Flooding and Historic Buildings |
| Invasive Non-Native Species Framework Strategy for Great Britain (2008) |
| Land Drainage Act 1991 (as amended) |
| Localism Act (2011) |
| Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network, (2010) |
| Making Space for Water – taking forward a new Government strategy for flood and coastal erosion risk management in England (2005) |
| National Flood and Coastal Erosion Risk Management Strategy (2011) |
| National Planning Policy Framework (2012) |
| National Wetland Vision (2008) |
| Natural Environment and Rural Communities (NERC) Act (2006) |
| Planning (Listed Buildings and Conservation Areas) Act (1990) |
| Salmon and Freshwater Fisheries Act (1975) |
| Securing the Future – the UK Government Sustainable Development Strategy (2005) |
| The Air Quality Strategy (2011) |
| The National Flood and Coastal Erosion Risk Management Strategy for England (2011) |
| The National Flood Emergency Framework for England (2011) |
| The SuDS Manual (2006) |
| The Town and Country Planning (Listed Building and Conservation Areas) Act (1990) |
| UK Biodiversity Action Plan (2002) |
| Urban Wastewater Treatment Directive 1991 |
| Water Act (2003) |
| Water for Life, Water White Paper (2011) |
| Water for People and the Environment, Water Resources Strategy for England and Wales (2009) |
| Water White Paper 2011 |
| Waterways for tomorrow 2000 |
| Wildlife and Countryside Act (1981, as amended) |
| **Regional** |
| Lowland Derbyshire Biodiversity Action Plan (November, 2011) |
| River Basin Management Plan Humber River Basin District (December, 2009) |
| **Local** |
| The City of Derby Local Plan - Part 1 Core Strategy (2017) |
| Derby City Council (2011) Derby City Surface Water Management Plan |
| Derby City Council (2010) Water Cycle Study |
| Derby City Council (2011) Local Transport Plan |
| Derby City Council (2011) Preliminary Flood Risk Assessment |
| Derby City Climate Change Strategy (2013) |
| Derby City Council / Environment Agency (2013) Our City Our River |
| Derby Surface Water Management Plan (2010) |
| Derby Strategic Flood Risk Assessment (2011) |

## 2.3 Baseline Information: Environmental Characteristics and Key Issues

Baseline information outlines the current environmental and social status of numerous potentially vulnerable receptors and assets within the City of Derby. Additionally, it identifies any key issues or problems which require addressing in the LFRMS and provides a basis for predicting and monitoring the effects of the LFRMS implementation. This baseline information has been updated throughout the duration of the SEA process as the LFRMS is developed further, as new information becomes available and as consultation comments are addressed. The SEA will also include consideration of the potential inter-relationships where the LFRMS measures could cause secondary or cumulative effects.

### 2.3.1 Landscape

Derby City Council looks after 300 parks and open spaces across the city, covering 700 hectares. There is a wide variation of footfall, quality of facilities and security.

Derby City Council also has a rich and diverse historic environment. Listed buildings, conservation areas and areas of local importance are located throughout the City (see section 2.3.4) and make a significant and valuable contribution to the local landscape character.

#### Key Environmental Issues

Flood risk management has the potential to affect local landscape characteristics in the City and green spaces. This includes impacts on existing character areas and on the setting of local landmarks and landscape features. Many of these aspects are protected through regional and local policies and as such could constrain the implementation of LFRMS objectives if they are shown to present a risk to the quality of the local landscape.

In the future, the need for new housing will place additional pressures on greenfield land in and around Derby.

### 2.3.2 Biodiversity

There are many natural and semi-natural habitat types present within the City, including river corridors, parks, woodlands, post-industrial land, hedgerows, lakes and urban gardens. Built up areas (industrial and domestic) form a significant proportion of the land (65%) within the City of Derby.

Many rare species of mammals, birds, plants, insects and fish have been found in Derby. Some are given full legal protection and two, the dark bush cricket and broomrape, are found nowhere else in Derbyshire (DCC, 2016).

Derby retains a network of green wedges and wildlife corridors that link the city to the countryside. These areas are used for walking, cycling, farming, education and parkland (DCC, 2016).

#### 2.3.2.1 Designated Nature Conservation Sites

There are several statutory designated nature conservation sites located partially or wholly within the City of Derby boundary. There are no Natura 2000 sites (i.e. Special Protected Areas (SPA), Special Areas of Conservation (SAC) or Ramsar sites). One nationally important Site of Special Scientific Interest (SSSI) and 11 Local Nature Reserves (LNR) are located in the City. Sites are described briefly in Table 2-2 and their locations shown in Figure 2-1.

Table 2-2. Nature Conservation Sites with the City of Derby and their features of interest

| Site Name | Features of Interest |
|---|---|
| **Boulton Moor SSSI** | Geological interest |
| **Chellaston LNR** | Botanical interest |
| **Sinfin Moor LNR** | Botanical interest |
| **Elm Wood LNR** | Ancient woodland |
| **Elvaston LNR** | Open parkland and woodland |
| **Sunnydale Park LNR** | Botanical interest |
| **Mickleover Meadows LNR** | Botanical and reptile/amphibian assemblage |
| **The Sanctuary LNR** | Ornithological interest |
| **West Park Meadows LNR** | Botanical interest |

| Site Name | Features of Interest |
|---|---|
| **Chaddesden Woods and Lime Lane Wood LNR** | Woodland |
| **Darley and Nutwood LNR** | Woodland and botanical interest |
| **Allestree Park LNR** | Botanical interest |

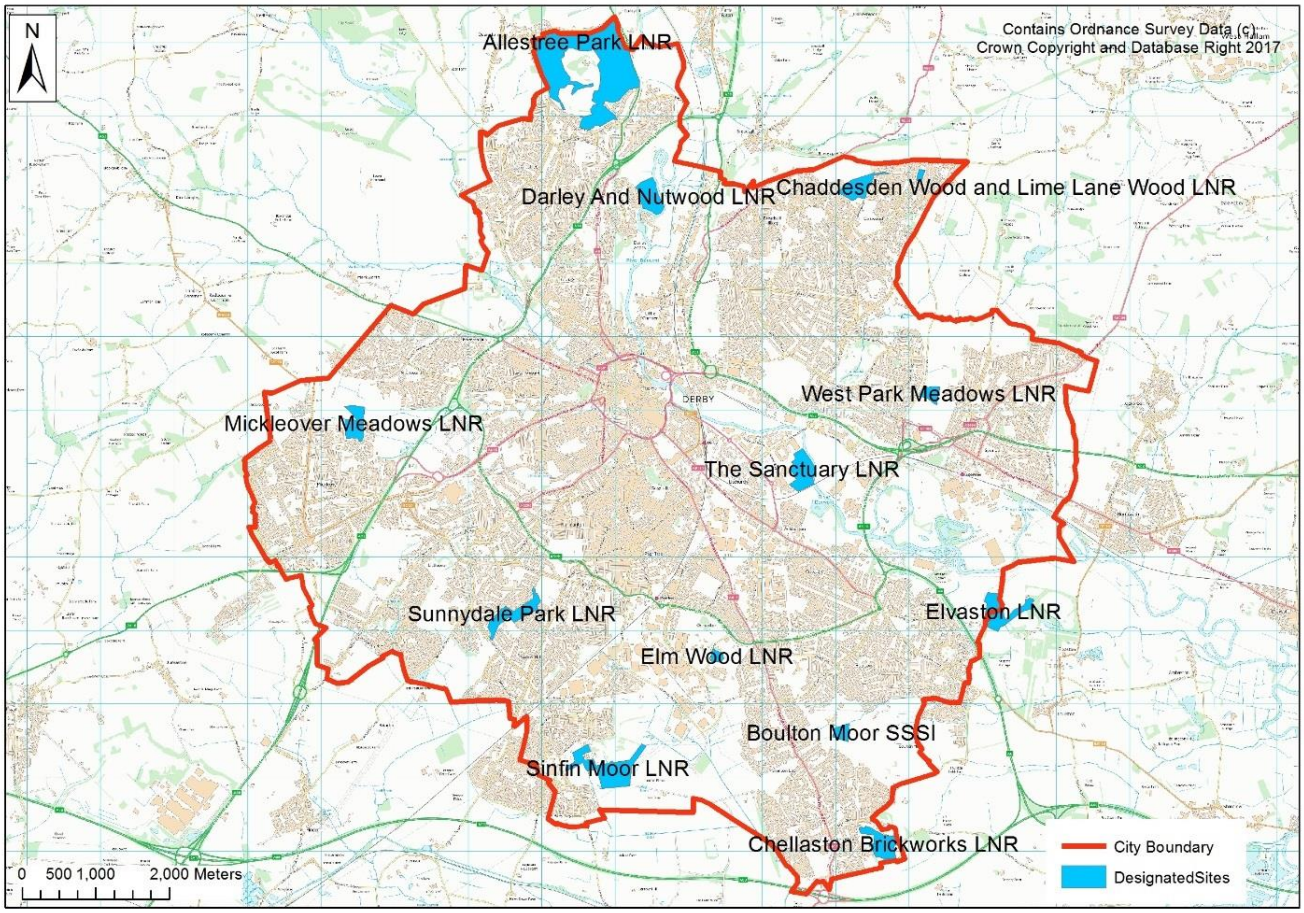


Figure 2-1. Nationally and locally designated nature conservation sites with the City of Derby

Within the City there are also 65 geological and biological Sites of Importance for Nature Conservation made up of 58 Wildlife Sites and seven Regionally Important Geological Sites. Furthermore, an audit in 1991 identified 99 Woodlands covering 1% of Derby; two areas are classed as ancient woodland (Chaddesden Wood and Elm Wood).

#### 2.3.2.2 Habitats Regulations

The Conservation of Habitats and Species Regulations 2010 (as amended) implement Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) into national legislation. In brief the regulations "provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites" (JNCC, 2010). There are no European or Ramsar sites within the District of the City of Derby, or within 10km of its boundary. No sites outwith the 10km buffer around the City of Derby are considered connected to the City, via hydrological or other pathways, and therefore it is considered that the LFRMS will have no likely significant effect on any European site and no Habitats Regulations Assessment is required.

#### 2.3.2.3 Lowland Derbyshire Biodiversity Action Plan

Derby City Council have no specific BAP but the City is covered by the Lowland Derbyshire BAP issued by the Lowland Derbyshire Biodiversity Partnership in 2011. The plan was developed to achieve good practice and provide optimal environments for wildlife in the City. Derby local priority habitats and species, as identified by the Lowland Derbyshire Biodiversity Partnership (Lowland Derbyshire Biodiversity Partnership, 2011), are listed in Table 2-3 below.

Table 2-3. Priority Habitats and Species found in City of Derby

| BAP Habitats | BAP Species |
|---|---|
| Floodplain grazing marsh | Great Crested Newt |
| Lowland mixed deciduous woodland | Common Toad |
| Wood-pasture and parkland | Common Lizard |
| Ponds | Grass Snake |
| Rivers and streams | Slow Worm |
| Lowland meadow | Various birds |
| Hedgerow | Brown Hare |
| Swamp | Brown Long-eared bat |
| Wet woodland | Harvest Mouse |
| Open Mosaic habitats | Hedgehog |
| Lowland calcareous grassland | Noctule bat |
| Lakes | Otter |
| Lowland dry acid grassland | Polecat |
| Traditional orchards | Soprano Pipistrelle |
| | Water Vole |
| | White Letter Hairstreak |
| | White-clawed Crayfish |
| | Various moths |

#### 2.3.2.4 Fisheries

Watercourses within the City including the River Derwent, Chaddesden Brook, Ock Brook, Cuttle Brook, Hell Brook and Bramble Brook are likely to support fish species.

In addition, several waterbodies within the City are used for recreational fishing, including:

- Haslams Lake (Carp, Tench)
- Allestree Park (Carp, Tench, Bream, Pike, Roach and Perch)
- Alvaston Park (Carp, Tench)
- Heatherton Pond (Carp)
- Markeaton Park - (Carp, Tench, Bream, Pike, Roach and Perch)
- Mill Dam - (Crucian Carp, Rudd, Roach, Perch, Bream, Pike and Carp)

#### 2.3.2.5 Invasive non-native species

Watercourse corridors can also be locations where invasive non-native species are prevalent particularly Japanese Knotweed, Giant Hogweed, Himalayan Balsam and Water Fern.

