Strategic Environmental Assessment (SEA) of the Derbyshire Local Flood Risk Management Strategy (LFRMS)

Environmental Report
June 2015

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1 INTRODUCTION

1.1 Background

1.1.1 Derbyshire County Council (DCC) has produced a Local Flood Risk Management Strategy (LFRMS) as a key duty under Section 9 of the Flood and Water Management Act, (FWMA, 2010). The purpose of the LFRMS is to guide the management of local flood risk across the County.

1.1.2 The LFRMS has been informed by a Strategic Environmental Assessment (SEA) as it has been developed; which has sought to identify the likely significant effects of the strategy and help to demonstrate how the LFRMS can contribute to the achievement of wider environmental objectives.

1.1.3 This Environmental Report presents the findings of the SEA process.

1.2 SEA Explained

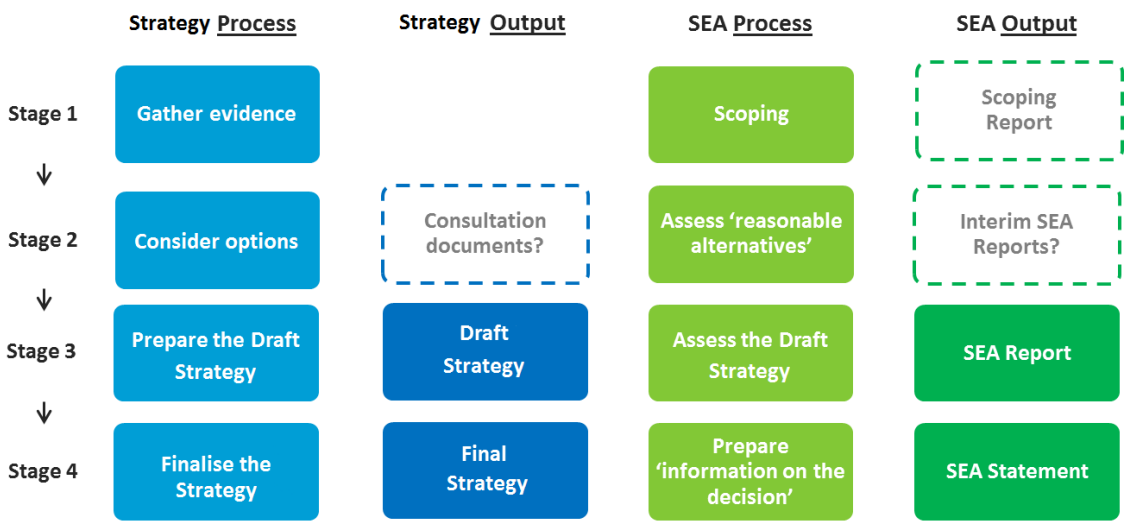
1.2.1 SEA is a process that involves the systematic identification and evaluation of the potential environmental impacts of high-level decision-making (e.g. a plan, programme or strategy).

1.2.2 SEA is also a tool for communicating the likely effects of a 'plan', 'programme' or 'strategy' (and any reasonable alternatives), explaining the decisions taken with regard to the approach decided upon, and encouraging engagement from key stakeholders such as local communities, businesses and other interested parties.

1.2.3 Although SEA can be applied flexibly, it is a legal requirement under the Environmental Assessment of Plans and Programmes Regulations 2004 (which were prepared in order to transpose into national law the EU Strategic Environmental Assessment (SEA) Directive).[1] The regulations set out prescribed processes that must be followed. In particular, the regulations require that a report is published for consultation alongside the LFRMS that 'identifies, describes and evaluates' the likely significant effects of implementing 'the plan, and reasonable alternatives'.[2] The Environmental Report (Sometimes called an SEA report) must then be taken into account alongside consultation responses when finalising the strategy.

1.2.4 SEA can be viewed as a four-stage process (illustrated in **Figure 1.1** below) that produces a number of statutory and non-statutory outputs.

Figure 1-1: SEA as a four stage process



[1] Directive 2001/42/EC: http://ec.europa.eu/environment/eia/sea-legalcontext.htm
[2] Regulation 12(2) http://www.legislation.gov.uk/uksi/2004/1633/regulation/12/made

1.3 What stage of the SEA process are we at?

1.3.1 Undertaking an SEA is an iterative process, but it typically follows the four stages identified in **Figure 1.1.** This Environmental Report essentially represents the outcome of stages 1, 2 3 and 4 of this process.

Stage 1: Scoping

1.3.2 The scoping stage of SEA involves the following key tasks, which are undertaken to identify the environmental issues that should be a focus of the SEA and how the assessments will be undertaken.

- Reviewing the policy context.
- Establishing the current and projected baseline position for a range of environmental factors.
- Identifying the key environmental issues.
- Establishing a methodological framework that will be used as a basis for undertaking assessments (referred to as a SEA Framework).
- Identifying limitations and assumptions.

1.3.3 After gathering this information, the Council prepared a Scoping Report, to present the scope of the SEA to interested parties.

1.3.4 The Scoping Report was published and sent to the statutory bodies (English Heritage, Natural England, and the Environment Agency) to seek input and feedback on the scope of the SEA. In particular whether:

- The relevant policy context had been reviewed;
- Up-to-date and relevant baseline information had been gathered;
- The most important environmental issues have been identified; and
- The assessment methodology is appropriate.

1.3.5 Following the period of consultation (which lasted 5 weeks between 1st July and 5th August 2014), the Council responded to feedback as deemed necessary before finalising the Scoping Report. However it should be remembered that the scope of the SEA constantly evolves as new evidence and information become available.

Stage 2: Assessment of Reasonable Alternatives

1.3.6 Stage 2 of the SEA process involves identification and assessment of 'reasonable alternatives'. This means comparing different approaches that could be taken to achieve the objectives of the LFRMS.

1.3.7 As explained in Chapter nine of this report, the Council considers that there are no reasonable alternatives to the LFRMS.

Stage 3: Assessment of the Draft LFRMS

1.3.8 The SEA process runs parallel to the preparation of the LFRMS. Therefore, as the LFRMS is being developed, it is useful to undertake an assessment of the emerging principles, objectives, key actions and detailed actions. This means that the findings of the SEA can be taken into consideration before the LFRMS is finalised.

1.3.9 This Environmental Report sets out an assessment of the draft LFRMS.

Stage 4: Finalise the Strategy

1.3.10 Following consultation on the draft LFRMS, a number of focused changes have been made to the objectives and key actions in the LFRMS to reflect stakeholder feedback and the findings of the draft Environmental Report. The Environmental Report has been updated to take account of these changes.

2 DERBYSHIRE AND THE DERBYSHIRE LFRMS

2.1 Derbyshire Context

2.1.1 The study area is identified within **Figure 2-1**. The county of Derbyshire is located within the East Midlands, Derbyshire has an estimated total population of approximately 776,200 in 2013[3].

2.1.2 Derbyshire is a large county which covers an area of 255,071 ha which constitutes 16% of the land area of East Midlands and nearly 2% of England. Derbyshire is largely rural with no major urban centre, there are eight Districts within Derbyshire of which Erewash (that sits adjacent to the Nottinghamshire border) is the largest urban local authority. The Peak District National Park accounts for more than a third of the county's total land area and stretches beyond Derbyshire. The main built up areas of the County are Derby, Chesterfield, Bolsover, Swadlincote, Long Eaton, Ilkeston, Ashbourne, Matlock, Buxton and Glossop. The County includes eight District/Borough authorities (listed below) and also the Peak District National Park Authority (PDNPA), however the PDNPA have no flood risk responsibilities as they are not designated a risk management authority within the scope of the Flood and Water Management Act.

- Amber Valley Borough Council
- Bolsover District Council
- Chesterfield Borough Council
- Derbyshire Dales District Council
- Erewash Borough Council
- High Peak Borough Council
- North East Derbyshire District Council
- South Derbyshire District Council

2.2 Derbyshire LFRMS

2.2.1 DCC is designated a Lead Local Flood Authority (LLFA) under the FWMA and as such has responsibilities, duties and powers to help coordinate the management of flood risk across the County. Derby City Council as a separate LLFA covers the administrative area of Derby City and will be producing a separate LFRMS.

2.2.2 The City and County Council are working closely together to ensure their respective LFRMS' are complementary and provide integrated benefits in terms of both flood risk and the wider environment.

2.2.3 The purpose of the LFRMS is to identify the extent of flood risk in Derbyshire, how it will be managed in partnership with others and to outline Derbyshire's approach to local flood risk management in the County.

2.2.4 The LFRMS will build upon the Preliminary Flood Risk Assessment (PFRA) produced in May 2011. The PFRA provided a high level overview of existing and potential flood risk from a variety and combination of flood sources including: surface water, groundwater and ordinary watercourses, as well as the interaction with Environmental Agency designated Main Rivers and reservoir flooding.

2.2.5 The SEA process will be fully integrated into the development of the LFRMS to ensure that environmental considerations are taken into account. This Environmental Report illustrates how the SEA has influenced the LFRMS process. Where possible, the SEA also identifies opportunities for environmental enhancement as well as mitigating any potentially adverse effects of the LFRMS.

2.2.6 The County Council has prepared six objectives for inclusion in the LFRMS (see Table 2-1). These give an indication of the scope of the LFRMS. Each objective is supported by a number of key actions and breakdowns of these key actions.

[3] Office of National Statistics (ONS) Mid-Year estimates 2013: http://www.nomisweb.co.uk/reports/lmp/la/1941962807/report.aspx

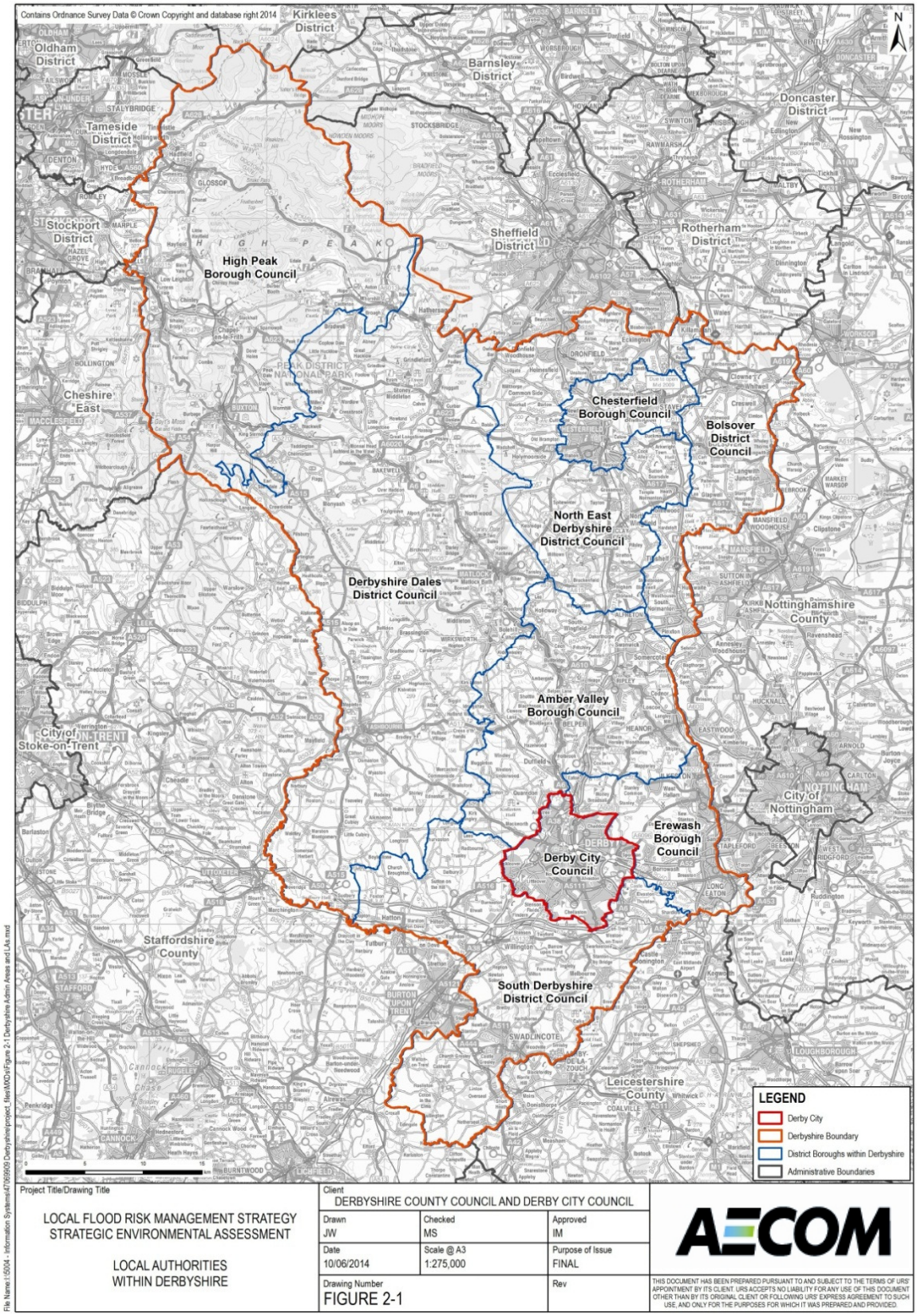
TABLE 2-1: LFRMS OBJECTIVES AND KEY ACTIONS

LFRMS Objective	key actions
1) To further develop an understanding of the flood risk and the impacts of climate change working collaboratively to ensure a coordinated response for Derbyshire.	1.1) Identify and strengthen how RMAs in Derbyshire and adjoining authorities share information and resources and work collaboratively in a coordinated manner for flood risk management.
	1.2) Enhance and develop the resources gap at the County Council.
	1.3) Quantify the current understanding and continue to develop our understanding of flood risk to Derbyshire.
	1.4) Continue to collect data from all sources (predictive and historical) and manage appropriately.
	1.5) To work with the internal teams at Derbyshire such as Emergency Planning, Highways, Structures and also emergency responders to further develop a collaborative approach for flood risk management for the Authority.
	1.6) Develop a robust methodology and undertake an analysis for understanding the impacts of climate change in the future flood risk to Derbyshire.
2) To continue to work with all relevant bodies to ensure appropriate and sustainable development in Derbyshire.	2.1) Continue to liaise with and enhance relationships with all Local Planning Authorities to encourage flood risk reduction in land use planning and encourage a strategic approach to catchment management.
	2.2) Promote appropriate and sustainable development in Derbyshire.
	2.3) Encourage sustainable works on or within close proximity to ordinary watercourses.
	2.4) Continue to develop relationships with the general public, developers and all other relevant stakeholders surrounding local planning and development.
3) To aim to reduce the level of flood risk to the residents of Derbyshire.	3.1) Work collaboratively with all District/Borough land drainage officers, emergency planning teams, Local Planners, internal teams and other adjoining authorities to coordinate, optimise and secure resources, expertise and opportunities to reduce flood risk.
	3.2) Continue to bid for finances from Defra for flood risk management projects in Derbyshire where the cost/benefit result is sufficient enough to make the project viable.
	3.3) Promote personal resilience and empower localism within local communities.
	3.4) Encourage conscientious land and asset management practice.
	3.5) Continue to consent for works appropriately under Section 23 of the Land Drainage Act and exercise enforcement powers appropriately under the Land Drainage Act.
	3.6) Develop and action a communication strategy and prioritise communication.
	3.7) Look to maximise any opportunities for funding through promoting multi-benefit schemes.
4) To continue to prioritise limited resources effectively to support communities most at risk in Derbyshire.	4.1) Quantify the current understanding and continue to develop our understanding of flood risk to Derbyshire
	4.2) Continue to invest resources in flood risk management schemes that are viable for National funding
	4.3) Promote personal resilience and empower localism within local communities
	4.4) Undertake flood enquiry visits based on priority or in local clusters to manage

TABLE 2-1: LFRMS OBJECTIVES AND KEY ACTIONS

LFRMS Objective	key actions
	demand more effectively
	4.5) Prioritise statutory consultee response to planning applications
	4.6) Provide support and guidance during and after a flood event to those communities that need it most
	4.7) Support the Highways team for implementing the gully cleansing project
5) To continue to help and support the local communities of Derbyshire to manage their own risk	5.1) Develop and action a communication strategy and prioritise communication
	5.2) Promote personal resilience and empower localism within local communities
	5.3) Encourage conscientious land and asset management practice
	5.4) Work with internal Emergency Planning team and emergency responders to ensure effective response during an emergency event
	5.5) Continue to work collaboratively with other Risk Management Authorities on schemes where the County Council are not the lead Authority
6) To continue to help protect and enhance the natural and historic environment of Derbyshire	6.1) Promote sustainable and multi-benefit flood risk management activities
	6.2) Support the EA in implementing the objectives of the Water Framework Directive
	6.3) Continue to support local environmental groups where there are potential benefits for local flood risk management.

Figure 2-1: Map of Derbyshire, showing the Local Authorities



3 SCOPING

3.1 Introduction

3.1.1 In essence, scoping is the process of gathering information about the area and factors likely to be affected by the LFRMS. This information helps to identify what the key issues are and which of these should be the focus of the SEA process.

3.2 Contextual review / policy framework

3.2.1 An important step when seeking to establish the appropriate 'scope' of an SEA involves reviewing 'context' messages (e.g. issues, objectives or aspirations) set out within relevant published plans, policies, strategies and initiatives (PPSIs) at international, national and local level. Environmental context messages are important, as they aid the identification of the 'issues and opportunities' that should be a focus of the SEA. Assessments should also take account of the cumulative impacts that could arise as a result of other plans and programmes within and beyond the plan period.

3.3 The current and projected baseline

3.3.1 Another important step when seeking to establish the 'scope' of an SEA involves reviewing the current state for a range of environmental topics. Doing so helps to enable identification of those key environmental topics that should be a particular focus of the appraisal, and also helps to provide 'benchmarks' for the appraisal of significant effects.

3.3.2 Just as it is important for the scope of SEA to be informed by an understanding of current baseline conditions, it is also necessary to consider how the baseline conditions might 'evolve' in the future under the no plan / business as usual scenario.

3.3.3 The SEA Regulations identify a non-exclusive list of environmental 'topics' that may be appropriate for initial consideration within a SEA. These include;

- Population
- Human Health
- Air
- Soil
- Water
- Climatic Factors
- Material Assets
- Landscape
- Biodiversity, Flora and Fauna
- Cultural, Architectural and Archaeological Heritage

3.3.4 This list serves as a useful starting point from which issues can be scoped out-of or into the SEA depending upon whether or not they are considered likely to affect or be affected by the LFRMS.

3.3.5 It is important to note that the SEA should only address impacts at a strategic level, and not seek to identify the effects that are likely to result due to individual projects (For example the construction of flood defence schemes). These issues are more appropriately considered during project level Environmental Impact Assessment (EIA).

3.3.6 Given the scope of the LFRMS, it is considered that the following topics (**Table 3-1**) can be 'scoped out' of the SEA as it is unlikely there would be significant effects as a result of the implementation of the LFRMS.

TABLE 3-1: TOPICS SCOPED OUT OF THE SEA	
Topic	**Reason for being scoped out**
Air Quality	Air quality is unlikely to be significantly affected by a flood risk management strategy. Potential effects on air quality are likely to be limited to short-term and temporary effects during the construction phase of engineered flood defences and can be assessed at project level.
Flood Risk	The primary aim of the LFRMS is to address flood risk in the County. Flood Risk has therefore been scoped out of the SEA process to avoid duplication in assessment of the impacts in terms of flooding. However, given the importance of flooding to the LFRMS, it has been considered as a 'cross-cutting' issue as relevant under each environmental topic included in the scope of the SEA. This provides some context in terms of the baseline position.
Noise	Levels of noise disturbance are unlikely to be significantly affected by flood risk management options. Potential effects on noise are likely to be limited to short term temporary effects during the construction phase of engineered flood defences.
Waste	Whilst some waste facilities are vulnerable / incompatible with areas at risk of flooding, the siting of new facilities would be determined through the planning process.
Soil and Geology	The type of soil and underlying geology can influence the likelihood of surface and groundwater flooding in an area. In addition, due to the difference in soil structures, vulnerability to erosion varies. However, the LFRMS will not identify particular locations for flood measures, nor is it deemed necessary to gather detailed information about soil and geology at this strategic scale. It would therefore be difficult to make any meaningful appraisal of the significance of effects on soil quality and geology.
Mineral resources	Derbyshire is one of the richest counties in the UK in terms of its range and variety of mineral resources which include limestone, sandstone, sand and gravel and coal and vein minerals. Whilst flooding can have an effect on resources and operations, most minerals workings are less vulnerable to flooding or in the case of sand and gravel may even be compatible. The LFRMS is a strategic document that will not identify specific schemes or areas that may benefit from flood management measures.
Climatic Factors (*Carbon emissions*)	In the main, carbon emissions from, domestic, industrial and commercial sources have decreased across Derbyshire over the last 5 years. Although flooding can affect the siting and operation of energy generation schemes, the LFRMS is unlikely to have a significant influence on these issues. Whilst the move towards lower carbon sources of energy generation will need to take account of issues such as flood risk, these issues are more appropriately dealt with as part of strategic planning documents or individual projects that would most likely require an Environmental Impact Assessment.

3.3.7 The topics that were the focus of the SEA scoping process have been grouped into three broad themes, detailed in **Table 3-2** below[4].

TABLE 3-2: ENVIRONMENTAL TOPICS

Chapter / Broad Theme	Topics Covered	
Chapter 3: Population and Human Health	• Population • Deprivation	• Human health • Resilience to climate change
Chapter 4: Environmental Resources	• Biodiversity, fauna and flora • Landscape	• Historic environment • Water resources
Chapter 5: Resource Management	• Community Facilities and Critical infrastructure • Housing	• Economy • Agriculture and land use

3.3.8 Each of these three broad themes formed a chapter in the SEA Scoping Report, and each are divided into a series of topics. For each topic, the following information is presented:

- The policy framework / contextual review; and
- The current and projected baseline.

3.3.9 This information has been reproduced and updated as necessary in the following chapters of this Environmental Report.

[4] *It is recognised that some these topics could actually overlap into more than one broad theme. However, for the purpose of clarity and to avoid duplication, each topic has been categorised under one theme only.*

4 POPULATION AND HUMAN HEALTH

4.1 Introduction

4.1.1 People are both affected by and can affect flood risk (for example, through land management practices such as agriculture, or even by paving over private gardens, which can increase surface water run-off). It is therefore important to establish the key demographical trends for Derbyshire.

4.1.2 This chapter sets out the relevant policy framework/contextual review and baseline position for the following topics that have been grouped under the theme of 'Population and Human Health':

- Population;
- Deprivation;
- Human Health; and
- Climatic factors / resilience to climate change.

4.1.3 The chapter concludes by drawing together the evidence presented to identify a series of key issues and opportunities that relate to 'Population and Human Health' and which should be a focus for the SEA.

4.2 Population

Contextual review

TABLE 4-1: POPULATION: CONTEXTUAL REVIEW

Source	Key Messages
EU Floods Directive, 2007/60/EC on the assessment and management of flood risks.	Requires all Member States to assess whether all watercourses and coastlines are at risk from flooding. It requires a six-year cycle of flood risk assessment, mapping and planning, including considering the impact of flooding on people, the economy and the environment.
National Planning Policy Framework (NPPF, 2012).	Directs development to the lowest flood risk areas and ensures that where development does go ahead, that it has taken into account the flood risk both to and from that development for the lifetime of that development.
Sustainable Communities Plan (Sustainable Communities: Building for the Future, 2003)	The Plan sets out a number of key objectives for the UK, including: • To develop sustainable communities; • To deliver a step change in housing supply; • To deliver growth areas throughout the country; • To ensure decent homes are delivered; and • To protect the countryside and the local environment.