**Key Environmental Issues**

A number of designated nature conservation sites are located within the City and they support a diverse range of habitats and fauna, shaped by the underlying geology of the Borough. Flooding and flood risk management actions under the LFRMS may adversely impact these sites or provide opportunities for enhancement.

Protected species and habitats identified within the Borough may be negatively impacted upon by LFRMS implementation; however, benefits to some species through creation of new habitat may be seen and opportunities for habitat enhancement on some sites may arise.

Flooding of waterbodies can displace fish species, including non-native species which is a particular environmental concern. However, flood risk management also provides opportunity to improve fisheries habitats, for example through the removal or modification of existing impediments to fish passage.

Flooding and flood risk management works have the potential to cause the spread of invasive non-native species through the movement of seeds and plant fragments, however, it may also provide opportunity for their control/ eradication.

There is strong pressure to construct buildings closer together and build on brownfield sites. After industrial use on site has stopped, a brownfield site may become an important habitat for wildlife.

Planning procedures need to conserve and enhance biodiversity and take into account the needs of protected species.

Increasing population means more people accessing green space for leisure or commuting.

More intensive farming and changes to land drainage.

Loss of private gardens to hardstanding, decking and extensions leading to loss of greenery and more rain water going into sewer systems.

Climate change is affecting biodiversity.

### 2.3.3 Water

#### 2.3.3.1 Watercourses

The main waterbody with the City of Derby is the River Derwent, which rises north of the City in the Peak District, flowing generally south through the City and combining with a number of smaller watercourses along its length before combining with the River Trent to the south of Derby. The city boundary follows the course of some watercourses such as Hell Brook to the south-west of the city and Markeaton Brook to the north-west of the city.

#### 2.3.3.2 Water Framework Directive

The Water Framework Directive (WFD) is a European Directive which requires the introduction of strategic planning measures to manage, protect and improve the water environment, which came into force in December 2000. The WFD was transposed into UK legislation in 2003 which resulted in the Environment Agency being made responsible for the production of River Basin Management Plans (RBMPs). The City of Derby District is covered by the Humber RBMP, which identifies the current quality of waterbodies in the city and sets objectives for making further improvements to their ecological and chemical quality.

Several waterbodies as described in the Humber RBMP fall within the City of Derby, these are summarised in terms of their WFD status and objectives in Table 2-4.

Table 2-4. WFD Status and Objectives for Humber RBMP water bodies within City of Derby

| Water Body | Designation | Current Overall Status | Current Ecological Status | Current Chemical Status | Objectives |
|---|---|---|---|---|---|
| River Derwent from Bottle Brook to Trent | Heavily Modified | Moderate | Moderate | Fail | Moderate by 2015<br>Moderate by 2015<br>Good by 2015 |
| Markeaton Brook from Source to Mackworth Brook | Not designated artificial or heavily modified | Moderate | Moderate | Good | Good by 2027<br>Good by 2027<br>Good by 2015 |
| Mackworth Brook Catchment (trib of Markeaton Brook) | Not designated artificial or heavily modified | Poor | Poor | Good | Good by 2027<br>Good by 2027<br>Good by 2027 |
| Markeaton Brook from Mackworth Brook to Derwent | Heavily modified | Moderate | Moderate | Good | Good by 2027<br>Good by 2027<br>Good by 2015 |
| Chaddesden Brook Catchment (trib of Derwent) | Not designated as artificial or heavily modified | Moderate | Moderate | Good | Good by 2015<br>Good by 2015<br>Good by 2015 |

#### 2.3.3.3 Surface Water Quality

Surface water quality within the City is most at risk from run-off from urban areas, including domestic and industrial discharge, which is likely to put pressure on surface water quality within the City. Furthermore, surface run-off of nitrates from agricultural land is likely to affect the surface water quality within the more rural landscape surrounding the urban area.

#### 2.3.3.4 Groundwater Quality

Quality of the groundwater has been assessed under the WFD, taking into account chemical and quantitative factors. The current overall status of the Derwent - Secondary Combined groundwater body, as stated in the Humber RBMP, is Poor with the current quantitative status assessed as Good and chemical status as Poor. The status objectives for this groundwater body are to achieve good quantitative and chemical status by 2015 and an overall good status by 2027.

#### 2.3.3.5 Flooding

The Derby City Council Level 1 Strategic Flood Risk Assessment (2010) identified the following flood risks in Derby and neighbouring districts and boroughs:

- Fluvial flood risks to Derby from the River Derwent.
- Reservoir Risks from the Derwent Valley reservoirs and also Allestree Park reservoir.
- Fluvial flood risks to the city from the minor tributary watercourses including:
    - Markeaton Brook affecting the city centre, Raynesway area and Alvaston.
    - Wood Brook, Lees Brook and Chaddesden Brook affecting Oakwood and Chaddesden.
    - Cotton Brook affecting Normanton and Peartree.
    - Littleover Brook affecting Littleover, the Derby Royal Hospital and the city centre.
    - Bramble Brook affecting Mickleover and areas south west of the city centre.
    - Hell Brook and Cuttle Brook affecting areas of Mickleover, Pastures Hill, Sunny Hill and Sinfin.
- Pluvial flood risks affecting Oakwood, Littleover, Peartree, Normanton, Spondon and the city centre.

The most frequent flood risk in Derby is flooding from heavy rainfall, which can often happen and quickly impacts a number of high risk properties. Surface water flooding is made worse by:

- Changes to surfacing due to loss of gardens or reuse of brownfield sites.
- Large urban areas of impermeable paving or tarmac.
- Soils, such as clay, that do not easily allow water to pass through them.

In urban areas, pluvial flood water can become polluted with domestic sewage when combined foul sewers overflow. This can lead to human health problems and environmental damage.

Fluvial flood risk is less likely, but if it were to occur it could have a significant and possibly devastating effect. This type of flooding can often involve greater depths of flood water with greater risk to people.

When surface water flows through urban environments it picks up pollutants toxic to aquatic and/or riparian life. The use of Sustainable Urban Drainage Systems is recommended to reduce pollution inputs to sensitive watercourses. The combined sewers overflow into watercourses when they become too full. This sewage then bypasses any treatment and pollutes the environment. Combined sewer overflows are a necessity to protect properties from sewage flooding; however, their occurrence should be minimised by reducing the surface water flows into combined sewers.

Flood risk is likely to increase with climate change because the intensity of rainfall is forecast to increase by up to 30%. It is assumed that due to the Water Framework Directive, the ecological status of the waterbodies in Derby will improve in order to meet targets set for 2027.

**Key Environmental Issues**

Local flooding or flood risk mitigation works can result in:

- High levels of nutrients and pollutants in waterbodies and watercourses

- Poorer surface water quality

- Poorer groundwater quality

- Changes in shape, dimensions and boundaries of waterbodies and watercourses.

More development projects using Sustainable Drainage Systems could result in greater amounts of groundwater flowing through the city. The effects of this are not fully known at this stage.

### 2.3.4 Cultural, Architectural and Archaeological Heritage

The City of Derby holds a number of historically and culturally valuable sites, reflecting a rich and diverse built environment and historic development.

Analysis of GIS data identified that there are 381 Listed Buildings, seven scheduled monuments (i.e. St Mary's Bridge; Darley Abbey, remains of; Roman hypocaust under school playing field, Little Chester; Little Chester Roman site; Derby Racecourse Roman vicus and cemetery; two sections of Rykneld Street Roman Road; and Anglo-Scandinavian high cross shaft, St Weburgh's Church, Spondon), three registered parks and gardens (i.e. Derby Arboretum, The Old Cemetery, Uttoxeter New Road, Nottingham Road Cemetery, Chaddesden) and one World Heritage Site (i.e. Derwent Valley Mills World Heritage Site). located within the city These are awarded protection against potentially damaging activities, including those associated with development, under the Ancient Monuments and Archaeological Areas Act 1979. The locations of all these sites are depicted in Figure 2-2. There are no Registered Battlefields within the City.

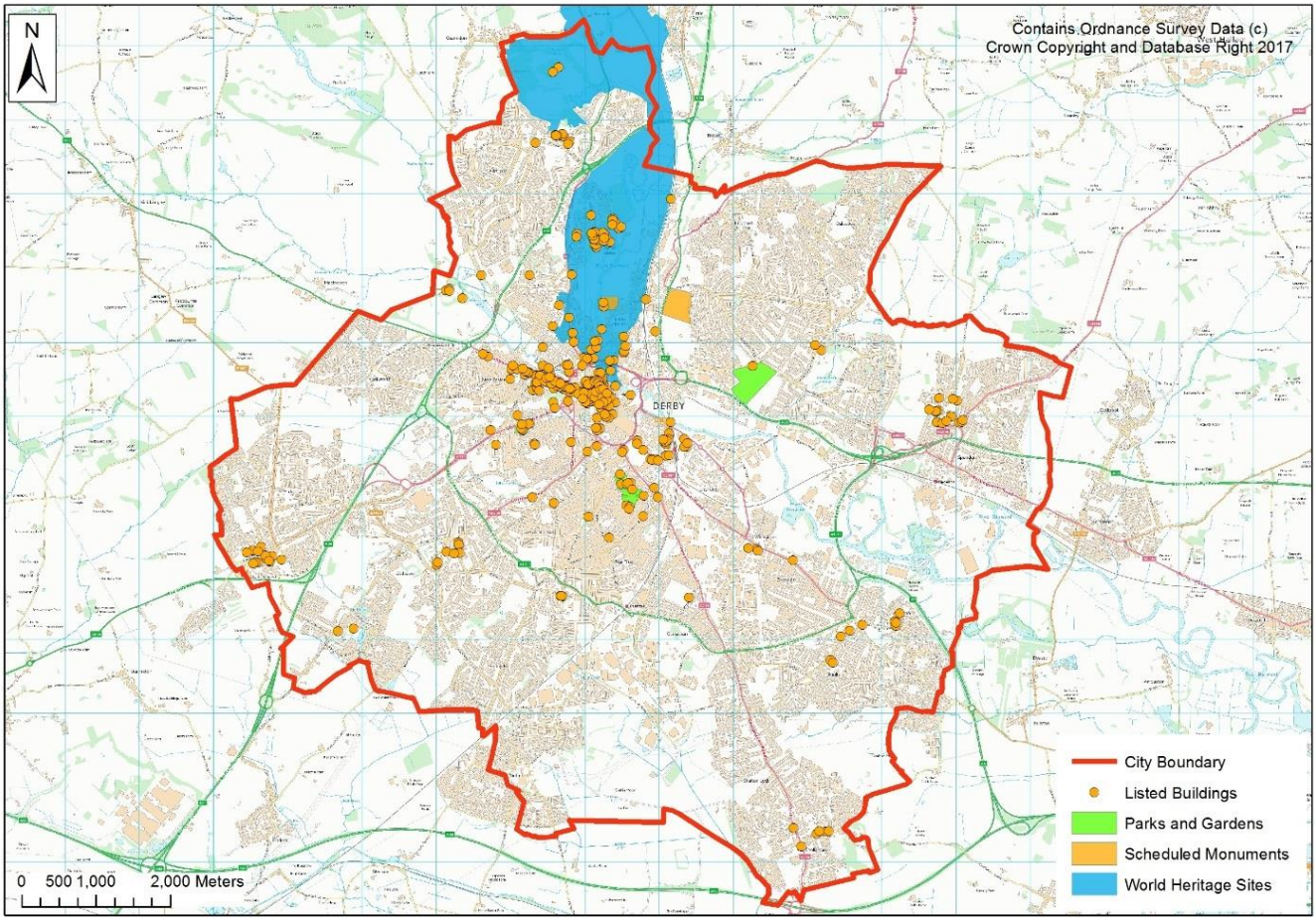


Figure 2-2. Listed buildings, parks and gardens, scheduled monuments and World Heritage Sites within the City of Derby

Within the City there are also 16 Conservation Areas protected under the Planning (Listed Buildings and Conservation Areas) Act 1990. This includes;

- City Centre Conservation Area
- Friar Gate Conservation Area
- St Peter's Street and Green Lane

- Railway Conservation Area
- Arboretum Conservation Area
- Little Chester Conservation Area
- Strutts Park Conservation Area
- Hartington Street Conservation Area
- Highfield Cottages Conservation Area
- Leylands Conservation Area
- Nottingham Road Conservation Area
- Darley Abbey Conservation Area
- Mickleover Conservation Area
- Spondon Conservation Area
- Allestree Conservation Area
- Markeaton Conservation Area

Of the statutorily designated sites, Historic England identifies that eight are at risk and are included on the Heritage at Risk Register, this includes six listed buildings, two conservation areas.