Existing and projected baseline

4.2.1 Derbyshire had an estimated population of 776,200 in 2013 (excluding Derby City) detailed below in Table 4-2. Including Derby City the population is 1,027,600.

4.2.2 The concentration of this population is directed towards the main urban areas of Chesterfield, Swadlincote, Bolsover, Long Eaton, Ilkeston, Ashbourne, Matlock, Buxton and Glossop. Across Derbyshire there is a great variation in population density and settlements, ranging from sparsely populated rural areas to market towns and larger urban areas.

4.2.3 Between 2003 and 2013 the population of Derbyshire increased by 4.7%, equating to an estimated additional 33,900 people. This was well below both the regional figure of 8.1% and national increase of 7.9%. Derby City showed higher growth though with a 7.9% rise in population over the same time period. This equated to an additional 18,500 people.

4.2.4 All eight Local Authorities within Derbyshire showed an increase in population between 2009 and 2013.

TABLE 4-2: DERBYSHIRE POPULATION ESTIMATES[5]

Area	2009	2010	2011	2012	2013
Amber Valley Borough	121,000	121,600	122,500	122,700	123,500
Bolsover District	74,200	74,600	76,000	76,400	76,800
Chesterfield Borough	100,900	101,000	103,800	103,800	104,100
Derbyshire Dales District	70,100	70,400	71,100	71,300	71,300
Erewash Borough	110,900	111,300	112,200	112,800	113,100
High Peak Borough	92,400	92,600	91,000	91,100	91,200
North East Derbyshire District	98,000	98,300	99,100	99,300	99,300
South Derbyshire District	92,800	93,900	94,900	96,000	97,100
Derbyshire	**760,200**	**763,700**	**770,700**	**773,500**	**776,200**
East Midlands	4,451,200	4,481,400	4,537,400	4,567,700	4,598,800
England	51,809,700	52,234,000	53,107,200	53,493,700	53,865,800

4.2.5 The Office for National Statistics (ONS) Sub-National Population Projections are produced every 2-3 years and identify the projected population changes in local authorities throughout the UK based on current assumptions about fertility, mortality and migration. The latest SNPP Population Projections have been re-based on the 2012 Mid-Year Estimates and were released in May 2014. In Derbyshire, the statistics suggest that the population will increase by 11.2% (87,000) by 2037[6].

4.2.6 The Derbyshire Local Economic Assessment (2012) outlines varying levels of growth throughout the County, with South Derbyshire set to experience a substantial population increase. The number of people of retirement age is also forecast to increase significantly[7].

TABLE 4-3: DERBYSHIRE POPULATION PROJECTIONS[8]

Area	2012	2017	2027	2037	Change 2012 -37	Change 2012-37 (%)
Amber Valley	122,746	125,540	131,931	136,791	14,045	11.4%
Bolsover	76,447	77,917	81,206	83,683	7,236	9.5%
Chesterfield	103,782	104,844	108,060	110,572	6,790	6.5%
Derbyshire Dales	71,336	72,414	75,661	78,056	6,720	9.4%
Erewash	112,809	115,733	122,188	127,464	14,655	13%
High Peak	91,118	932,911	96,725	99,548	8,430	9.3%
NE Derbyshire	99,325	100,563	104,675	107,103	7,778	7.8%
S Derbyshire	95,959	101,231	110,810	117,509	21,550	22.4%
Derbyshire	774,000	792,000	831,000	861,000	87,000	11.2%
East Midlands	4,568,000	4,712,000	4,998,000	5,230,000	662,000	14,5%

[5] Source: ONS Mid-Year Estimates, 2013.
[6] Source: ONS SNPP Population Projections 2012-2037
[7] Derbyshire Local Economic Assessment, (2012), Version 2.0
[8] Source: ONS SNPP Population Projections 2012-2037.

TABLE 4-3: DERBYSHIRE POPULATION PROJECTIONS[8]						
Area	**2012**	**2017**	**2027**	**2037**	**Change 2012 -37**	**Change 2012-37 (%)**
England	53,494,000	55,415,000	59,124,000	62,166,000	8,672,000	16.2%

4.2.7 The ONS mid-year population estimates for 2013 indicate that:

- The age group with the highest proportion of people is 44-64 year olds Derbyshire (28.5%);
- 17.5% of the population in Derbyshire are aged between 0-15;
- 62.5% are aged 16 - 64 and 19.9% are 65+; and
- Derbyshire has a slightly older population than the national population, with 17.3% of the population in England at 65 years or older.

TABLE 4-4: POPULATION CHANGE				
Mid-2002 to Mid-2011	**All Persons**	**0-15 Years**	**16-64 Years**	**65+ Years**
Derbyshire County	4.1%	-4.9%	1.9%	22.7%
East Midlands	7.2%	2.2%	5.3%	20.5%
England	7.3%	4.0%	6.0%	16.7%

4.2.8 Population growth is likely to result in increased demand on existing infrastructure services, such as sewerage networks and local water supplies. The requirement for additional housing can also result in development that causes land take of greenfield (and brownfield) land, and increased flood risk to the new development or the surrounding local area. In turn this can increase pressure on biodiversity and ecosystems. However, new development could also bring opportunities, such as the incorporation of sustainable urban drainage systems (SUDS) and the retro-fitting of SUDS to adjacent existing development and new infrastructure which will have wider benefits to existing local communities.

4.3 Deprivation

4.3.2 Quality of life is affected by flooding. Poor quality of life and living conditions can also make communities more vulnerable to the effects of flooding. The more deprived a community, the more likely they are to be more significantly affected by the impact of flooding. These communities could have lower levels of awareness about flood risk[9], and may already be suffering from poor health. Those communities that suffer losses and have low incomes and / or no insurance, may also be more susceptible to psychological health impacts, and by extension, physical health impacts[10].

4.3.3 This section sets out the relevant policy framework/contextual review and baseline position for 'deprivation'.

Contextual review

TABLE 4-5: DEPRIVATION: CONTEXTUAL REVIEW	
Source	**Key Messages**
The Urban White Paper: Our Towns and Cities: The Future - Delivering an Urban Renaissance (2000)	The central purpose of the Paper is to address urban decline and it starts with a holistic approach to policy which recognises the need to link together a range of initiatives on housing, planning, education, transport and law and order issues.

[9] Fielding, J.L (2012) Are the most at risk the least aware? A study of environmental justice and awareness of flood risk in England and Wales. University of Surrey.
[10] Environment Agency (2006) Addressing Environmental Inequalities: Flood Risk. Science Report: SC020061/SR1

Marmot Health Inequalities Review – Fair Society, Healthy Lives (2010)	The relevant objective set out in the Review is to: • Create and develop healthy and sustainable places and communities.
Derbyshire's Sustainable Community Strategy 2009–2014 (2009)	Two of the key aims of the Strategy include reducing inequality and creating cohesive communities with a thriving voluntary and community sector.

Existing and projected baseline

4.3.4 The Indices of Multiple Deprivation (IMD) 2010 measure deprivation within localities under the following sub-domains:

- Health deprivation and disability;
- Barriers to housing services;
- Income deprivation;
- Employment deprivation;
- Education, skills and training deprivation;
- Crime; and
- Living environment deprivation.

4.3.5 An overall deprivation score is calculated by combining the seven deprivation scores and assigning each sub-domain a different weighting. **Figure 4-1** shows the position of Derbyshire's Lower Super Output Areas (LSOAs). The most deprived LSOAs are to the east of the County. The most deprived LSOA within Derbyshire, Hopewell North, lies within Ilkeston North Ward and covers part of the Cotmanhay area. It ranks within the top 3% most deprived areas in England. It was also the most deprived LSOA in Derbyshire in the IMD 2007.

4.3.6 Populations in urban areas in Derbyshire are more likely to live in deprived areas than those living elsewhere. When comparing the IMD 2007 and IMD 2010, it is evident that the average rank for both urban and rural populations has improved.

4.3.7 There are 17 LSOAs within Derbyshire in the 10% most deprived areas in England, one more than recorded for the IMD 2007. There are sixty LSOAs within Derbyshire in the 20% most deprived in England, one less than in IMD 2007 and 7 less than in IMD 2004.

4.3.8 The number of LSOAs in the least deprived 10% in England has increased from 30 in the IMD 2007 to 42 in 2010. This maintains the upward trend experienced since 2004 when only 23 LSOAs fell within the 10% least deprived areas.

4.3.9 Across all the LSOAs in England there has been an improvement over time. The average rank of Derbyshire's LSOAs on the national scale has fallen (i.e. improved) by 1% compared with IMD 2007, and 3% compared with IMD 2004.

4.3.10 Out of all 326 local authority districts in England, Bolsover and Chesterfield are ranked the highest (most deprived) of Derbyshire's districts in each of the five local authority summary measures. Bolsover ranks as the 46th most deprived local authority district and Chesterfield the 90th.

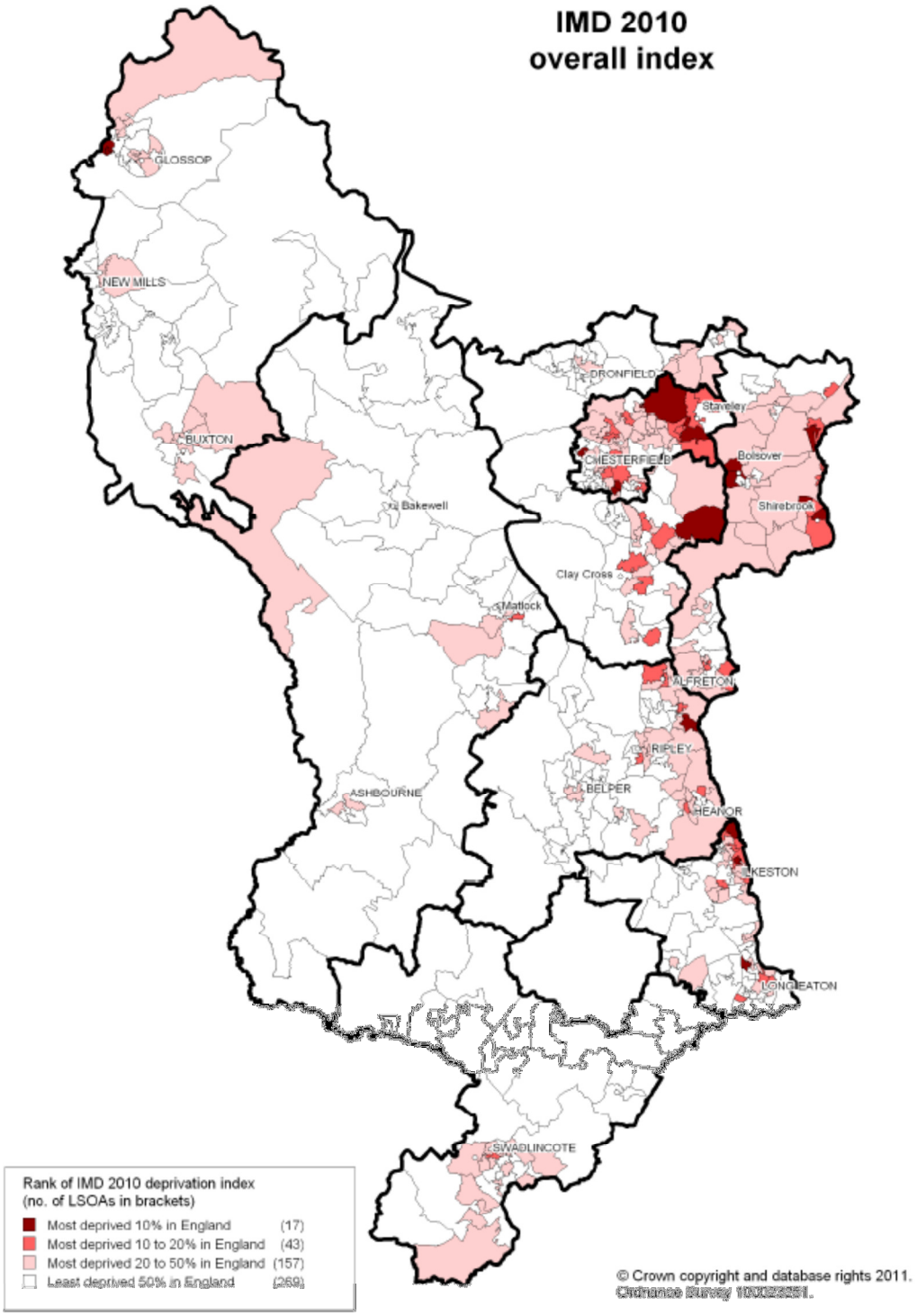
4.3.11 Across the seven domains of deprivation, Derbyshire scores worst on the 'Health and Disability' domain, with sixty LSOAs falling into the worst 10% in England out of a total of four 486 LSOAs in Derbyshire. A comparison between IMD 2007 and IMD 2010 shows that there has been a significant increase in the number of LSOAs near the top of the ranking for this domain, with nearly double the number of LSOAs in the top 10% deprived in England. However, this picture is set against a net relative improvement (measured as the change in average rank across all LSOAs in the County) between IMD 2007 and IMD 2010 for this measure.