Within the City there will also be a wide range of non-designated heritage assets which will be listed on the Derby Historic Environmental Record (HER), alongside statutorily designated sites. However, at this strategic level of assessment data for the HER has not been collated, but it should be used to inform measures implemented from the LFRMS at the project level.

There is also the potential for unknown and undesignated archaeological and palaeo-environmental features to be present within the City, and when buried in waterlogged soils of river valleys, floodplains and wetland areas this can be critical for their maintenance.

Key Environmental Issues

77 listed buildings are currently at risk from surface water flooding.

An unknown number of non-designated and unknown heritage assets within the City of Derby could be affected by flooding.

Any proposed flood alleviation measures have the potential to impact on the historic environment in either a positive or negative way. Any flood risk management measures will have to ensure these heritage sites are taken into consideration. The setting of such sites will also need to be taken into account, as will the potential for positive impacts from implementation of the LFRMS.

### 2.3.5 Population

The most recent estimate of the population of the City of Derby is 248,752 (Office for National Statistics, 2011), which has increased from 230,700 in 2001 (Office for National Statistics, 2011), representing a 7.8% increase in the population. This may rise to 275,700 in 2020 (DDC, 2016). Any increase in population has to be met with increased provision of healthcare, housing and welfare and amenity provision.

The City is divided into seventeen wards and the approximate population size of each ward is given in Table 2-5, below.

Table 2-5. Populations of wards in the City of Derby

| Ward | Population Size |
|---|---|
| Abbey | 15,334 |
| Allestree | 13,622 |
| Alvaston | 16,255 |
| Arboretum | 18,590 |
| Blagreaves | 13,055 |
| Boulton | 13,874 |

| Ward | Population Size |
|---|---|
| Chaddesden | 13,413 |
| Chellaston | 15,198 |
| Darley | 14,897 |
| Derwent | 14,102 |
| Littleover | 14,375 |
| Mackworth | 14,180 |
| Mickleover | 14,022 |
| Normanton | 17,071 |
| Oakwood | 13,259 |
| Sinfin | 15,128 |
| Spondon | 12,377 |

**Key Environmental Issues**

The LFRMS may have some influence on the rate of population growth through effects on the viability of land for development.

The need for new housing will place additional pressures on greenfield land in and around Derby.

Increasing numbers of people travelling through and within the City would tend to adversely affect the air quality in parts of Derby.

### 2.3.6 Human Health

The general health of the inhabitants within the City of Derby is comparable to that of England as a whole; 79.9% of the population are in very good or good health compared to 5.8% that are in bad or very bad health (England: 79.9% and 6% respectively). The life expectancy for women is 81.5 years of age, and is higher than that for men who have a life expectancy of 77.5 years (Office for National Statistics, 2011). The age distribution of the population within the Borough is shown in Figure 2-3.

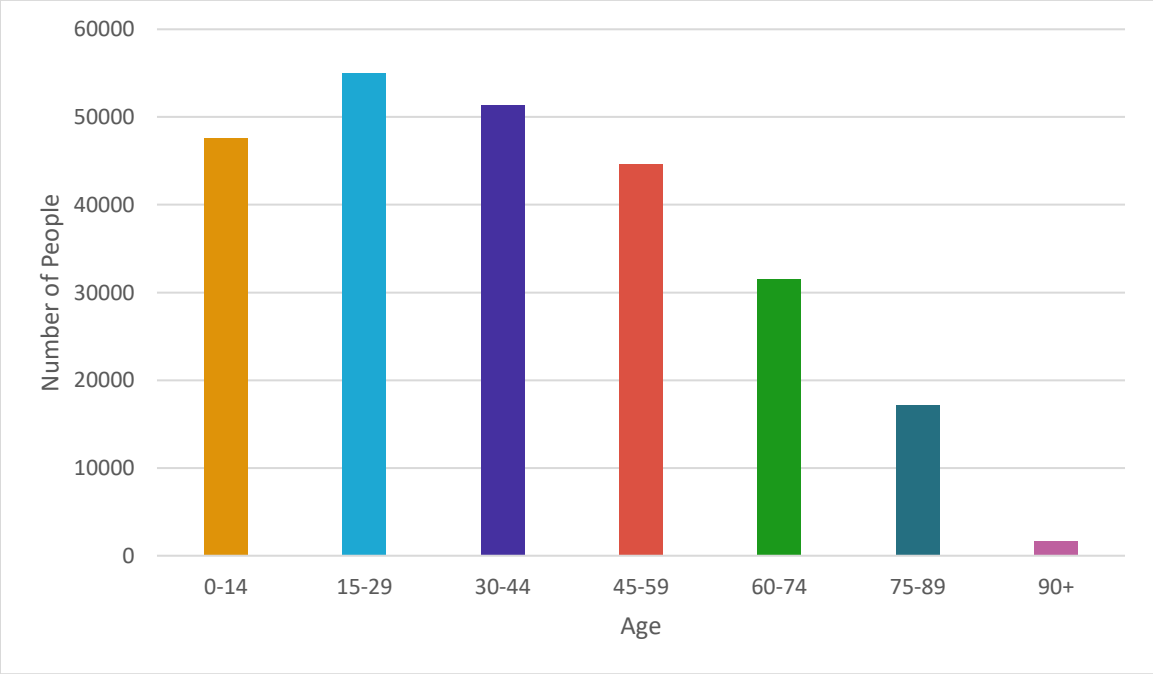


Figure 2-3. Age distribution of people resident within Derby (Office for National Statistics, 2011)

Derby has:

- More young people participating in sport per week than the national average.
- More young people gaining at least 5 GCSE passes (grades A*- C) than the national average.
- Excellent quitting smoking rates.
- Decreasing mortality rates from cardiovascular disease.

Derby's population is growing in terms of size and diversity and has a changing age profile. However, it has a higher than average:

- Proportion of people smoking.
- Alcohol-related harm.
- Number of problematic drug users.

The numbers of people in the city who are blind, partially-sighted or have a visual impairment are predicted to increase year-on-year, as are the number of people with physical disabilities.

Mortality rates from cardiovascular disease have reduced substantially but remain higher than the national average.

Premature mortality from cancer had been reducing since 1999, but increased in 2007 and 2008 and is now significantly higher than the national rate.

There are increasing numbers of:

- children on child protection plans
- referrals relating to safeguarding and family support
- looked after children.

#### 2.3.6.1 Deprivation

The Index of Multiple Deprivation (IMD) provides a measure of relative deprivation across England and was most recently published in 2010. According to Office of National Statistics (ONS) Indices of Deprivation (2010) the average IMD score for the City of Derby is 24.58 which is higher than the average IMD score for all neighbouring local authorities (Table 2-6). The deprivation scores take into account income, employment, health and education deprivation, among other key indicators of deprivation (Department for Communities and Local Government, 2011).

Table 2-6. Index of Multiple Deprivation Scores

| Local Authority | IMD Score |
|---|---|
| Derby City Council | 24.58 |
| Amber Valley | 17.89 |
| Erewash | 19.19 |
| South Derbyshire (Non-Metropolitan District) | 13.64 |

Derby remains comparatively deprived – ranked 88th of 326 most deprived local authorities.

Around a third of private sector dwellings are classed as 'non-decent' and there were over 7,000 applicants for social housing in March 2011.

There are wide variations in deprivation, needs and outcomes across the City's wards.

Key Environmental Issues

The population of the City of Derby has shown an upward trend and is set to increase in the future. This growing population will place increased demand on a range of resources and the City's water and sewerage infrastructure, which could be exacerbated by the effects of climate change. Linked to this may be increased demands for development and pressure on the existing housing provision, which may result in greater need for development in areas at risk of flooding.

Flooding can have a negative effect on health. Repeated flooding is particularly damaging to mental health and well-being.

Flooding can generate obstacles to emergency services and aid workers getting access to people in need.

### 2.3.7 Material Assets

The City of Derby has good rail connections and excellent access to the motorway network. Of particular note is the M1 which runs north / south to the east of the city linking Derby with other conurbations, including Nottingham and Sheffield to the north as well as Leicester to the south. Rail infrastructure is also good with a direct line to London and Edinburgh. The railway is used by Cross-Country trains.

Other material assets spread across the city include hospitals, police stations, fire stations, schools and institutions of further and higher education, water supply and sewerage systems, and energy and telecommunications facilities.

#### Key Environmental Issues

Material assets will be put under more pressure due to development and increased population, so they might need to be developed to cope with the increased demand.

Any urban development that removes surface area to store or attenuate pluvial or fluvial flow may add to the risk of flooding.

Where possible new developments must use Sustainable Drainage Systems.

Transport infrastructure must be developed to favour pedestrians, cyclists and public transport.

Development close to cultural, architectural and archaeological heritage assets, and their setting, must be designed to complement the existing buildings.

### 2.3.8 Air

Derby is a busy centre at the junction of a number of major routes. Historically the City has a strong manufacturing industry base and, although diminished, the service sector in the City is growing.

The quality of the air in Derby is deemed to have an effect on the health and well-being of the people who both live and work in the City. Derby City Council has a duty to manage and where possible reduce the amount of air pollution from vehicles and the burning of waste and fossil fuels where possible.

The Environment Act 2005 requires local authorities in England and Wales to monitor and record the levels of certain air pollutants within their area. Within the City there are several areas which are identified to exceed the annual mean objective for nitrogen dioxide. Three Air Quality Management Areas (AQMA) have been identified (DCC, 2016):

- Ring Roads
- A52
- 54 dwellings at the Southern End of Victory Road

All of these AQMA are for nitrogen oxide pollution as a results of road transport emissions.

#### Key Environmental Issues

The air quality in Derby is typical of an urbanised environment with the primary source of air pollution being from road and transport emissions which has led to the designation of three current AQMAs in which air quality needs to be improved. Greater pressures on air quality may occur in the future through increases in the population of the City, greater development and increased traffic congestion. This could lead to the designation of additional AQMAs, to address local impacts on air quality, or hinder the improvements within the existing AQMAs within the City. However, the LFRMS is not likely to impact on air quality and if any impacts arise they are unlikely to be significant.

Increased emissions to air from vehicles and industries could adversely affect the health of people in Derby.

## 2.4 Scoping Conclusion

At the scoping stage the following receptors were scoped out of the assessment and are therefore not considered in this Environmental Report:

- Solid Geology - the strategy does not include any likely detriment to the characteristics of the bedrock solid geology beneath Derby. The superficial deposits may be affected by the increased use of infiltration drainage.
- Climate – flood risk does not have an effect on climate. However, climate change does have an impact on flood risk. Therefore, there is not a separate heading for climate, instead the potential effects of climate change is covered in the sections on material assets and water.

# 3 Strategic Environmental Assessment Objectives, Baseline and Context Introduction

## 3.1 Introduction

The SEA framework, developed at the scoping stage (DCC, 2016), is used to identify and evaluate the potential environmental issues associated with the implementation of the LFRMS. The framework comprises a set of SEA objectives that have been developed to reflect the key environmental issues identified through the baseline information review in Section 2.3. The Scoping Report (DCC, 2016) also identified how the LFRMS might impact upon the SEA objective, and what would need to be assessed, i.e. an indicator. These assessment indicators are used as a means to measure the potential significance of the environmental issues and can also be used to monitor implementation of the LFRMS. These LFRMS objectives are tested against the SEA framework to identify whether each option will support or inhibit achievement of each objective.

Table 3-1 below summarises the purpose and requirements of the SEA objectives, indicators and targets.

Table 3-1. Definition of SEA Objectives Indicators and Targets

| | Purpose |
|---|---|
| **Objective** | Provide a benchmark 'intention' against which environmental effects of the plan can be tested. They need to be fit-for-purpose. |
| **Indicator/ Measure of Success** | Provide a means of measuring the progress towards achieving the environmental objectives over time. They need to be measurable and relevant and ideally rely on existing monitoring networks. |

## 3.2 SEA Objectives and Indicators/Measures of Success

SEA objectives and indicators/measure of success have been compiled for each of the environmental receptors (or groups of environmental receptors) scoped into the study during this phase of the project (see section 2.3). The SEA objectives for the LFRMS are given in Table 3-2 below. These objectives can be refined or revised in response in light of any additional information obtained during the life of the project.

Table 3-2: SEA Objectives and assessment indicators

| SEA Topic | Environmental Objective | How the Local Flood Risk Management Strategy might impact on this. Assessment of the following: | Measures of Success (i.e. indicators)[1] |
|---|---|---|---|
| **1. Air** | To improve air quality by reductions in emissions of pollutants. | • Reducing congestion caused by flooding incidents.<br>• Reducing emissions through passive flood defences rather than actions such as pumping or emergency interventions. | None identified at Scoping stage |
| **2. Biodiversity** | To conserve and enhance biodiversity, flora and fauna. | • Does the strategy cause damage or degradation to wildlife sites?<br>• Are there opportunities to enhance biodiversity through habitat changes?<br>• What are the effects on the ecology of waterbodies?<br>• Does the strategy improve control of invasive species? | Increase wetland habitat or natural watercourse habitat by 10% by 2020 |
| **3. Cultural, Architectural and Archaeological Heritage** | Conserve, protect and enhance the cultural, architectural and archaeological heritage assets, and their setting. | • Does the strategy harm the significance of heritage assets and their setting?<br>• Does it provide any opportunities to enhance and/or better reveal the assets and their setting? | Average, annually, remove 1% of defined assets from one flood zone to another by mitigation measures to reduce flood risk. |
| **4. Human Health** | Protect and enhance general health and minimise risks to health through flooding risks. | • Does the strategy include measures to avoid pollution?<br>• Are there measures in the strategy to improve amenity? | Average annually, remove 1% of population within a flood zone from one flood zone to a lower |

| SEA Topic | Environmental Objective | How the Local Flood Risk Management Strategy might impact on this. Assessment of the following: | Measures of Success (i.e. indicators)[1] |
|---|---|---|---|
| | | • Does the strategy have measures to avoid flood risk to dwellings and also to health infrastructure?<br>• Does the strategy plan for the reduction of potential sewage overflows? | one by mitigation measures to reduce flood risk. |
| **5. Material Assets** | Minimise flood risk to infrastructure and buildings. | • Does the strategy protect transport routes and critical services such as gas, electric, telecoms and water supply?<br>• In what way will the strategy reduce flood risk to private property?<br>• Will the strategy reduce flood risk to commercial assets, to minimise economic impact? | Average annually, remove 1% of defined assets from one flood zone to another by mitigation measures to reduce flood risk. |
| **6. Landscape** | Protect and enhance the landscape of Derby. | • Will the strategy cause any detriment to the setting of important features?<br>• Can the strategy provide enhancements to Derby amenity areas, including visual enhancements? | Annually, remove 1% of defined assets from one flood zone to another by mitigation measures to reduce flood risk. |
| **7. Population** | Facilitate the City Council in developing infrastructure to match growth predictions for population whilst minimising environmental impact. | • Can the strategy provide flood-secure housing on brownfield sites?<br>• Can the strategy assist with the management or reduction of flood risk in densely populated areas? | None identified at Scoping Stage |
| **8. Water quality and hydromorphology (shape, size, materials, character of waterbodies and watercourses)** | Improve the quality of the water bodies in Derby. Minimise the risk to these from flooding or pollution. Restore waterbodies and watercourses to their natural hydromorphology. | • What is the extent of the potential changes to watercourses. Can they improve or enhance them?<br>• Does the strategy consider the removal of culverts?<br>• Does the strategy identify the potential to restore earth walls to watercourses?<br>• Does the strategy recommend the promotion of natural flow regimes? | Average annually, improve 1% of defined assets from below 'good' standard into the higher quality standard.<br><br>Average annually, improve 1% of defined assets by restoring natural watercourses or de-culverting. |

**[1]Measures of success are detailed in Appendix D of the SEA Scoping Report**

# 4 Plan Issues and Alternatives

## 4.1 Developing Alternatives

The SEA Directive requires an assessment of the plan and its 'reasonable alternatives'. In order to assess reasonable alternatives, different strategy options for delivering the LFRMS have been assessed at a strategic level against the SEA objectives, and the environmental baseline as detailed in section 2. The results of this assessment will be used to inform the decision-making process in choosing a preferred way of delivering the LFRMS.

## 4.2 Appraisal of actions to improve flood risk

The LFRMS has the purpose of managing and reducing local flood risk in the City. The strategy objectives have been assessed against the SEA objectives for each of the following options as shown in Table 4-1.

- **Do Nothing** - where no action is taken and existing assets and ordinary watercourses are abandoned.
- **Maintain current levels of flood risk** - where existing assets and watercourses are maintained as present in line with current levels of flood risk. Existing infrastructure is not improved over time and the effects of climate change are not taken into account.
- **Manage and reduce local flood risk** - take action to reduce the social, economic and environmental impact due to flooding.

Table 4-1. Assessment of the strategy and alternative options against the SEA objectives

| **SEA Objectives** | | **Options and Effects** | | |
|---|---|---|---|---|
| | | **Do Nothing** | **Maintain current levels of flood risk** | **Manage and reduce local flood risk** |
| **1** | To improve air quality by reductions in emissions of pollutants. | Potential for air quality to become worse due to increased congestion because of more frequent flooding and an increased population. | Little or no change in the current air quality. | Potential to improve air quality by improving flood defences to reduce flooding and consequent congestion. Flood risk management measures can be selected that rely on machinery/facilities with improved emission levels. |
| **2** | To conserve and enhance biodiversity, flora and fauna. | Potential for both adverse and beneficial impacts. For example, abandonment of assets may allow for the development of more natural watercourses and wetland habitat creation/ enhancement through increased inundation. However, there could be an increased risk of spreading non-native, invasive species through flooding and detrimental impacts on habitats intolerant of increased inundation. | Little/ no change to baseline levels; however, as a result of increased flooding in the future due to climate change, new habitats may be created or existing wetland habitats enhanced. However, habitats intolerant of increased inundation or changes in water quality may be adversely affected. | Potential for both adverse and beneficial impacts as a result of active management. Opportunities may arise to enhance biodiversity and notable habitats within the City through the implementation of measures to reduce local flood risk, for example habitat creation in flood storage areas or natural flood management. However, if not implemented sensitively, flood risk management measures could |

| SEA Objectives | | Options and Effects | | |
|---|---|---|---|---|
| | | **Do Nothing** | **Maintain current levels of flood risk** | **Manage and reduce local flood risk** |
| | | | | adversely impact upon sites, habitats and species. |
| **3** | Conserve, protect and enhance cultural, architectural and archaeological assets, and their setting. | Cultural, architectural and archaeological assets will be exposed to damage and deterioration through increased exposure to flood risk. | Little/ no change to baseline, however, in the future, important cultural, architectural and archaeological assets may be exposed to increased flooding and damage due to climate change. | Potential for both adverse and beneficial impacts as a result of active management, for example through increased protection of vulnerable cultural, architectural and archaeological assets. However, reduced inundation may result in the desiccation of buried archaeology. |
| **4** | Protect and enhance general health and minimise risks to health through flooding risks. | Increased exposure to flood risk from a combination of no management and climate change. | No improvements to health and well-being as existing levels of flood risk are maintained and the risk may increase in the future as a result of climate change. | Managing and reducing local flood risk will help to protect people and residential properties from flooding, helping to improve health and welfare, bringing substantial social benefits. |
| **5** | Minimise flood risk to infrastructure and buildings. | Infrastructure and buildings will be exposed to damage and deterioration through increased exposure to flood risk. | Little/ no change to baseline, however, in the future, infrastructure and buildings may be exposed to increased flooding and damage due to climate change. | Beneficial impacts as a result of active management, for example through increased protection of vulnerable infrastructure and buildings. |
| **6** | Protect and enhance the landscape of Derby. | Locally important landscape features exposed to damage and deterioration through increased exposure to flood risk. | Little change to baseline, however, in the future as a result of climate change, adverse impacts on local landscape features may arise. | Potential for managing and promoting this objective through sensitively designed flood risk management schemes which enhance local landscape character and/or create green spaces. |
| **7** | Facilitate the City Council in developing infrastructure to match growth predictions for population whilst minimising environmental impact. | Infrastructure exposed to damage and deterioration due to increased populations and flood risk. Increase in run-off pollution. | Little/ no change in baseline, however, in the future infrastructure may be exposed to increase deterioration. | Potential for increased water quality due to less run-off reaching waterbodies because new infrastructure has low environmental impacts. |

| SEA Objectives | | Options and Effects | | |
|---|---|---|---|---|
| | | **Do Nothing** | **Maintain current levels of flood risk** | **Manage and reduce local flood risk** |
| **8** | Improve the quality of the waterbodies in Derby. Minimise the risk to these from flooding or pollution. Restore waterbodies and watercourses to their natural hydromorphology. | Potential for both adverse and beneficial impacts on waterbodies. For example, abandonment of assets may allow for the development of more natural watercourses, however, an increase in flooding and population may lead to increased land run-off pollution.<br>Potential for little/ no change to current state of watercourse or benefits. | Little/ no change to restoring waterbodies to more natural hydromorphology.<br>Little/ no change in the volumes of flooding and pollution of waterbodies. However, in the future waterbodies may be exposed to increased flooding and pollution as a result of climate change.<br>Little/ no change to the current state of watercourses and their hydromorphology | Potential for beneficial impacts, depending upon the specific statuses and goals of the water bodies as identified in the Humber RBMP. Opportunities for achieving WFD objectives may arise through the implementation of measures to reduce local flood risk.<br>Active restoration of watercourses may allow for the development of more natural watercourses.<br>Waterbodies will be less likely to flood in the future because of climate change and consequently risk of pollution from flood events reduces. |

## 4.3 Conclusions

Table 4-1 suggests that the only realistic option is to follow the management strategy, as detailed in the draft Derby LFRMS. It is evident that by doing nothing or maintaining current levels flood risk, there are likely to be detrimental effects on the environmental receptors for which SEA objectives have been developed; these are likely to be prevented by carrying out active flood risk management as proposed by the LFRMS.

# 5 Appraisal of LFRMS Objectives to Improve Flood Risk

## 5.1 Impact Significance

The unmitigated impacts of the LFRMS on achieving the SEA objectives will be identified through the analysis of the baseline environmental conditions and use of professional judgement. This cross-check identifies where there are:

- Local Strategy objectives that are likely to contribute to the delivery of wider environmental objectives;
- Uncertainties and potential tensions between the Local Strategy objectives; and
- Clear conflicts that should be addressed.

The significance of effects (including cumulative effects) will be scored using the five-point scale summarised and explained in Table 5-1. If there is high uncertainty regarding the likelihood and potential significance of an impact (either positive or negative), it will be scored as uncertain.

Table 5-1: Impact significance key

| | **Option 1** | **Option 2** | **Option 3** |
|---|---|---|---|
| **SEA Objective 1** | Discussion of effects | Discussion of effects | Discussion of effects |
| **SEA Objective 2** | Discussion of effects | Discussion of effects | Discussion of effects |
| **SEA Objective 3** | Discussion of effects | Discussion of effects | Discussion of effects |

| Very Positive | Positive | No Effect | Negative | Very Negative |
|---|---|---|---|---|

Table 5-2 shows the results of the assessment of all the actions within in the LFRMS, on the SEA objectives, with brief explanatory comments. An overall summary of the assessments is shown in Table 5-3.