4.3.12 There is a strong correlation between the incidence of income and employment deprivation and health. The most deprived areas in terms of health are also the most economically deprived areas within Bolsover, Chesterfield and North East Derbyshire. There are approximately 93,000 people in the County who are classed as income deprived, including approximately 23,000 children and 30,600 people aged 60 or over. Lower levels of deprivation are evident in the south and west of Derbyshire.

4.3.13 Employment deprivation is classed as those people receiving Jobseekers Allowance, Incapacity Benefit or Severe Disablement Allowance. Over 44,000 people of working age in Derbyshire fell into this category in IMD 2010.

4.3.14 The pattern of results for the 'Barriers to Housing' domain is vastly different from that of the other domains; of the 16 highest ranking LSOAs (i.e. most deprived) 11 are in Derbyshire Dales. This is likely to reflect house prices and long distances to travel to key services in rural parts of the County. However, there are 108 LSOAs in the lowest 10% (i.e. least deprived) in England, more than in any other domain.

Figure 4-1: Index of Multiple Deprivation for Derbyshire 2010



4.4 Human Health

4.4.1 Flooding can have an adverse effect on the physical and mental health of communities. People already suffering from poor health may also find it harder to adapt to or recover from flood events.

Contextual review

TABLE 4-6: HUMAN HEALTH: CONTEXTUAL REVIEW

Source	Key Messages
National Planning Policy Framework NPPF (2012)	The NPPF identifies the planning system's social role as being able to 'support vibrant and healthy communities', with a core planning principle being; *'to take account of and support local strategies to improve health, social and cultural wellbeing for all'*. The aim is to achieve places that promote social interaction, and which are safe and accessible.
Natural England's Accessible Natural Greenspace Standards (ANGST, 2001)	These Standards recommend that people living in towns and cities should have: • An accessible natural greenspace of at least 2 ha in size, no more than 300 metres (5 minutes' walk) from home; • At least one accessible 20 ha site within two kilometres of home; • One accessible 100 ha site within five kilometres of home; • One accessible 500 ha site within ten kilometres of home; and • Statutory Local Nature Reserves at a minimum level of one hectare per thousand population. Access to natural greenspace can have a positive impact on health and wellbeing.
The East Midlands Health Strategy: Next Steps for Investment for Health (2009)	The overall aim of the Strategy is to: *"Improve the health and well-being of everyone in the East Midlands and reduce the gap between the most and least healthy".* In order to achieve the strategic aim of improving health and reducing inequality, four strategic goals were established. Those relevant to the LFRMS are: • To promote 'better health' as a personal aspiration, corporate objective and shared responsibility for each individual and organisation in the region; • To ensure that public services are designed, commissioned and delivered to include 'better and more equal health' as an outcome; and • To identify and promote high-impact, evidence-based interventions that will deliver better and more equal health.

Existing and projected baseline

4.4.2 The Derbyshire Public Health Report 2012/2013[11] shows that the health of people in Derbyshire is mixed compared with the England average. Life expectancy for men in Derbyshire is above the national average whilst the life expectancy for women is slightly below the national average; furthermore life expectancy is 7.7 years lower for men and 5.6 years lower for women in the most deprived areas of Derbyshire than in the least deprived areas.

4.4.3 Health and wellbeing priorities include: inequalities in avoidable mortality, early years health and literacy, alcohol, obesity and inactivity, community management of long term conditions, access to psychological therapies and health and independence in old age[12].

4.4.4 The Community Mental Health Profile (2013)[13] shows that Derbyshire has a high proportion of its population (19.2%) with a limiting long-term illness (2001 data). This situation may translate into an

[11] NHS, Derbyshire Public Health Report available at: http://www.derbyshire.gov.uk/images/Derbyshire%20health%20Report_tcm44-224110.pdf
[12] NHS 2012. Derbyshire Health Profile at: http://www.apho.org.uk/resource/item.aspx?RID=117088
[13] http://www.nepho.org.uk/cmhp/index.php?pdf=E10000007

increased number of people with issues such as mobility and mental health that could affect their ability to respond to flooding.

4.5 Climatic Factors / adaptation to climate change

4.5.1 The LFRMS has the potential to enhance resilience to climate change through reducing flood risk or environmental enhancement measures.

Contextual review

TABLE 4-7: ADAPTATION TO CLIMATE CHANGE: CONTEXTUAL REVIEW

Source	Key Messages
National Planning Policy Framework NPPF (2012)	One of the twelve core planning principles set out within the NPPF is to "support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change…" The NPPF requires Local Plans to take account of the effects of climate change in the long term. New developments should be planned so that they avoid increased vulnerability to the impacts of climate change. Where new development is at risk of such impacts, this should be managed through adaptation measures.
The East Midlands Energy Challenge (The Regional Energy Strategy, Part 1: 2004, Part 2: 2007)	The key sustainability objectives outlined within the Regional Energy Strategy are to ensure: • The need for energy is reduced; • Energy is used more efficiently; • Energy is used from renewable sources; and • Clean and efficient use of fossil fuels.
Derbyshire: A Climate Change Strategy (2008)	The key target set out within the Derbyshire Climate Change Strategy is to reduce greenhouse gas emissions in Derbyshire to the levels set out in the Government's Climate Change Act – a 60% reduction by 2050 against 1990 levels.
River Don Catchment Flood Risk Management Plan (2010)	The Don CFMP area has a wealth of environmental and culturally recognised sites that could be affected by flooding. Sensitivity to climate change across the Don will be limited to small increases in flood extent within the catchment and The major changes in flood risk will be increased frequency of flooding and increased depth and speed of flood water flows in the existing at risk communities The Vision for the Chesterfield and River Hipper sub area is that washlands and floodplains work together to reduce the risk of flooding to people and property. When creating flood storage we will endeavor to incorporate habitat improvements and recreational facilities. Adaptation to flood risk and climate change will be central to the future sustainability of local communities.
River Trent Catchment Flood Risk Management Plan (2010)	There is flood risk to about 1,000-2,000 properties in Derby Urban Area in a 1% probability river flood. In the River Trent CFMP area, climate change will have a significant impact on flood risk. Within the next 50 to 100 years, the number of properties (both residential and commercial) at risk of flooding during a 1% flood event will rise from 22,851 to over 45,473 across the catchment. Within Derby the number of properties at risk rises from 2000-6000. The policy approach for the Derby, Burton and Nottingham sub-area is to reduce flood risk where it is too high. Some key actions include: Reducing disruption caused by flooding to critical infrastructure. Returning watercourses to a more natural state and increasing the amount of BAP habitat.

Existing and projected baseline

4.5.2 Climate change projections for the United Kingdom published as part of the UKCP09[14] programme provided detailed probabilistic projections of climate change. Although there is uncertainty in climate change predictions, the following changes are likely to have taken place in the East Midlands by 2080. The changes mentioned below relate to a 'medium emissions scenario'[15]:

- The central estimate of increase in winter mean temperature is 2.6ºC; it is very unlikely to be less than 1.4ºC and is very unlikely to be more than 4.1ºC;
- The central estimate of increase in summer mean temperature is 3.7ºC; it is very unlikely to be less than 2ºC and is very unlikely to be more than 5.8ºC;
- The central estimate of change in winter mean precipitation is 14%; it is very unlikely to be less than 2% and is very unlikely to be more than 32%; and
- The central estimate of change in summer mean precipitation is -18%; it is very unlikely to be less than -36% and is very unlikely to be more than 1%.

4.5.3 In the future the East Midlands is therefore likely to experience a warmer climate with drier summers and wetter winters, which means that extreme events such as floods and droughts are likely to become less predictable and possibly more frequent. Development pressures will also be likely to increase CO_2 emissions in the future, contributing towards the impacts of climate change.[16]

[14] Further information on the UKCP09 programme is available from: http://ukclimateprojections.defra.gov.uk/.
All of the information in relation to climate change projections was obtained from the UKCP09 website.
[15] Projections are set out within the UKCP09 programme, which correspond to three emissions scenarios (Low, Medium and High). The key characteristics of each of these scenarios are:
Medium emissions Scenario - describes a world that has rapid economic growth, quick spreading of new and efficient technologies, and a global population that reaches 9 billion mid-century and then gradually declines. It also relies on a balance between different energy sources.
High emissions Scenario - similar economic and population trends as the Medium emission scenario but more emphasis on power generation from fossil fuels.
Low emissions scenario - represents a more integrated ecologically friendly world, characterised by clean and resource efficient technologies, and lower global greenhouse gas emissions.
[16] UK Climate Change Programme http://ukclimateprojections.defra.gov.uk/.

4.6 Key Issues for Population and Human Health

The key issues arising from the contextual review and baseline assessment for 'Population and Human Health' in Derbyshire are set-out in **Table 4-8**.

TABLE 4-5: KEY ISSUES AND RELEVANCE TO THE LFRMS

Key Issue	Relevance to the LFRMS
Population The population of Derbyshire is growing, with an increasing proportion of elderly residents.	The increasing population in Derbyshire could affect flood risk through increased demand for housing, wastewater treatment, and surface water run-off. The LFRMS should take account of these demographic trends and seek to prioritise limited council resources to those at the highest risk of flooding and seek to ensure appropriate and sustainable development in Derbyshire.
Deprivation Reducing the inequalities between deprived and more affluent areas is a key objective at national and local level. However, there are concentrations of deprivation in Derbyshire, mainly in urban areas to the North West of the County.	Deprived communities are more vulnerable to the effects of flooding. The LFRMS could present the opportunity to help reduce and better manage flooding in deprived areas (if these are identified as 'most at risk' for example).
Health One of the priorities for local health care is to reduce the levels of obesity and inactivity. There is a high proportion of the population with a limiting long-term illness, which could affect their ability to deal with flood events.	It is important to ensure that housing, healthcare, leisure and recreational facilities are protected from increased flood risk across Derbyshire. The LFRMS can help to improve awareness of flood risk amongst communities.
Climatic factors / resilience to climate change Climate change is anticipated to exacerbate flood risk.	The LFRMS should seek to identify ways to improve the resilience of Derbyshire to the effects of climate change.

5 ENVIRONMENTAL RESOURCES

5.1 Introduction

5.1.1 This chapter sets out the relevant policy framework/contextual review and baseline position for the following topics that have been grouped under the theme of 'Environmental Resources':

- Biodiversity, fauna and flora;
- Landscape;
- Historic environment and heritage; and
- Water quality and resources.

5.1.2 The chapter concludes by drawing together the evidence presented to identify a series of key issues and opportunities that relate to 'Environmental Resources' and which should be a focus for the SA.

5.2 Biodiversity, fauna and flora

5.2.1 Actions arising from the LFRMS could have direct or indirect effects on wildlife habitats and species. Flooding could potentially change the nature of habitats. Natural habitats can also help to regulate flood risk. Table 5-1 below presents a review of the key plans, policies, and programmes relating to 'biodiversity, fauna and flora'.

TABLE 5-1: BIODIVERSITY, FAUNA & FLORA: CONTEXTUAL REVIEW

Source	Key Messages
The Habitats Directive (92/43/EEC) and **The 1992 Birds Directive** (79/409/EEC)	There is a requirement to take measures to maintain or restore to favourable conservation status, natural habitats and species of European community importance. This includes Special Areas of Conservation, Special Protection Areas and Ramsar sites.
National Planning Policy Framework (NPPF, 2012)	The NPPF states that planning policies should promote the 'preservation, restoration and re-creation of priority habitats, ecological networks' and the 'protection and recovery of priority species'.
The Natural Choice: securing the value of nature - Natural **Environment White Paper** (2012) **Biodiversity 2020**: A strategy for England's wildlife and ecosystem services (2011)	The Natural Environment White Paper (NEWP) and Biodiversity Strategy 2020 sets out the importance of a healthy, functioning natural environment to sustained economic growth, prospering communities and personal well-being. Key objectives and commitments are to: • Halt biodiversity loss, support functioning ecosystems and establish coherent ecological networks by 2020; • Establish a new voluntary approach to biodiversity offsetting to be tested in pilot areas; • Enable partnerships of local authorities, local communities and landowners, the private sector and conservation organisations to establish new Nature Improvement Areas; and • Address barriers to using green infrastructure to promote sustainable growth.

TABLE 5-1: BIODIVERSITY, FAUNA & FLORA: CONTEXTUAL REVIEW	
Source	**Key Messages**
Putting Wildlife Back on the Map: **The East Midlands Biodiversity Strategy** (2006)	Relevant objectives within the East Midlands Biodiversity Strategy include: • To manage effectively the remaining wildlife habitats and reduce fragmentation by extensive habitat creation; • To protect and conserve urban and post-industrial habitats of significant biodiversity value; • To manage urban and post-industrial habitats to enhance their biodiversity value; and • To ensure that economic regeneration initiatives, biodiversity projects and multi-functional GI delivery are developed in an integrated way.
Lowlands Derbyshire Biodiversity Action Plan (2011)	Relevant objectives set out within the Lowlands Derbyshire Biodiversity Action Plan include the need to: • Protect sites and species through the use of wildlife legislation; • Provide appropriate protection to priority habitats and species through designating sites; • Promote habitat and species conservation management and creation through the planning system; • Promote agri-environmental schemes.
Local Nature Partnerships (2011) Peak District Local Nature Partnership **Lowland Nottinghamshire and Derbyshire Local Nature Partnership** (2012)	Local Nature Partnerships (LNP) work strategically to help their local area manage the natural environment. There are two LNPs for Derbyshire. The Peak District LNP and the Lowland Nottinghamshire and Derbyshire LNP. The Peak District LNP was approved in 2012 and covers the whole of the Peak District as defined by its landscape and geography including the National Park, the Dark Peak, the White Peak and the South West Peak. The Lowland Nottinghamshire and Derbyshire LNP has the following 20-30 year vision: • All businesses are generating and safeguarding ecosystem services from their enterprises; • All communities have access to wildlife-rich natural environments on their doorsteps and are engaged in caring for them; and • All homes and businesses in the area are set within a network of connected, wildlife-rich natural landscapes.
River Basin Management Plans	Humber River Basin Management Plan, 2009. River Basin Management Plans deal with the pressures facing the water environment (and in particular water quality) and the actions that will address them. River Basin Management Plans also seek to protect and enhance the ecological status of Derbyshire water bodies upon which wildlife and biodiversity depend.
Relevant **local plans** for each Local Authority Districts.	The relevant local plans for each authority incorporate objectives to ensure that the key features of biodiversity value are protected within Derbyshire. The LFRMS should seek to have a synergistic effect on biodiversity by linking Local Planning policies. Local Plans.

Biodiversity, Fauna and Flora: Existing and projected baseline

European Designated Sites

5.2.2 In total, there are 6 designated European Sites for Nature Conservation identified within Derbyshire - five Special Areas of Conservation (SAC) and one Special Protection Area (SPA). In addition, there are a further four European sites located within 15km of the Derbyshire boundary, which have been identified to ensure any cross-boundary issues can be assessed.

5.2.3 Natural England recommends that a 15km buffer zone is used to determine potential impacts on European Sites. Details of these European Sites are set out in **Table 4-2**, along with a summary of the reasons for their designation. The location of the SACs, Ramsar sites and SPAs set out in **Table 4-2** are shown in **Figure 4-1.**

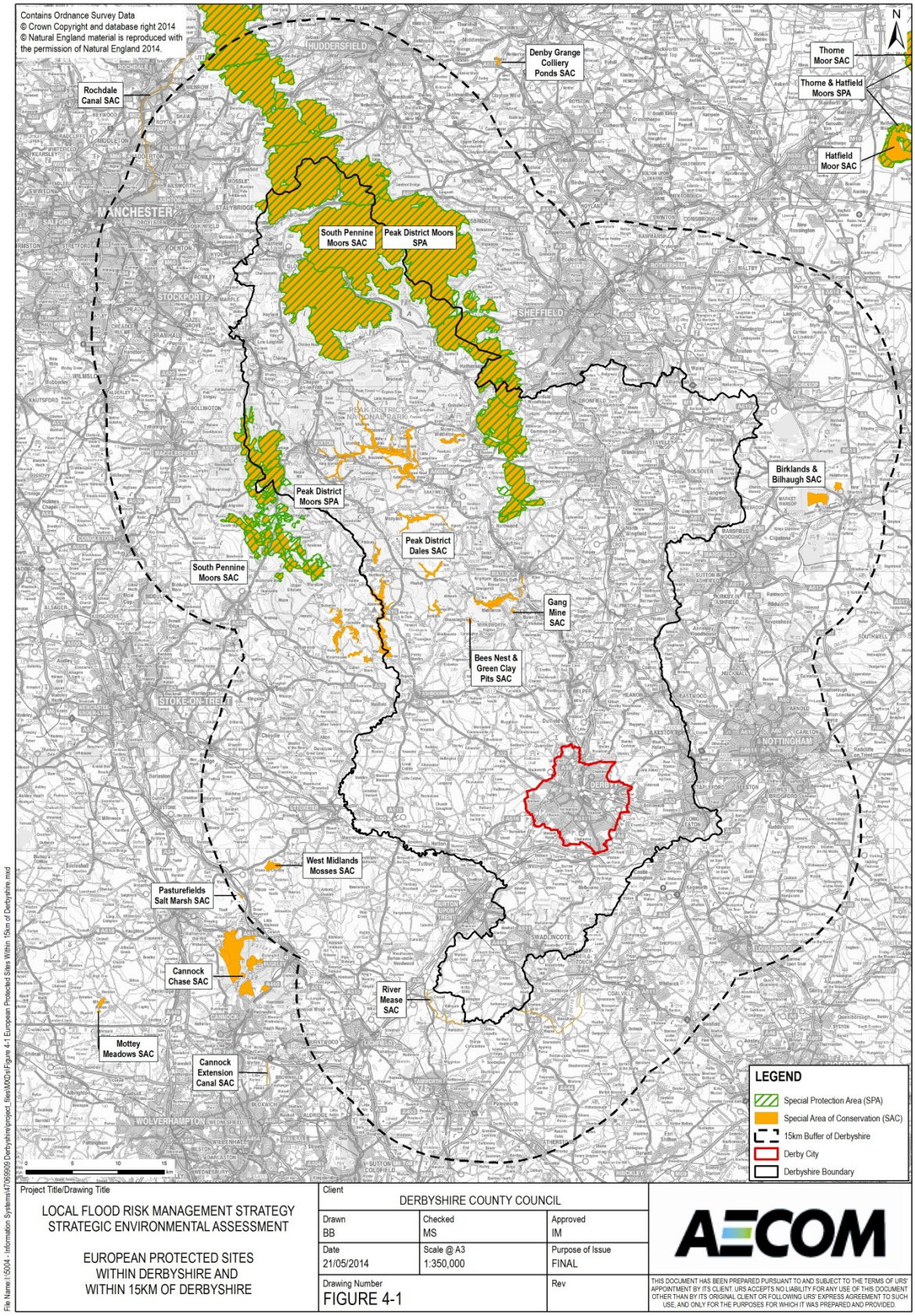
TABLE 5-2: DESIGNATED SITES WITHIN DERBYSHIRE

Site Name	Summary of reasons for designation
Bees Nest & Green Clay Pits SAC[17].	14.7ha site considered to be one of the best areas in the United Kingdom for great crested newts. Semi-natural dry grasslands and scrubland on calcareous substrates for which the area is considered to support a significant presence.
Gang Mine SAC[18]	An 8.2ha example of Calaminarian grasslands in an anthropogenic context in northern England. Natural limestone outcrops supporting species typical of Calaminarian grasslands are rare and small. This site has been chosen to provide an example of the habitat type on sedimentary rocks.
Peak District Dales SAC[19]	2,326.3ha site has been selected for number of habitats and species. Habitats are mainly related to calcareous areas – semi-natural dry grasslands and scrubland facies: on calcareous substrates; Tillio-Acerion forests of slopes, screes and ravines; European dry heaths; Calaminarian grasslands Violetalia calaminariae; Alkaline fens; Calcareous and calcshist screes of the montane to alpine levels; Calcareous rocky slopes with chasmophytic vegetation. Species are related to those living in the River Dove – White-clawed Crayfish; Brook Lamprey; and Bulhead.
River Mease SAC[20]	21.8ha Habitat is a watercourse of plain to montane levels with the Ranunculion fluitanis and Callitricho-Batrachion vegetation. Species are Spined Loach for which the river is one of only four known outstanding localities in the UK; Bullhead; White-clawed Crayfish; and Otter.
South Pennine Moors SAC[21]	The 64,983ha South Pennine Moors SAC has been selected for a number of habitat types – European dry heaths; Blanket Bogs which are a priority feature and is the most south-easterly occurrence in Europe; Old Sessile oak woods with Ilexand Blechnum around the fringes of upland heath and bogs; Northern Atlantic wet heaths with Erica tetralix; and transition mires and quaking bogs.
South Pennine Moors Phase 2 SPA[22]	The 20,936ha SPA Site is of importance for several upland breeding, including birds of prey and waders. During the breeding season the site is of importance for Golden Plover, Merlin, Peregrine Falcon Short-eared owl and Dunlin.

[17] Bees Nest and Green Clay Pits SAC, details at:http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK0030087
[18] Gang Mine SAC, details at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0012817
[19] Peak District Dales SAC, details at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0019859
[20] River Mease SAC, details at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030258
[21] South Pennine Moors SAC, details at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030280
[22] South Pennines Moors Phase 2 SPA, details at: http://jncc.defra.gov.uk/pdf/SPA/UK9007022.pdf

Designated Sites within 15km of Derbyshire	
Birklands and Bilhaugh SAC	Selected for old acidophilous oak woods, noted for its rich invertebrate fauna.
Pasture Fields Salt Marsh SAC	This is the only known site in the UK of a natural salt spring with inland saltmarsh meadow vegetation.
Rochdale Canal SAC	This site has been selected for supporting a significant population of floating water-plantain in a botanically diverse water plant community.
West Midlands Mosses SAC/ Ramsar	Contains three pools which are examples of natural dystrophic lakes and ponds in the lowlands of England and Wales. Also Transition mires and quaking bogs.