Table 5-2. Assessment of LFRMS objectives against SEA objectives

| LFRMS objectives | General Task Areas to Promote Objectives | SEA Objectives | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| 1 - Improve our knowledge of existing Flood Risk Management Assets | Derby City Council will improve knowledge of existing Flood Risk Management Assets using a risk-based approach to gather data on existing infrastructure, and knowledge of current and future flood risk. The works will follow the asset register and risk-based approaches taken by the Environment Agency. Derby City Council will define a database of contact details to be used for communication with riparian owners. They will be categorised by catchment basin and be prioritised by proximity to critical watercourses. | | | | | | | | | This will have benefits for the built environment and material assets by improving knowledge of Flood Risk Management Assets so that action can be taken to minimise flood risk, on a priority basis. No effect on other SEA objectives is anticipated. |
| 2 - Develop economical, risk-based flood risk management schemes and infrastructure maintenance regimes that form a sustainable approach to reducing flood risk. | Develop cost-effective, risk-based flood risk management schemes and maintenance regimes. From review of the action plan this will initially include capital flood risk management schemes at Cuttle Brook, Littleover Brook and Cotton Brook, with others also been identified and developed. | ? | | ? | | | ? | | | Implementation of flood risk management schemes and infrastructure maintenance regimes will help to reduce flood risk and have significant benefits for the local population, human health and material assets. There are potential benefits in relation to other SEA objectives, for example through restoring the natural hydromorphology of rivers or creating wetland. There is uncertainty in relation to impacts in relation to air, cultural, architectural and archaeological heritage and landscape, depending on what measures are selected and how they are implemented. |
| 3 - Educate and engage with communities and elected Derby City Council member to raise awareness of | The Council will engage with and educate Derby communities, businesses and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities to contribute to keeping risk of disruption to communities at a minimum.<br>Work with riparian owners to inform, educate and advise them on maintaining their stretch of | | | | | | | | | Raising awareness of flooding within the City will have indirect positive impacts on the local population, human health and material assets by increasing preparedness to flooding and ensuring adverse impacts are minimised when flood events to occur. Increased education will also help to avoid congestion at times of flooding and have positive impacts for air quality. In |

| LFRMS objectives | General Task Areas to Promote Objectives | SEA Objectives 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| flood risk. | watercourse to manage flood risk. | | | | | | | | | relation to water quality and hydromorphology, working with riparian owners on maintaining their own watercourses could lead to benefits if done sensitively.<br>No effect on other SEA objectives is anticipated. |
| 4 - Minimise the risk of flooding from new development and avoid development that puts more people at risk of flooding | The Derby City Council 'Projects, Water and Flood Risk Management Team' will ensure new developments have drainage designs that are sustainable, are not at risk of flooding, do not increase risk of flooding elsewhere and require minimal maintenance. The aim is for new developments to be designed in line with the National Planning Policy Framework and accompanying planning practice guidance. Flood risk will be considered throughout the planning process, starting with the Council's Statutory Plan and through the Development Management process. If new development cannot be sited outside of flood risk areas, suitable mitigation and resilience measures should be included in the design to reduce risk to people and property - new and already in existence.<br>Contemporary drainage design standards require the management of flows in piped drainage systems to reduce the risk of flooding from developed sites to less than a 1% annual average probability, approximately equal to a 1 in 100 year event. Although the sewers may flood, the water should be contained within the site on roads and in open spaces rather than flowing towards houses. | | | | | | | | | This will have direct benefits for the local population and material assets by ensuring only appropriate development is encouraged in flood risk areas. Indirectly this will then benefit human health.<br>No effect on other SEA receptors is anticipated. |
| 5 - Promote flood risk management activities that | Promote the use of SuDS (Sustainable Drainage Systems). The use of SuDS is favoured over conventional piped drainage systems which can be vulnerable to flash | | | | | | | | | The implementation of flood risk management activities benefits the local population, human health and material assets directly by reducing flood risk. Positive benefits will also arise from |

| LFRMS objectives | General Task Areas to Promote Objectives | SEA Objectives 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| consider climate change, enhance the natural environment, improve water quality and provide amenity benefits | flooding. Examples of SuDS features include soakaways, permeable paving, swales and attenuation ponds. LLFAs became statutory consultees to local planning authorities from April 2015. In this role, they will be abler to promote SuDS for new developments. | | | | | | | | | implementation of this objective for biodiversity, cultural, architectural and archaeological assets and landscape by ensuring that these receptors are considered during the development of schemes, ensuring their protection.<br>The use of SuDS will benefit biodiversity by creating new habitats and corridors. SuDS will also help to improve water quality. SuDS will also have indirect benefits for humans and built environment receptors by protecting buildings and infrastructure from flooding as well as providing amenity areas of use by the public. However, they can have a detrimental impact on historic environment assets if not implemented sensitively, however, this objective aims to avoid this by promoting flood risk management activities that consider the historic environment. |
| 6 - Work in partnership with Risk Management Authorities and other sky stakeholders to share a common understanding of flood risk. | The Council will work in partnership with Risk Management Authorities (RMAs) and other key stakeholders to share a common understanding of flood risk, ensure effective maintenance is delivered, invest jointly in schemes and share expertise. | ? | ? | ? | ? | ? | ? | ? | ? | The benefits or impacts of working in partnership are generally unknown at this time, however, it is likely they will lead to benefits for all SEA receptors by ensuring that flood risk is reduced, that sensitive features and assets are protected and by ensuring that sustainable solutions are selected for the benefit of all partners. |
| 7. Promote riparian responsibilities for the maintenance of watercourses | Aim for 20% of owners/occupiers to be contacted annually. Produce a database of all riparian owners for each watercourse in Derby by March 2017. Produce and distribute riparian ownership rights/responsibilities document. Aim to contact every occupier at least once every 5 years. | | | ? | ? | ? | ? | ? | | Benefits to biodiversity through better management of watercourses, riparian margins and invasive non-native species. Potential to benefit water quality, flooding and pollution risks and hydromorphology.<br>Indirect benefits to other SEA receptors may arise through riparian watercourse maintenance helping to reduce flood risk, however, this has |

| LFRMS objectives | General Task Areas to Promote Objectives | SEA Objectives | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| | | | | | | | | | | some uncertainty depending on how and where this maintenance is conducted. |

Table 5-3. Summary of Effects of LFRMS objectives/actions on SEA objectives

| Receptor | Objective | | Result/ Comment |
|---|---|---|---|
| Air | 1 | To improve air quality by reductions in emissions of pollutants. | No negative effects identified. Benefits arise from education increasing awareness of flood risk reducing congestion during flood events and through the promotion of more sustainable approaches to flood risk management. Uncertainties have been identified largely from limited information on the nature and scale of implementation measures. |
| Biodiversity | 2 | To conserve and enhance biodiversity, flora and fauna. | No negative effects identified. Potential benefits identified from the creation of new habitats, protection of existing habitats and improved management of watercourses. Uncertainties have been identified largely from limited information on the nature and scale of implementation measures under the LFRMS Objectives at this stage. |
| Cultural, Architectural and Archaeological Heritage | 3 | Conserve, protect and enhance the cultural, architectural and archaeological heritage assets, and their setting. | No negative effects identified. Potential benefits identified in relation to reduced flood risk to heritage assets. Uncertainties have been identified largely from limited information on the nature and scale of implementation measures. |
| Human Health | 4 | Protect and enhance general health and minimise risks to health through flooding risks. | As expected of a strategy for managing flood risk, none of the measures are considered to have negative effects on this SEA objective. Benefits arise from improved education, flood risk management activities and the potential creation of amenity areas (e.g. SUDS). |
| Material Assets | 5 | Minimise flood risk to infrastructure and buildings. | As expected of a strategy for managing flood risk, none of the measures are considered to have negative effects on this SEA objective. All the LFRMS Objectives are likely to help achievement of the SEA objective through promotion of flood risk management measures that reduce flood risk, promote flood warning and aim to improve flood resilience and recovery. |
| Landscape | 6 | Protect and enhance the landscape of Derby. | No negative effects identified. Potential benefits identified through promotion of sustainable flood risk management activities and partnership working. Uncertainties have been identified largely from limited information on the nature and scale of implementation measures under the LFRMS Objectives at this stage. |
| Population | 7 | Facilitate the City Council in developing infrastructure to match growth predictions for population whilst minimising environmental impact. | As expected of a strategy for managing flood risk, no negative effects identified. Benefits identified from the implementation of flood risk management schemes which reduce flood risk. Uncertainties have been identified largely from limited information on the nature and scale of implementation measures under the LFRMS Objectives at this stage. |
| Water quality and hydromorphology (shape, size, materials, character of waterbodies and watercourses) | 8 | Improve the quality of the water bodies in Derby. Minimise the risk to these from flooding or pollution. Restore waterbodies and watercourses to their natural hydromorphology. | No negative effects identified. Benefits identified from improved education for riparian landowners which will likely improve standards of watercourse maintenance, and from implementation of flood risk management schemes. Uncertainties have been identified largely from limited information on the nature and scale of implementation measures under the LFRMS Objectives at this stage. |

# 6 Conclusions and Recommendations

The key objective of the LFRMS is to implement measures that will manage, mitigate and reduce the risks associated with flooding. It aims to increase local residents, neighbourhoods and business communities' knowledge and understanding of flood risk within the City.

In an assessment of alternative options to implement the LFRMS, the 'Do Nothing' approach would promote an overall negative effect on the SEA objectives, due to the abandonment of current management practices which would increase the risk of local flooding and have adverse impacts on a range of SEA receptors, in particular human health and the local population. This impact would likely increase over time as responsible bodies will be unable to incorporate precautionary measures in existing or new developments in a response to climate change pressures. The mid-way alternative option considered, i.e., 'Maintain Current Levels of Flood Risk', is unlikely to worsen the current impacts on SEA receptors or to significantly change baseline levels. However, by not fully considering adaptation to climate change pressures, the current level of flood risk management may be insufficient to prevent detrimental impacts on the environment in the future. The only realistic approach to be employed by Derby City Council is therefore the 'Manage and Reduce Local Flood Risk' option, which offers more beneficial outcomes to a number of SEA objectives, particularly those relating to social, development and infrastructure receptors, and a pro-active approach to flooding pressures.

Many of the objectives proposed within the LFRMS have the potential for direct and indirect environmental benefits. The cross-check assessment of the LFRMS objectives and actions against the SEA objectives highlights positive impacts in many cases. In particular, LFRMS objective 5 actively promotes the protection and enhancement of the natural environment and heritage assets through the delivery of flood risk management measures.

An assessment of the cumulative impacts of the Derby City Council LFRMS has been undertaken, but a further assessment is ideally suited when specific measures and proposed sites for implementation are known for each LFRMS action, following consultation on the strategy. At present a number of LFRMS objectives have uncertainties regarding impacts on SEA objectives, as the impact of some LFRMS actions on these SEA objectives is unknown. Without a specific methodology for the implementation of these actions, a precautionary approach must be taken as there is a potential for a negative impact if appropriate working methods/mitigation is not put in place, however, there is also considerable potential for benefits to arise and so an uncertain conclusion is reached.

Finally, it is unclear at this stage whether subsequent flood risk planning/strategy activities may require an SEA. Derby Council should consider the potential for the Flood Risk Management Plans to be a 'plan or programme' requiring SEA under the SEA Regulations.).

## 6.1 Monitoring

The SEA Regulations require Derby City Council to monitor the significant environmental effects of the implementation of the LFRMS. Key indicators and targets that require monitoring are listed in Table 6-1, below, and are based on those used as part of the SEA framework, together with the main LFRMS objectives that they will help to monitor the achievement of.

The indicators/measures of success and associated targets will enable the LFRMS to be monitored and any problems or shortfalls to be highlighted and remedied at an early stage. If failings are evident, it will be necessary for the LFRMS to be revised so that the achievement of the SEA objectives is not compromised. Of note, it is unlikely that any effects, negative or otherwise, will be seen immediately and that the relative time scale for monitoring will vary for each indicator/target.