Figure 5-1: European Protected Sites within Derbyshire and within 15km of Derbyshire



SSSIs

5.2.4 In total, there are 86 SSSIs in Derbyshire and one within the City of Derby, which cover a total of 101,481 ha. Natural England collects data on the condition of SSSIs throughout the Country and Table 5-3 below sets out the condition of SSSIs in Derbyshire in comparison to the regional and English averages up until August 2012.

5.2.5 The table shows that 98.71% of SSSIs in Derbyshire meet the Public Service Agreement (PSA) (over 95% in favourable or recovering condition) for the condition of SSSIs and this percentage achievement is higher than the East Midlands and England average. However, there is a much lower percentage of SSSIs in favourable condition (the SSSI is being adequately conserved and is meeting its conservation objectives) than the East Midland and England average. Consequently, a much higher percentage of sites are in an unfavourable recovering condition (SSSI units are not yet fully conserved but all the necessary management measures are in place) than the East Midlands and England average.

5.2.6 Table 5-3 identifies that 80.5% of SSSIs throughout Derbyshire were in an unfavourable recovering condition. This suggests that these sites, although not yet fully conserved, are likely to move to a favourable condition in the future as all the necessary management measures are in place. This will lead to an overall improvement in the condition of SSSIs within Derbyshire.

5.2.7 The spatial distribution of sites within and surrounding Derbyshire provides a rich network of biodiversity with sites covering many habitat types. Whilst there is diversity within the plan area in terms of habitat type, which will help to provide the necessary living conditions for a wide range of flora and fauna, there are a wide range of threats to this diversity, including:

- Atmospheric pollution (such as acid precipitation and nitrogen deposition) and increased flood risk that may arise as a result of climate change, could pose a risk to the habitats and species present within Derbyshire;

- Increased development planned across the area (including for housing, business, leisure, transport infrastructure and employment land), this will place increased pressure on areas of biodiversity value due to land take for development and an increase in population; and

- An increase in population is likely to lead to an increase in leisure and recreational pressure and increased demand for natural resources such as water. New development may lead to an increase in disturbance through human activity, loss of habitat, increased predation (e.g. from domestic pets), atmospheric, land and water based pollution.

5.2.8 If these threats are not managed appropriately in the future, then this could lead to a negative impact on the future biodiversity baseline in relation to the preservation and enhancement of key habitats and species throughout Derbyshire.

TABLE 5-3: SSSI CONDITION[23]

Area	% of area meeting PSA target	% of area favourable	% of area unfavourable / recovering	% of area unfavourable no change	% of area unfavourable declining	% of area destroyed/part destroyed
Derbyshire	98.71	18.20	80.50	0.79	0.5	0
East Midlands	98.63	47.51	51.12	0.92	0.43	0.02
England	96.65	37.34	59.31	2.18	1.15	0.03

National Nature Reserves NNRs

5.2.9 National Nature Reserves (NNRs) help to manage habitats, species and geology. Most reserves also offer the opportunity for the public to experience England's national heritage. Within Derbyshire there are four NNRs.

5.2.10 Calke Abbey estate is located towards the south of Derbyshire and is 79.7ha in size. The main habitat in the reserve is the Wood Pasture, but there is also an ancient deer park and concentrations of large oak trees, limes and beeches.

5.2.11 Kinder Scout, Biggin Dale and Derbyshire Dales NNRs are all located in the Peak District National Park.

Local Nature Reserves LNRs

5.2.12 The purpose of LNRs is to provide the public with opportunities to study/learn about nature. To qualify for LNR status, a site must be of importance for wildlife, geology, education or public enjoyment. There are 43 Local Nature Reserves (LNR) located within Derbyshire. Furthermore, there are in excess of 1,200 local wildlife sites (LWS) in Derbyshire, which are sites that contain important habitats or support Biodiversity Action Plan Species, locally uncommon or rare species.

Biodiversity Action Plan

5.2.13 The UK Biodiversity Action Plan (1994) set out priority habitats and species that require protection throughout the UK. At the local level, the Lowlands Derbyshire Biodiversity Action Plan 2011-2020[24] sets out a series of actions for ensuring that areas of biodiversity value located within Derbyshire are maintained, managed, restored and created. It incorporates Local Biodiversity Action Plans (LBAPs) for eight areas within Derbyshire. These areas are detailed in **Table 5-4** and illustrated in **Figure 5-2** below.

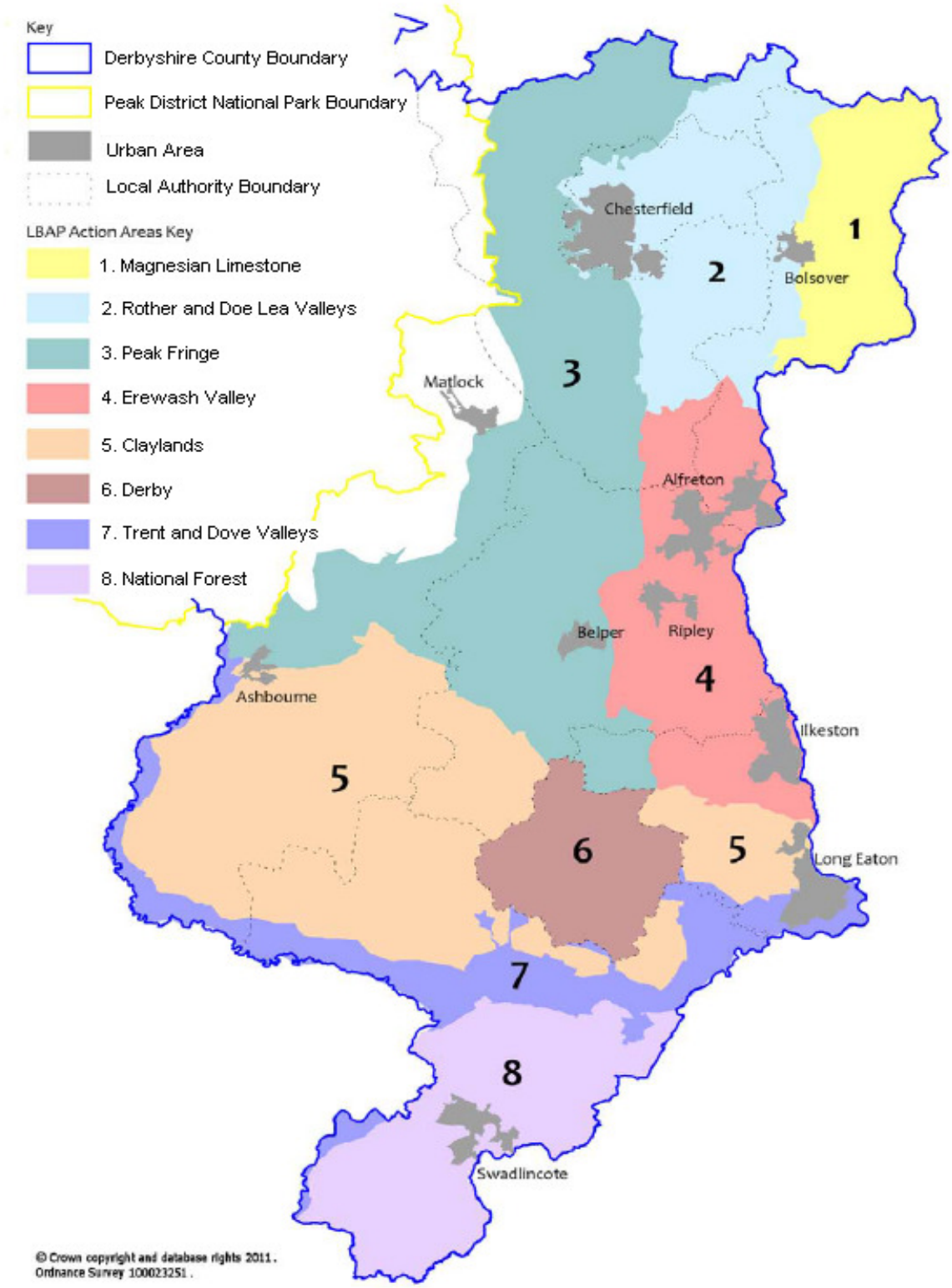
[23]Information in relation to the condition of SSSIs throughout the area has been taken from the Natural England website. Accessed on 104/03/2014: http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/sssi/default.aspx
[24] The Lowlands Derbyshire Biodiversity Action Plan (2011-2020) accessed 04/03/2014, from http://www.derbyshirebiodiversity.org.uk/lbaps/lowland-derbyshire.php

TABLE 5-4: PRIMARY AND SECONDARY HABITATS LOCATED WITHIN LBAPS IN LOWLANDS DERBYSHIRE

LBAP area	UK BAP Habitat		UK BAP Species
	Primary Habitats	Secondary Habitats	
Magnesian Limestone Area	Lowlands mixed deciduous woodland, lowland calcareous grassland, hedgerows and arable field margins.	Wood pastures and parkland, lowland meadow and ponds.	Great-crested newt, dingy skipper, grizzled skipper, water vole, flamingo moss and white-clawed crayfish.
Rother and Doe Lea Valleys	Lowland mixed deciduous woodland, lowland meadow, lakes, ponds, canals, hedgerows, wet woodland and floodplain grazing marsh.	Reedbed, field margins, localised habitats, lowland calcareous grassland, traditional orchard, heathland, wood-pastures and parkland, lowland dry acid grassland and green roofs.	Great-crested newt, dingy skipper, water vole, and white-clawed crayfish.
Peak Fringe	Lowland mixed deciduous woodland, lowland meadow, hedgerows, lowland dry acid grassland and floodplain grazing marsh.	Heathland, wood pastures and parkland, lakes and canals and ponds.	Great-crested newt, dingy skipper, water vole, dormouse and white-clawed crayfish.
Erewash	Floodplain grazing marsh, lakes and canals, lowland mixed deciduous woodland, lowland meadow, wet woodland and ponds.	Reedbed, wood pastures and parkland, arable field margins	Great-crested newt, otter, dingy skipper, water vole, grass-wrack pondweed and white-clawed crayfish.
Claylands	Lowland meadow, veteran trees, wood pastures and parkland, hedgerows and ponds.	Arable field margins, lowland mixed deciduous woodland, floodplain grazing marsh, wet woodland, lowland dry acid grassland, rush pasture, lakes and canals	Great-crested newt, otter, dingy skipper, water vole, oak polypore and white-clawed crayfish.
Derby	Rivers and streams, floodplain grazing marsh, lowland deciduous woodland, wood pastures and parkland and ponds.	Lowland meadow, hedgerows, swamp and wet woodland.	Great-crested newt, otter, water vole and white-clawed crayfish.
Trent Valley	Lowland Meadow, arable field margins, reedbed, wet woodland, lakes and canals, ponds, rivers and streams and floodplain grazing marsh.	Hedgerow, lowland mixed deciduous woodland and lowland swamp.	Great-crested newt, otter and water vole.
National Forest	Lowland meadow, hedgerows, lowland mixed deciduous woodland, wet woodland, wood pastures and parkland, lakes and canals and ponds.	Arable field margins, lowland dry acid grassland, floodplain grazing marsh.	Great-crested newt, otter, dingy skipper, grizzled skipper, water vole, Oak Polypore and white-clawed crayfish.

Figure 5-2: LBAPs in Lowlands Derbyshire

(Source: Lowlands Derbyshire Biodiversity Action Plan 2011-2020)



5.3 Landscape

5.3.1 Watercourses and water bodies can be important features that contribute to the character and function of landscapes. However, this can be affected by flood events and flood risk management measures. It is therefore important to identify sensitive areas of landscape and how these may be affected (either positively or negatively) by the LFRMS.