Figure 6-1 below illustrates the process that will occur to trigger action when adverse effects of the LMFRS implementation are identified through the proposed monitoring programme detailed below.

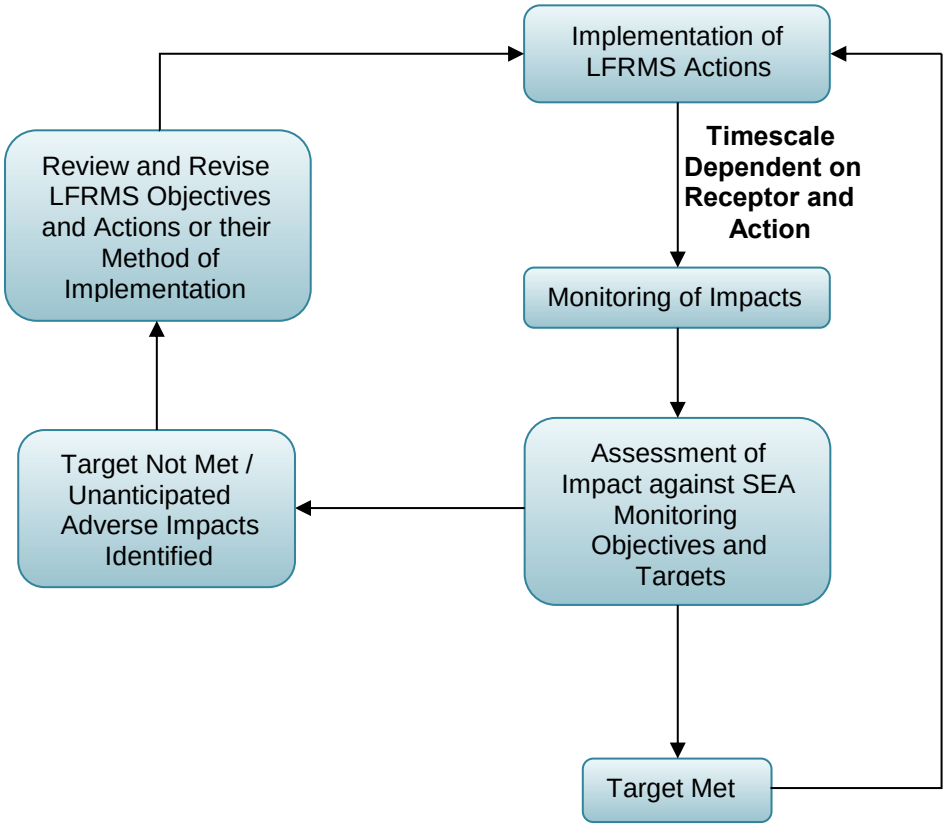


Figure 6-1. Process for ensuring adverse impacts of LFRMS identified through SEA monitoring framework are mitigated/rectified

Table 6-1. Monitoring indicators and targets

| Receptor | SEA Objective | | Monitoring Indicator/Measure of Success | Target |
|---|---|---|---|---|
| Air | 1 | To improve air quality by reductions in emissions of pollutants. | • Reducing congestion caused by flooding incidents.<br>• Reducing emissions through passive flood defences rather than actions such as pumping or emergency interventions. | Improved air quality shown by AQMA data.<br>Reduced congestion caused by flooding incidents.<br>Reduced emissions through passive flood defences rather than actions such as pumping or emergency interventions. |
| Biodiversity | 2 | To conserve and enhance biodiversity, flora and fauna. | • Does the strategy cause damage or degradation to wildlife sites?<br>• Are there opportunities to enhance biodiversity through habitat changes?<br>• What are the effects on the ecology of waterbodies?<br>• Does the strategy improve control of invasive species? | Increase wetland habitat or natural watercourse habitat by 10% by 2020. |
| Cultural, Architectural and Archaeological Heritage | 3 | Conserve, protect and enhance the cultural, architectural and archaeological heritage assets, and their setting. | • Does the strategy harm the significance of heritage assets and their setting?<br>• Does it provide any opportunities to enhance and/or better reveal the assets and their setting? | Average, annually, remove 1% of defined assets from one flood zone to another by mitigation measures to reduce flood risk. |
| Human Health | 4 | Protect and enhance general health and minimise risks to health through flooding risks. | • Does the strategy include measures to avoid pollution?<br>• Are there measures in the strategy to improve amenity?<br>• Does the strategy have measures to avoid flood risk to dwellings and also to health infrastructure?<br>• Does the strategy plan for the reduction of potential sewage overflows? | Average annually, remove 1% of population within a flood zone from one flood zone to a lower one by mitigation measures to reduce flood risk. |
| Material Assets | 5 | Minimise flood risk to | • Does the strategy protect transport routes | Average annually, remove 1% of |

| Receptor | SEA Objective | | Monitoring Indicator/Measure of Success | Target |
|---|---|---|---|---|
| | | infrastructure and buildings. | and critical services such as gas, electric, telecoms and water supply?<br>• In what way will the strategy reduce flood risk to private property?<br>• Will the strategy reduce flood risk to commercial assets, to minimise economic impact? | defined assets from one flood zone to another by mitigation measures to reduce flood risk. |
| Landscape | 6 | Protect and enhance the landscape of Derby. | • Will the strategy cause any detriment to the setting of important features?<br>• Can the strategy provide enhancements to Derby amenity areas, including visual enhancements? | Annually, remove 1% of defined assets from one flood zone to another by mitigation measures to reduce flood risk. |
| Population | 7 | Facilitate the City Council in developing infrastructure to match growth predictions for population whilst minimising environmental impact. | • Can the strategy provide flood-secure housing on brownfield sites?<br>• Can the strategy assist with the management or reduction of flood risk in densely populated areas? | No increase in number of residential properties at risk from flooding. |
| Water quality and hydromorphology (shape, size, materials, character of waterbodies and watercourses) | 8 | Improve the quality of the water bodies in Derby. Minimise the risk to these from flooding or pollution. Restore waterbodies and watercourses to their natural hydromorphology. | • What is the extent of the potential changes to watercourses. Can they improve or enhance them?<br>• Does the strategy consider the removal of culverts?<br>• Does the strategy identify the potential to restore earth walls to watercourses?<br>• Does the strategy recommend the promotion of natural flow regimes? | Assessment of LFRMS options and their impact on the WFD objectives - no deterioration in status as a result of LFRMS measures.<br>Average annually, improve 1% of defined assets from below 'good' standard into the higher quality standard.<br>Average annually, improve 1% of defined assets by restoring natural watercourses or de-culverting. |

# 7 Next Steps

This SEA Environmental Report will be consulted upon with statutory consultees (i.e. Historic England, Natural England and the Environment Agency) and the general public alongside the LFRMS.

Following adoption of the LFRMS, an SEA Statement of Environmental Particulars will be produced outlining how the SEA process has influenced the development of the Derby LFRMS, how consultation comments were taken into consideration and how the Strategy will be monitored.

# Appendices

## A Review of policies, plan and programmes

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| **International** | | | | |
| EC Birds Directive – Council Directive 2009/147/EEC on the conservation of wild birds | Provides for protection of all naturally occurring wild bird species and their habitats, with particular protection of rare species. | None | None: may restrict the LFRMS objectives if they are shown to be likely to have a significant effect on a SPA. | Biodiversity |
| EU Floods Directive – Directive 2007/60/EC on the assessment and management of flood risks | Aims to reduce and manage the risk of flooding and associated impacts on the environment, human health, heritage and economy. Principle requirement is the preparation of flood risk management plans at River Basin District level, together with preliminary flood risk assessments and hazard/risk maps. | Water level management may alter the flood risk within the area. | The LFRMS may be restricted if actions as part of the plan increase flood risk significantly. | Water |
| EU Groundwater Directive – Directive 2006/118/EC on the protection of groundwater against pollution and deterioration | Establishes a regime that sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. Implemented in the UK through the Environmental Permitting Regulations (2010). | Water quality is relevant to the LFRMS as changing water levels may have localised effects of water pollution and a reduction in surface water and groundwater quality. | May restrict the LFRMS in localised areas if a significant risk of water quality deterioration is identified. | Water |
| EC Habitats Directive – Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora | Principle aim is to promote the maintenance of biodiversity by requiring Member States to take measures to restore habitats and species to favourable conservation status. Introduces robust protection for habitats and species of European importance. Enables the creation of Special Areas of Conservation (SACs) in order to establish a coherent ecological network of protected sites. Encourages protection and | None | None. However, may restrict the LFRMS objectives if they are shown to be likely to have a significant effect on a Ramsar. An assessment under the Habitats Regulations will be required. | Biodiversity |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| | management of flora and fauna and supporting landscapes through planning and development policies. | | | |
| 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 | Establishes framework for protection of inland surface waters, transitional waters, coastal waters and groundwater to prevent pollution, promote sustainable water use, protect the aquatic environment, improve the status of aquatic ecosystems and mitigate the effects of floods and droughts. | Member states must prepare River Basin Management Plans and programme of measures for each River Basin District that sets out a timetable approach to achieving the WFD objectives. Places requirements on all relevant authorities to ensure their actions do not contravene the objectives of the Directive. | May restrict LFRMS options if likely to inhibit achievement of WFD objectives and detailed programme of measures. Water level management options may be strengthened if they actively contribute to meeting the WFD requirements. | Biodiversity, Water |
| European Landscape Convention (2006) | To encourage local authorities to adopt policies and measures at local, regional, national and international level for protecting, managing and planning landscapes throughout Europe.<br><br>Furthermore, proposals are made to impose financial and legal measures at national and international levels with the aim of shaping landscape policy. | Member states are encouraged to adopt policy with the regard to the protection of their landscape characteristics. The implementation of the LFRMS may threaten distinctive landscape characteristics of the District. | May restrict the LFRMS' implementation as doing so may impact upon landscape value. | Landscape |
| Nitrates Directive (91/676/EEC) | Aims to protect water quality across Europe by preventing the pollution of watercourses from agricultural sources.<br><br>Forms and integral part of the water framework directive. | Localised raised water levels, as a potential result of the LFRMS' implementation, threaten the watercourses within the city as a result of the associated increased agricultural run-off. | Should it become apparent that the watercourses of the district will incur increased levels of agricultural pollution as a result of the LFRMS, it may threaten its implementation. | Water |
| Ambient Air Quality Directive (2008/50/EC) | This piece of legislation aims to merge the majority of existing | None | None; however, actions as | Air |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| | international air quality legislation, in addition, the following aspects have been added:<br>Limiting objectives for Particulate Matter (PM 2.5);<br>Natural sources of air pollution are now omitted;<br>Deadline extensions for meeting European Commission (EC) limits for pollutants PM10, NO2 and Benzene. | | part of the LFRMS might be restricted if they pose a threat to the air quality. | |
| **National** | | | | |
| Air Quality (England) (Amendment) Regulations 2002 (SI 3043) | These regulations set emissions objectives for Local Authorities for the review of air quality in their areas. These regulations amend the Air Quality (England) Regulations 2000, setting new objectives for benzene and carbon monoxide emissions. | None | None; however, actions as part of the LFRMS might be restricted if they pose a threat to the air quality. | Air |
| Ancient Monuments and Archaeological Areas Act (1979) | Law relating to ancient monuments and features/areas of archaeological or historical interest. The Act makes provision for the investigation, preservation and recording of matters of such interest for the regulation of operations or activities which may impact upon these matters. | The LFRMS will have to take into account the features of archaeological and heritage interest that are protected by this act that fall within the city. | The LFRMS may be restricted if any negative impact is foreseen for the listed buildings or scheduled monuments which are listed under this Act. | Cultural, Architectural and Archaeological Heritage |
| Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems (Defra, 2011) | Sets out the Government's strategy for improving biodiversity in England up to 2020. | Changes in water levels and flooding can have adverse impacts on biodiversity. However there may be opportunities for the LFRMS to provide for biodiversity enhancements. | The strategy could restrict LFRMS objectives if they are shown to have a significant adverse impact on water quality or local biodiversity. | Biodiversity, Water |
| National Strategy Action Plan for Neighbourhood Renewal (Cabinet Office, 2001) | Within 20 years of its implementation, this policy aimed to raise the entire population above the poverty line, narrowing the gap between deprived and prosperous neighbourhoods. | Areas within Stoke on Trent suffer significant deprivation; a problem which may worsen should those communities experience adverse impacts as a result of the LFRMS. The | The implementation of the LFRMS could worsen deprivation in areas of the district that are already significantly | Population |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| | | implementation of the LFRMS must therefore ensure that this is avoided in order to contribute to the achievement of this national strategy. | deprived. | |
| Conservation of Habitats and Species Regulations (2010) | Updated legislation which combines all prior amendments to the regulations, originally compiled in 2004, and transposes the Habitats Directive into law. | No internationally designated sites are present within the City. | None: there are no Natura 2000 or Ramsar sites within the city. However, there are parts of a Ramsar site within 10km of the City boundary which may restrict the LFRMS objectives if they are shown to be likely to have a significant effect. An assessment under the Habitats Regulations will be required. | Biodiversity |
| Contaminated Land (England) Regulations (2006) | Sets out provisions relating to the identification and remediation of contaminated land. The regulations identify contaminated land issues and pathways to pollution of surface, ground, estuarine and coastal water environments. | Flooding can increase pollution and contamination of land and water from agricultural and contaminated land. | The LFRMS may increase the potential for contamination of land and water within the City. | Water |
| Draft Water Bill (H M Government, 2012) | Emerging national strategy aimed at improved regulation of the water industry, whilst increasing its resilience to natural hazards such as drought and floods. It includes provisions to better manage sustainable water abstraction and encourage the use of SuDS. | Aims to promote better management of water resources and reduce the risks of flooding. | The Bill promotes greater protection of water resources and may restrict LFRMS objectives if they are likely to adversely affect water quality or sustainable resource management. | Water |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| England Biodiversity Framework (2008) | The framework encourages a number of conservation aspects including the adoption of an ecosystem approach and embeds climate change adaptation principles in conservation action. | The LFRMS may include measures that would result in biodiversity enhancements across landscapes and restoring / improving habitats. | The strategy could restrict LFRMS objectives if they are shown to have a significant adverse impact on water quality or local biodiversity. | Biodiversity, Water |
| Environment Act (1995) | Created a number of new agencies (including the EA) and set new standards for environmental management. | Consultation with the EA will be required before the LFRMS is approved. | The LFRMS objectives may be restricted if actions as part of the strategy have significant impacts on the environment. | Biodiversity, Water |
| Flood and Water Management Act (2010) | Designates LLFAs who 'must develop, maintain, apply and monitor a strategy for flood risk management in its area'. Applies to ordinary watercourses, surface run-off and groundwater. | Reference to the Local Flood Risk Management Strategy (LFRMS) of the LLFAs that cover the area of the drainage district will be required by developing the LFRMS. This Act also requires local authorities to contribute to sustainable development when exercising their flood and coastal erosion risk management function. Supporting guidance on this refers to improving the resilience of the natural, historic, built and social environment to current and future risks as well as protecting natural and heritage assets and enhancing the environment where it is most degraded. | The LFRMS objectives may require revision if the actions are likely to increase flood risk. | Water<br>Cultural, Architectural and Archaeological Heritage |
| Flood Risk Regulations (2009) | Implements the requirements of the EU Floods Directive, which aims to manage the risk of flooding and associated socio-economic and environmental impacts. Requires LLFAs to | Key driver for implementing flood risk management strategies at the local level. They include a requirement to have regard to the desirability of reducing the adverse | None | Biodiversity, Water<br>Cultural, Architectural and Archaeological Heritage |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| | manage flooding from surface run-off. | consequences of flooding for the environment (including cultural heritage). | | |
| Future Water: the Government's water strategy for England (Defra, 2008) | High level Government policy which outlines its intentions with regard to water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding and greenhouse gas emissions and the state it should be in by 2030. | The LFRMS must work to improve upon the themes outlined by this policy, rather than contributing to their degradation. | Certain aspects, outlined by the policy primarily surface water drainage and water quality in the natural environment may be adversely impacted by the LFRMS. | Water |
| Heritage Protection for the 21st Century, White Paper (DCMS, 2007) | Aims to promote the protection of the historic environment through the planning system. | Flooding events may have an adverse impact on historic features in the City and the LFRMS may provide an opportunity to deliver benefits through reduced flood risk. | The strategy could restrict LFRMS objectives if they are shown to have a significant adverse effect on heritage sites in the City. | Cultural, Architectural and Archaeological Heritage |
| Invasive Non-Native Species Framework Strategy for Great Britain (Defra, 2008) | Intended to minimise risk and exposure to adverse impacts that arise as a result of invasive non-native species in the UK. | LFRMS may have adverse impacts upon biodiversity through the spread of invasive species as a result of flood risk. | Spread of invasive species and its impact upon native biodiversity may conflict with the LFRMS. | Biodiversity |
| Land Drainage Act 1991 (as amended) | The act consolidates actions relating to IDBs and functions of such boards and of local authorities in relation to land drainage. Under this Act, the boards may choose to undertake maintenance work on any watercourse within its district for the purpose of cleansing, repairing, maintaining, improving or constructing new works within its district. | Under the Act the City of Stoke on Trent Council are required to manage the water courses within the district for water level and flood risk management. | There is no foreseen conflict between the Act and the LFRMS. | Biodiversity<br>Water<br>Population |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network (Lawton, *et al*., 2010) | This strategy aims to mitigate against the risks associated with UK flooding and coastal erosion to society whilst delivering greatest environmental, social and economic benefit, which work towards meeting the Government's sustainable development objectives. | The LFRMS must ensure that increased flood risk does not in impact upon environmental, social or economic benefits provided by the district. | LFRMS may cause increased flood risk which may impact upon such factors. | Biodiversity<br>Water<br>Material assets |
| Making Space for Water – taking forward a new Government strategy for flood and coastal erosion risk management in England (Defra, 2004) | Aims to provide strategic direction to deliver sufficient space for water and enable more effective management of coastal erosion and flooding to benefit both people and the economy. The aim being to address these issues to mitigate their impact and to achieve environmental and social benefits. | National guidance regarding flood risk management is directly relevant to the LFRMS. The LFRMS can contribute to its aims, including promoting greater land management and land use planning, and integrated urban drainage management. | None | Water<br>Population |
| National Planning Policy Framework (DCLG, 2012) | The National Planning Policy Framework (NPPF) has replaced the set of national planning policy statements and national planning policy guidance notes, bringing them into one document. | The NPPF has replaced PPS25 along with the other PPSs and PPGs, and so comprises the national policy framework in relation to planning in areas of higher flood risk. | None | Biodiversity,<br>Water<br>Cultural, Architectural and Archaeological Heritage<br>Population |
| Natural Environment and Rural Communities (NERC) Act (2006) | Provides guidance for the protection and enhancement of important habitat and species. | Requires the Secretary of State to publish a list of habitats and species of principal importance for the conservation of biodiversity in England. | May restrict the LFRMS if plans are shown to be likely to have a significant effect on priority species or habitats. | Biodiversity,<br>Water |
| Planning (Listed Buildings and Conservation Areas) Act 1990 | The Act places special controls on planning in respect of buildings and areas of special architectural or historic interest. | Many Listed buildings and scheduled monuments are present within the City boundary and may be impacted by the LFRMS. | May restrict certain LFRMS objectives if they are shown to be likely to have a significant effect on archaeological or historical assets in the district. | Cultural, Architectural and Archaeological Heritage |
| Salmon and Freshwater Fisheries Act (1975) | Aims to regulate practice relating to freshwater fisheries and salmon fishing. | The Act's main purpose is to protect fish species. However, it does | May restrict certain flood risk management | Biodiversity,<br>Water |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
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| | | indirectly affect flood risk. Restricting the obstruction to passage of fish may have implications for flood risk as this will prohibit the use of weirs and mill dams, and will require owners to maintain fish passes. | objectives if they are shown to be likely to have an adverse effect on fish passage or compromise a water body from achieving Good status under the WFD. | |
| Securing the Future – the UK Government Sustainable Development Strategy (H M Government, 2005) | Establishes a broad set of actions and priorities to support the achievement of sustainable development. It includes measures to enable and encourage behaviour change, measures to engage people, and ways in which the Government can promote sustainability. | Includes high level aims to promote sustainable development and sets out how local authorities can contribute to delivering this and the improvement of the local environment. | The LFRMS can contribute to sustainable development through the promotion of better flood risk management to benefit people, the economy and the environment. | Population<br>Material assets |
| The air quality strategy for England, Scotland, Wales and Northern Ireland. Working together for clean air (Defra, 2011) | Policy aims to improve and protect Britain's ambient air quality in the medium-term in order to reduce the risk to human health and the environment from eight primary pollutants without resulting in any significant adverse social or economic impacts. | None | There is no foreseen conflict between the government's Plan and the LFRMS. | Air |
| The National Flood and Coastal Erosion Risk Management Strategy for England (Defra, 2011) | Provides strategic direction to manage and monitor flood and coastal erosion risks in England. It sets out responsibilities of different organisations including local authorities to reduce risks and sets out the requirements for LLFAs to develop LFRMS. | Key driver for implementing flood risk management strategies at the local level. | None | Water<br>Population |
| The National Flood Emergency Framework for England (Defra, 2014) | Sets out a strategic approach to emergency response planning to reduce the impacts of flooding and improve resilience. | The framework sets out organisational responsibilities and promotes a multi-agency approach to managing flooding events. | None | Water environment |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| UK Biodiversity Action Plan (JNCC, 2014) | The UK BAP aims to maintain and enhance biological diversity within the UK and contribute to the conservation and enhancement of global diversity. | The LFRMS will need to consider the potential impacts of measures within it on important species and habitats that are within the district, including the various SSSIs. | The strategy could restrict LFRMS objectives if they are shown to have a significant adverse impact on designated habitats and species within the district. | Biodiversity<br>Water |
| Water Act (2003) | Sets out the framework for abstraction licensing, impoundments, water quality standards and pollution control measures, and includes measures for drought management and flood defence work in England and Wales. | Flood risk management is directly addressed by the LFRMS. | The strategy promotes greater protection of water resources and may restrict LFRMS objectives if they are likely to adversely affect water quality or sustainable resource management. | Water |
| Water for Life, Water White Paper (H M Government, 2011) | This policy aims to continue working towards a catchment based approach towards water quality and diffuse pollution | The LFRMS may potentially degrade water quality in the district due to increased agricultural run-off and spread of diffuse pollution. | Degradation in water quality could restrict the objectives of the LFRMS. | Water |
| Water for People and the Environment, Water Resources Strategy for England and Wales (Environment Agency, 2009) | Sets out the approach to sustainable water resources management throughout England and Wales to 2050 and beyond to ensure that there will be sufficient water for people and the environment. | Flood risk management measures are linked to wider water resources management issues and both aspects can actively contribute to achieving corresponding objectives. | None | Water<br>Population |
| Wildlife and Countryside Act (as amended) (1981) | The Act is the principle mechanism for legislative protection of wildlife in Great Britain. The Act deals with the protection of birds, other animals and plants. | The Act provides for the notification of SSSIs and their protection and management. Furthermore, it provides for the designation of notable species which are awarded protection. Any potential impacts of the LFRMS, including on SSSIs or protected species, | May restrict certain LFRMS objectives if they are shown to be likely to have a significant effect on statutorily designated sites or protected species within the area. | Biodiversity<br>Water |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
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| | | will need to be considered through the SEA. | | |
| **Regional** | | | | |
| Lowland Derbyshire Biodiversity Action Plan (November, 2011) | The Plan outlines how the Lowland Derbyshire Biodiversity Partnership (LDBP) aims to take forward the delivery of the Lowland Derbyshire portion of the UK BAP habitat targets. | Habitats and species which are recognised as priorities under the UK BAP are present within the City and thus the LFRMS must take into account the impacts on delivery of the UK BAP targets. | May restrict certain LFRMS objectives if they are shown to be likely to have a significant effect on UK BAP habitats or species. | Biodiversity Water |
| River Basin Management Plan Humber River Basin District (December, 2009) | The Humber RBMP has been prepared to meet the requirements of the EU Water Framework Directive. It focuses on actions to address the protection, improvement, sustainable use of water and other pressures facing the water environment in the Humber River Basin District. | Water quantity and quality is linked to the LFRMS. The LFRMS has the potential to impact the water bodies within the district and thus may hinder or promote the WFD objectives. | The LFRMS may be restricted if significant detrimental impacts on WFD objectives are identified. | Water |
| **Local** | | | | |
| The City of Derby Local Plan Review (2006)72 | The Local Plan will make it clear what is intended to happen in the area over the life of the plan, where and when this will occur and how it will be delivered. It will be tailored to each area in terms of their strategy and the policies required. | The LFRMS may limit areas of proposed development within this plan as it has the potential to impact upon water bodies within the City. | Any limitations arising from the implementation of the LFRMS may need to be revised in respect of the LDF. | Material Assets Population |
| Derby City Council (2011) Derby City Surface Water Management Plan73 | | | | Water |
| Derby City Council (2012) Aligned Core Strategy74 | The Derby Housing Market Area (HMA) local authorities have commissioned transport modelling work to test the transport impacts of potential strategic | The LFRMS may limit areas of proposed development within this plan as it has the potential to impact upon water bodies within the City. | Any limitations arising from the implementation of the LFRMS may need to be revised in | Material Assets Population |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| | development sites, taking account of potential mitigation interventions. The modelling will form part of the evidence base that will inform the Local Plans of the three HMA local authorities. | | respect of the ACS. | |
| Derby City Council (2010) Water Cycle Study76 77 | Report produced for the purpose of providing strategic level advice on water infrastructure and environmental capacity within the City, to inform Local Development Frameworks and strategic site allocation. | The LFRMS may limit areas of proposed development within this plan as it has the potential to impact upon water bodies within the City. | | Water |
| Derby City Council (2011) Local Transport Plan78 | The LTP is a vital tool to help councils, their partners and their local communities, plan for transport in the way that best meets the needs of the local area. | The LFRMS may limit areas of existing or proposed transport infrastructure. | Any limitations arising from the implementation of the LFRMS may need to be revised in respect of the LTP. | Material Assets |
| Derby City Council (2011) Preliminary Flood Risk Assessment79 | The PFRA is a high level screening exercise to identify areas where there is significant flood risk in national terms and to report these Flood Risk Areas to Europe.<br>It covers the risk of flooding from local sources, namely ordinary watercourses, surface water (overland run-off) and groundwater. It does not directly consider flooding from main rivers, such as the River Derwent.<br>The PFRA report looks at past flooding, where future flooding might occur across the county and the potential consequences that this may have for people, properties, infrastructure and the environment. The PFRA will help develop a Local Flood Risk Management Strategy to manage flooding in Derbyshire. | | Any limitations arising from the implementation of the LFRMS may need to be revised in respect of the PRFA. | Water |