5.3.2 Table 5-5 below presents a review of the key plans, policies, and programmes relating to 'landscape'.

TABLE 5-5: LANDSCAPE: CONTEXTUAL REVIEW

Source	Key Messages
The European Landscape Convention (2000)	The objectives of the Landscape Convention are to promote European landscape protection, management and planning, and to organise European cooperation on landscape issues.
NPPF (2012)	The NPPF identifies the need to protect and enhance valued landscapes as part of delivering new development and formulating planning policy.

Landscape: Existing and projected baseline

Landscape Character Areas

5.3.3 Derbyshire has a varied and diverse landscape, from the open moors of the Peak District to the flat floodplains of the Trent valley. There are 159 national Landscape Character Areas, of which 11 cover Derbyshire. These areas were examined in the 'Landscape Character of Derbyshire' study prepared in 2003. The key landscape and townscape characteristics relating to each area in Derbyshire are presented in **Table 5-6** below. The location of the different landscape character areas are shown in **Figure 5-3.**

5.3.4 Natural England, as part of the consideration of the 'State of the Natural Environment' in the East Midlands (2010) identifies a series of challenges that the natural environment is likely to encounter in the future. These include:

- Increased Development – plans for additional housing and improvements to the transport infrastructure will pose further risk to the character of areas of landscape value in the East Midlands region;
- Land Management – the changing global economic climate, population growth and the effects of climate change on food production will further increase pressure on areas of landscape value; and
- Flood Risk – the risk of flooding is likely to pose an increased risk to areas of landscape value in the region.

Figure 5-3: Landscape Character Areas in Derbyshire (Source: Natural England, 2013)

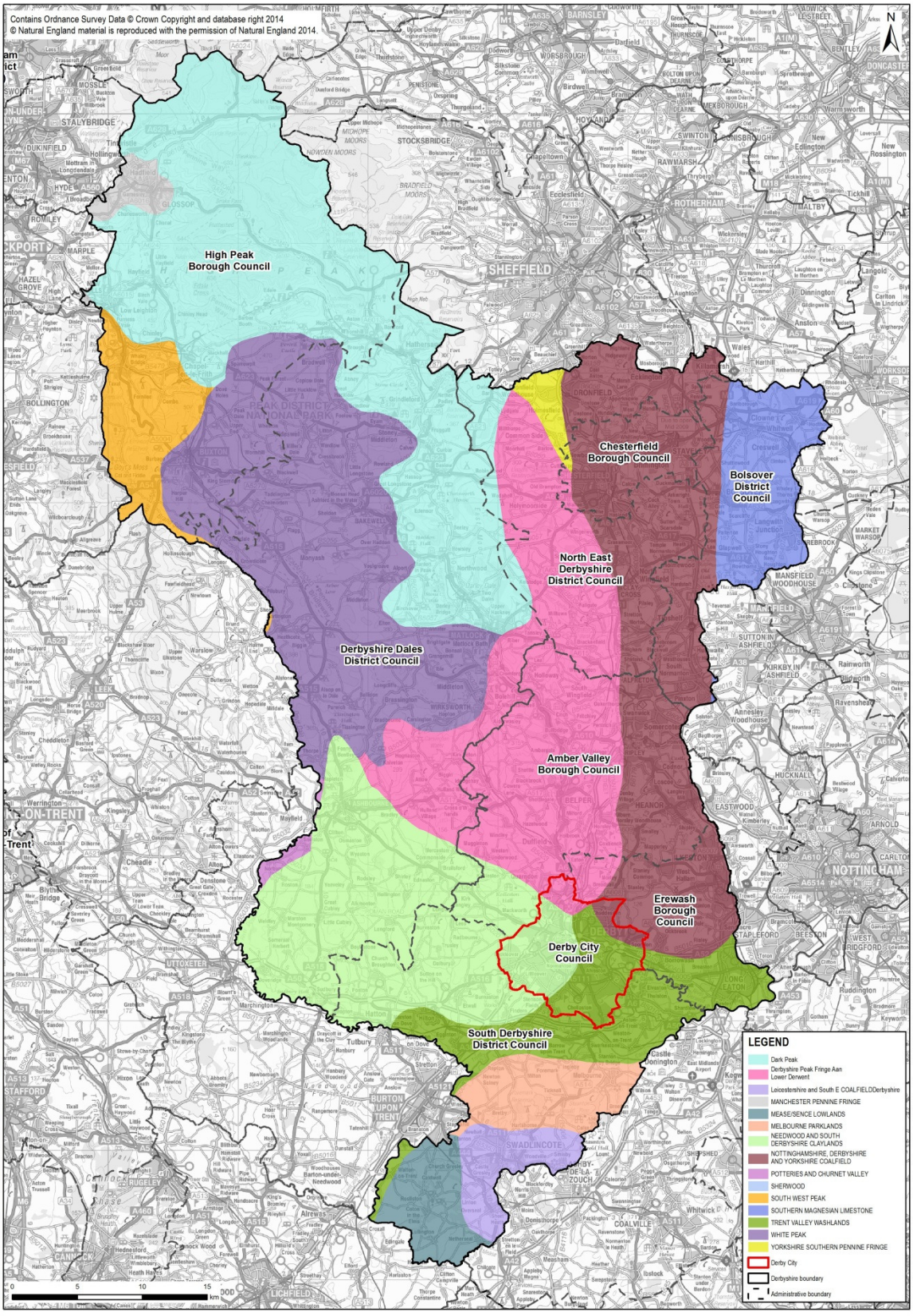


TABLE 5-6: LANDSCAPE CHARACTER OF DERBYSHIRE (SOURCE: DERBYSHIRE COUNTY COUNCIL, 2007)

Landscape Character Area	Landscape Character Type	Key Townscape Characteristics
Dark Peak (incorporates Glossop, New Mills and Buxton)	Riverside Meadows	Very sparsely settled landscape with occasional isolated gritstone farmsteads and cottages with stone slate roofs. Distinctive small clusters of farmsteads and cottages known as Booths. Scattered water-powered gritstone mills and a few later steam-powered mills, often constructed of red brick with prominent chimneys.
	Settled Valley Pastures	
	Moorland Fringe	
	Enclosed Moorland	
	Open Moors	
White Peak (incorporates areas around Buxton and Brassington)	Limestone Dales	Strongly nucleated, with most farmsteads and dwellings concentrated into a central village. Buildings are typically constructed from the local Carboniferous limestone, often with random rubble constructed walls and stone tile, or Welsh slate roofs. Use of gritstone is also common. Isolated stone farmsteads and scattered stone field barns. Dry-stone walls.
	Limestone Slopes	
	Limestone Moorlands	
	Plateau Pastures	
Derbyshire Peak Fringe and Lower Derwent (incorporates Wirksworth, Ashbourne and Belper)	Riverside Meadows	Grey to brown sandstone farmsteads with Staffordshire blue tile or stone slate roofs are the dominant vernacular building type Farmsteads are dispersed throughout the landscape, though there are occasionally clusters of farmsteads and cottages. The presence of coal in the area and the expansion of Chesterfield have contributed to widespread development of 19th to 20th century red brick housing. Small market towns and villages tend to be nestled in valley bottoms and are characterised by sturdy limestone cottages and fine church buildings with dispersed farmsteads in outlying enclosed land. Derwent Valley World Heritage Site.
	Settled Farmlands	
	Gritstone Heaths and Commons	
	Wooded Farmlands	
	Wooded Slopes and Valleys	
	Enclosed Moors and Heaths	
Nottinghamshire, Derbyshire and Yorkshire Coalfield (incorporates Dronfield, Tibshelf, Alfreton, Ripley and Ilkeston)	Wooded Hills and Valleys	Small villages, hamlets and scattered farmsteads. Occasional country houses with associated parkland trees. Villages and towns with red brick former mining terraces and ribbon development. Strong association with transport routes due to the presence of canals, railway lines and roads.
	Plateau Estate Farmlands	
	Riverside Meadows	
	Coalfield Estatelands	
	Wooded Farmland	
	Estate Farmland	
	Coalfield Village Farmland	
Southern Magnesium Limestone (incorporates Clowne, Bolsover and	Limestone Gorge	Settlement concentrated in villages with historic cores of limestone buildings. Farms and cottages with red clay pantile roofs. Large self-contained mining settlements around historic village
	Limestone Farmlands	

TABLE 5-6: LANDSCAPE CHARACTER OF DERBYSHIRE (SOURCE: DERBYSHIRE COUNTY COUNCIL, 2007)

Landscape Character Area	Landscape Character Type	Key Townscape Characteristics
Shirebrook)		cores. Creswell Crags.
Needwood and South Derbyshire Claylands	Riverside Meadows	Red brick and half-timber villages with sandstone churches. Historic parks and country house.
	Estate Farmlands	
	Sandstone Slopes and Heaths	
	Settled Plateau Farmlands	
	Settled Farmlands	
Trent Valley Washlands (includes Long Eaton and Willington)	Riverside Meadows	Discrete red brick villages with farms and cottages. Large red brick outlying farms. Rapid expansion of many villages particularly noticeable at Hatton, Hilton, Borrowash and Breaston. Today the urban fringes are characterised by large modern housing estates. Open character punctuated by massive cooling towers of power stations and strongly influenced by pylons, sand and gravel extraction.
	Wet Pasture Meadows	
	Lowland Village Farmlands	
Melbourne Parklands (incorporates Melbourne and Repton)	Riverside Meadows	Settlements constructed of red brick with red clay tiled roofs. Scattered red brick estate farmsteads and the occasional country house.
	Sandstone Slopes and Neaths	
	Wooded Estatelands	
	Estate Farmlands	
Leicestershire and South Derbyshire Coalfields	Coalfield Village Farmlands	Red brick buildings with clay tile roofs. Expansion of villages with red brick terraces, ribbon development and housing estates. Widespread legacy of coal extraction, including spoil heaps opencast sites and pit railways.
Mease & Sence Lowlands (incorporates Walton-on-Trent)	River Meadows Village Estate Farmlands	Small red-brick villages, often on hilltop sites and with prominent church spires.

5.4 Historic Environment and Heritage

5.4.1 At this strategic level, it is not proportionate to determine the effects of the LFRMS on specific heritage assets. These impacts are more appropriately considered at project level through the planning application process.

5.4.2 However, flood risk and flood risk management measures can still affect the character and setting of the historic landscape; so it is useful to establish the policy context and baseline position.

5.4.3 **Table 5-7** below presents a review of the key plans, policies, and programmes relating to 'historic environment and heritage'.

TABLE 5-7: HISTORIC ENVIRONMENT AND HERITAGE: CONTEXTUAL REVIEW	
Source	**Key Messages**
Government White Paper: **Heritage Protection for the 21st Century**[25] (2007)	The paper seeks to put the historic environment at the heart of the planning system. The proposals in the Heritage Protection Review White Paper are based on three core objectives: • The need to develop a unified approach to the historic environment; • Maximising opportunities for inclusion and involvement; and Supporting sustainable communities by putting the historic environment at the heart of an effective planning system.
The National Planning Policy Framework (NPPF, 2012)	The NPPF recognises heritage assets as an irreplaceable resource that should be conserved in a manner appropriate to their significance. The NPPF defines significance as: *"the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage assets physical presence, but from its setting also."*
The Government's Statement on the Historic Environment for England (2010)	The Government's Statement on the Historic Environment for England sets out its vision for the historic environment. It calls for those who have the power to shape the historic environment to recognise its value and to manage it in an intelligent manner in light of the contribution that it can make to social, economic and cultural life. Also of note is the reference to promoting the role of the historic environment within the Government's response to climate change and the wider sustainable development agenda.
Relevant **Local Plans** for each Local Authority**.**	Each of the relevant Local Plans for each LPA located within Derbyshire incorporate both key objectives and planning policies that aim to protect key landscape and historic assets located throughout the area.