| Plan/Policy/Programme | Overview | Relevance to LFRMS | Conflict with LFRMS | Primary SEA topic |
|---|---|---|---|---|
| Derby City Council / Environment Agency (2013) Our City Our River8 | Existing flood defences for the city are reaching the end of their design life meaning that in a severe flood event, there would be a major impacts in Derby. Aims to reduce the existing 1 in 25 chance of flooding from the River Derwent by using the most appropriate way to reduce flood risk to properties and people would be to realign the flood defences through Derby city centre. | | | Water<br>Material Assets<br>Population |

# References


Cabinet Office, 2001. National Strategy for Neighbourhood Renewal: Policy Action Team Unit. [Online]
Available at: http://dera.ioe.ac.uk/9947/1/National_strategy_for_neighbourhood_renewal_-_Policy_Action_Team_audit.pdf

DCLG, 2012. National Planning Policy Framework. [Online]
Available at: National Planning Policy Framework

DCLG, 2014. Flood Zone and Flood Risk Tables. [Online]
Available at: http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-1-flood-zones/

DCMS, 2007. Heritage Protection for the 21st Century, White Paper. [Online]
Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78116/hrp_whitepaper_doc1.pdf

Defra, 2004. Making Space for Water – taking forward a new Government strategy for flood and coastal erosion risk management in England. [Online]
Available at: http://www.look-up.org.uk/2013/wp-content/uploads/2014/02/Making-space-for-water.pdf

Defra, 2008. Future Water: The Government's water strategy for England. [Online]
Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69346/pb13562-future-water-080204.pdf

Defra, 2008. The Invasive Non-Native Species Framework Strategy for Great Britain. [Online]
Available at: http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCUQFjAAahUKEwj_m7X45Y_IAhWHOBoKHRTGBbw&url=http%3A%2F%2Fwww.nonnativespecies.org%2FdownloadDocument.cfm%3Fid%3D99&usg=AFQjCNFdLNIhBtBqMA4wXFCeIxo6MFRwZQ

Defra, 2011. Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems. [Online]
Available at: Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems

Defra, 2011. The air quality strategy for England, Scotland, Wales and Northern Ireland: Volume 1. [Online]
Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf

Defra, 2011. Understanding the risks, empowering communities, building resilience, The National Flood and Coastal Erosion Risk Management Strategy for England. [Online]
Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf

Defra, 2014. The National Flood Emergency Framework for England. [Online]
Available at: The National Flood Emergency Framework for England

Derby City Council, 2006. The City of Derby Local Plan Review [Online] Available at: http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/policiesandguidance/planning/CDLPR%202017.pdf

Derby City Council, 2010. Water Cycle Study [Online] Available at: https://www.derbyshire.gov.uk/images/Derby%20HMA%20Water%20cycle%20study%202010_tcm44-212273.pdf

Derby City Council 2011. Local Transport Plan [Online] Available at: http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/transport/DerbyCityCouncil-LTP3-strategy-april-2011.pdf

Derby City Council, 2011. Preliminary Flood Risk Assessment [Online] Available at: https://www.derbyshire.gov.uk/environment/flooding/prfa/default.asp

Derby City Council, 2011. Derby City Surface Water Management Plan [Online] Available at: https://cmis.derby.gov.uk/CMIS5/Document.ashx?czJKcaeAi5tUFL1DTL2UE4zNRBcoShgo=IS%2FvjWruVrWSJ%2B7ST1Xi%2FxWh7Os%2FD9eh6yTPtusFvFuMF7MvmpXpBg%3D%3D&mCTIbCubSFfXsDGW9IXnlg%3D%3D=hFflUdN3100%3D&kCx1AnS9%2FpWZQ40DXFvdEw%3D%3D=hFflUdN3100%3D&uJovDxwdjMPoYv%2BAJvYtyA%3D%3D=ctNJFf55vVA%3D&FgPlIEJYlotS%2BYGoBi5olA%3D%3D=NHdURQburHA%3D&d9Qjj0ag1Pd993jsyOJqFvmyB7X0CSQK=ctNJFf55vVA%3D&WGewmoAfeNR9xqBux0r1Q8Za60lavYmz=ctNJFf55vVA%3D&WGewmoAfeNQ16B2MHuCpMRKZMwaG1PaO=ctNJFf55vVA%3D

Derby City Council, 2012. Aligned Core Strategy [Online] Available at: http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/reports/localdevelopmentframework/DerbyCityCouncil-HMA-Transport-Position-Statement-Nov-2012.pdf

Derby City Council, 2013. Derby City Local Plan [Online] Available at: http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/policiesandguidance/planning/Full%20doc%20complete%20compressed.pdf

Derby City Council, 2013. Derby City Climate Change Strategy [Online] Available at:

Derby City Council/Environment Agency, 2013. Our City Our River [Online] Available at: http://www.derby.gov.uk/environment-and-planning/planning/our-city-our-river/

Derby City Council (2016) Strategic Environmental Assessment Scoping Report. Derby City Council, Derby.

Environment Agency, 2009. Water for life and livelihoods River Basin Management Plan Humber River Basin District. [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297488/gene0910bsqr-e-e.pdf

Environment Agency, 2009. Water for People and the Environment, Water Resources Strategy for England and Wales. [Online] Available at: http://webarchive.nationalarchives.gov.uk/20140328084622/http://cdn.environment-agency.gov.uk/geho0309bpkx-e-e.pdf

Environment Agency, 2010. Trent Catchment Flood Management Plan Summary Report. [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289105/River_Trent_Catchment_Management_Plan.pdf

European Parliament 2001/42/EC, 2001. Directive 2001/42/EC of the European Parliament and of the Council of June 27th 2001 on the assessment of the effects of certain plans and programmes on the environment. s.l.:s.n.

H M Government, 2005. Securing the future delivering UK sustainable development strategy. [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69412/pb10589-securing-the-future-050307.pdf

H M Government, 2011. Water for Life. [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228861/8230.pdf

H M Government, 2012. Draft Water Bill July 2012. [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228852/8375.pdf

Historic England, 2015. Search The Heritage At Risk Register. [Online] Available at: http://risk.historicengland.org.uk/register.aspx?rs=1&rt=0&pn=1&st=a&ua=Stoke-on-Trent%2c+City+of+(UA)&ctype=all&crit=

JNCC, 1997. Information Sheet on Ramsar Wetlands. [Online] Available at: http://jncc.defra.gov.uk/pdf/RIS/UK11080.pdf

JNCC, 2014. The UK Biodiveristy Action Plan (UK BAP). [Online] Available at: http://jncc.defra.gov.uk/ukbap

Lawton, J. H. et al., 2010. Making Space for Nature: A review of England's Wildlife Sites and Ecological Network. [Online]

Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/218690/201009space-for-nature.pdf

Lowland Derbyshire Biodiversity Partnership. (2011) Lowland Derbyshire Biodiversity Action Plan [Online] Available at: http://derbyshirebiodiversity.org.uk/news/files/Lowland_Derbyshire_Biodiversity_Action_Plan_2011-2020.pdf

MAGIC, 2015. MAGIC. [Online] Available at: http://www.magic.gov.uk/MagicMap.aspx

Met Office, 2010. Keele Climate. [Online] Available at: http://www.metoffice.gov.uk/public/weather/climate/gcqmkqe11

Met Office, 2015. Midlands: Climate. [Online] Available at: http://www.metoffice.gov.uk/climate/uk/regional-climates/mi

ODPM, 2005. A Practical Guide to the Strategic Environmental Assessment Directive. [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf

Office for National Statistics, 2009. Life Expectancy at Birth. [Online] Available at: http://neighbourhood.statistics.gov.uk/dissemination/DownloadData.do?step=6&datasetFamilyId=937&instanceSelection=127385&filesetIndex=0&rightPaneBoxHeight=453&JSAllowed=true&browserHeight=706&browserWidth=1036&%24ph=60_61_65&CurrentPageId=65&Back.x=10&Bac

Office for National Statistics, 2011. Age Structure 2011. [Online] Available at: http://neighbourhood.statistics.gov.uk/dissemination/datasetList.do?JSAllowed=true&Function=&%24ph=60&CurrentPageId=60&step=1&CurrentTreeIndex=-1&searchString=&Next.x=53&Next.y=11

Office for National Statistics, 2015. Resident Population Estimates, All Persons, Mid 2004. [Online] Available at: http://neighbourhood.statistics.gov.uk/dissemination/instanceSelection.do?JSAllowed=true&Function=&%24ph=60_61&CurrentPageId=61&step=2&datasetFamilyId=1813&instanceSelection=135412&Next.x=50&Next.y=13

Office for National Statistics, 2015. Resident Population Estimates, All Persons, Mid 2014. [Online] Available at: http://neighbourhood.statistics.gov.uk/dissemination/datasetList.do

SEA Regulations (S.I. 2004/12633), 2004. The Environmental Assessment of Plans and Programmes Regulations. HMSO.

UK Climate Projections, 2014. Maps and key findings. [Online] Available at: http://ukclimateprojections.metoffice.gov.uk/21708

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