Existing and projected baseline

5.4.4 Detailed information relating to heritage within the East Midlands in 2011 is presented on the Heritage Counts website.[26] 'Heritage Counts 2011' is the tenth annual survey of the state of the East Midland's historic environment. It provides a summary of research into the economic impact of historic environment regeneration, key policy updates from the region and an overview of the 'Heritage Counts' indicators. It is one of nine regional reports and has been prepared by English Heritage on behalf of the East Midlands Heritage Forum. Key findings for 2010/11 in the East Midlands include:

- 1,512 scheduled monuments, 1,101 conservation areas and 138 registered parks and gardens; and
- 1.7 million visitors to Historic Houses Association properties.

Heritage Assets in the East Midlands

5.4.5 The only World Heritage site located in the region is the Derwent Valley Mills, which spans across three local authority areas (Amber Valley, Derbyshire Dales and the City of Derby). The primary importance and value of the Derwent Valley Mills relates to developments in technology in the 18th

[25] https://www.gov.uk/government/publications/heritage-protection-for-the-21st-century-white-paper
[26] The 'Heritage Counts' website was accessed on 25/09/2012 and can be accessed from http://hc.english-heritage.org.uk/HC-regional-summaries/HC-East-Midlands/

century that introduced the mechanically powered factory system within the textile industry. The site covers an area that represents 6% of the total area covered by English World Heritage sites. In DCC's current service plan it is a key objective for the Conservation and Design Service team to provide expert advice and support to the Cresswell Heritage Trust in progressing the nomination of Creswell Crags as a candidate World Heritage Site. Creswell Crags comprises a series of caves which demonstrate how early prehistoric populations lived during the Ice Age.

Listed Buildings

5.4.6 In 2003/04, there were a total of 5,574 Listed Buildings in Derbyshire. This figure increased to 5,960 in 2010. As illustrated on Figure 5.4, there is a wide distribution of listed buildings across Derbyshire, with concentrations within settlements. The majority of listed buildings in Derbyshire are Grade II Listed.

Scheduled Monuments

5.4.7 A Scheduled Monument is a 'nationally important' archaeological site or historic building, which is given protection against unauthorised change. As illustrated on Figure 4.4., there is a greater number of Scheduled Monuments located in the Derbyshire Dales administrative area (292) with the lowest number located in Chesterfield (2). Almost a third of the Scheduled Monuments in the East Midlands are located in Derbyshire.

Registered Parks and Gardens

5.4.8 In England, the Register of Historic Parks and Gardens of special historic interest provides a listing and classification system similar to that used for Listed Buildings. Over 1,600 sites are listed, ranging from the grounds of large stately homes to small domestic gardens, as well as other designed landscapes such as town squares, public parks and cemeteries.

5.4.9 The number of Registered Parks and Gardens in the area has increased from 30 in 2006 to 33 in 2010. The highest number of Registered Parks and Gardens are located in the Derbyshire Dales administrative area (12).

5.4.10 24% of the total Registered Parks and Gardens within the East Midlands are located in Derbyshire. Furthermore, a large proportion (40%) of the highest grade parks and gardens (Grade 1) within the East Midlands are located within Derbyshire.

Conservation Areas

5.4.11 Conservation Areas are designated by Local Authorities and are areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. Within the East Midlands, the number of Conservation Areas has increased from 994 in 2002 to 1,075 in 2010. There are a total of 272 Conservation Areas located in Derbyshire.

Non-Designated Heritage Assets

5.4.12 Not all nationally important historic environment assets are designated. Other nationally important features may be known and recorded on the County Historic Environment Record (HER) but not designated. Additionally there may be unknown features of significant interest, especially buried archaeology and palaeo-environmental remains.

Heritage at Risk

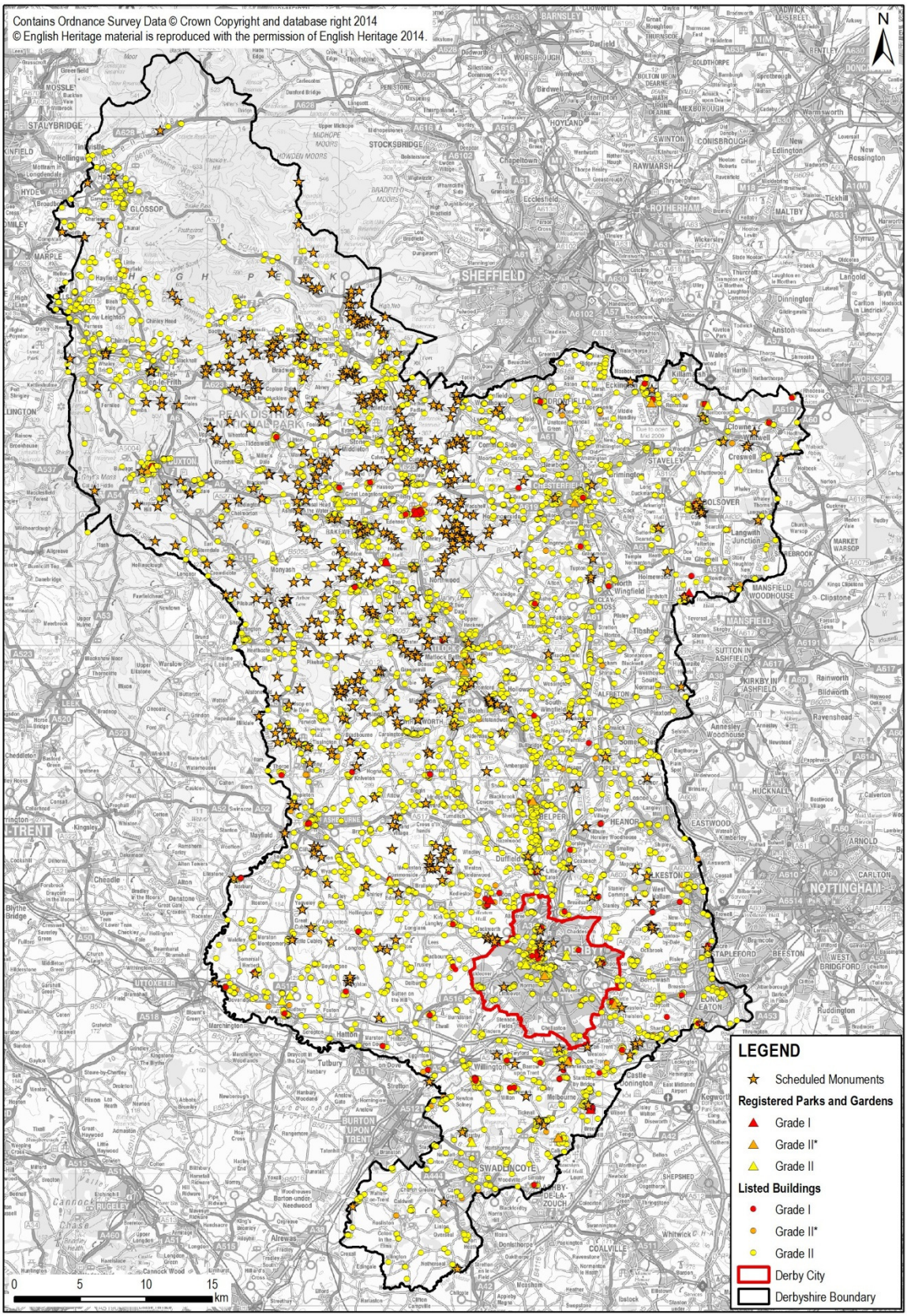
5.4.13 The Heritage at Risk Register identifies whether heritage assets located in England are at risk. The East Midland's Heritage at Risk Register shows that 7.7% (127 buildings) of the region's Grade I and II* Listed Buildings are on the 'at risk' register. Compared to a national average of 4.1%. Since 2012, 13 building or structure entries have been removed from the East Midlands Register because their futures have been secured but 5 have been added.

5.4.14 Table 5-8 below shows that a total of 58 heritage assets are on the Heritage at Risk Register in Derbyshire. This represents 15% of the total heritage assets on the Heritage at Risk Register in the East Midlands. South Derbyshire has the highest number of heritage assets (14) on the Heritage at Risk Register.

TABLE 5-8: HERITAGE AT RISK REGISTER IN DERBYSHIRE (SOURCE: HERITAGE AT RISK REGISTER , 2013)

LPA	Number of heritage assets on the heritage at risk register
High Peak	8
Derbyshire Dales	8
North East Derbyshire	6
Chesterfield	2
Bolsover	7
Erewash	0
Amber Valley	13
South Derbyshire	14
Total in Derbyshire (% of East Midlands Total)	58 (15%)
Total in East Midlands	389

Figure 5-4: Heritage Assets in Derbyshire



5.5 Water Quality and Resources

5.5.1 Flooding and flood risk management is closely related to the quality and availability of water resources. Table 5-9 below presents a review of the key plans, policies, and programmes relating to 'water resources'.

TABLE 5-8: WATER RESOURCES: CONTEXTUAL REVIEW

Source	Key Messages
The Water Framework Directive (WFD, 2000)	The Water Framework Directive promotes an integrated and coordinated approach to water management at the river basin scale. The key relevant objectives are: • Establish a strategic framework for managing the water environment and provide a common approach to protecting and setting environmental objectives for all ground and surface waters and the promotion of sustainable water use; • The Environment Agency has general responsibility for ensuring the Directive is given effect and has to approve environmental objectives, programmes of measures and river basin management plans; and • For surface water, the Directive requires that environmental objectives are based on the chemical and, more significantly, ecological status of the water body. For groundwater, quantitative and chemical objectives must be set.
The Bathing Water Regulations (2013)	Under the Bathing Waters Regulations, the EA is required to carry out the monitoring of bathing waters in England and Wales. Bathing waters in England and Wales are 'designated' by Defra and the Welsh Government. As part of the monitoring significant sources of pollution are identified which cause individual bathing waters to fail and progress plans to improve the water quality.
Flood & Water Management Act (FWMA, 2010)	The Flood and Water Management Act highlights that alternatives to traditional engineering approaches to flood risk management include: • Utilising the environment, such as management of the land to reduce runoff and harnessing the ability of wetlands to store water. • The Act introduces the requirement for developers to utilise Sustainable Drainage Systems (SUDS). Lead Local Authorities are responsible for establishing a SUDS Approving Body, which will have a duty to adopt and maintain SUDS once completed.
Water for life (The Water White Paper, 2011)	The Water White Paper sets out the Government's vision for a more resilient water sector, where water is valued as the precious resource it is. It states the measures that will be taken to tackle issues such as poorly performing ecosystems, and the combined impacts of climate change and population growth on stressed water resources.
Water Resources for the Future – A Strategy for England and Wales (2009)	The Water Resources for the Future strategy is part of a framework of integrated water resources planning, looking 25 years ahead. It considers the needs for water both of the environment and of society, and examines the uncertainties about future water demand and availability. Key objectives set out within the Strategy include: • Promote water efficiency – expect household water metering to become widespread over the next 25 years; • Pay further attention to leakage control; • Promote water sensitive agricultural practices; farmers should consider crop suitability and the possibility of increased winter storage; • Active promotion of water efficiency opportunities for commerce and industry; and • Deliver the sustainable development of water resources through working together.

TABLE 5-8: WATER RESOURCES: CONTEXTUAL REVIEW	
Source	**Key Messages**
Water Resources Strategy: Regional Action Plan for Midlands Region (2009)	Key objectives identified within the Regional Water Resources Strategy include: • To ensure the water environment is restored, protected and improved so that habitats and species can better adapt to climate change; • For supplies to be more resilient to the impact of climate change, including droughts and floods; • Water to be valued and used efficiently; • Water to be shared more effectively between abstractors; and • Improved water efficiency in new and existing buildings.
River Basin Management Plans	Humber Management Plan, 2009. River Basin Management Plans deal with the pressures facing the water environment (and in particular water quality) and the actions that will address them. River Basin Management Plans are reproduced every 6 years. The plan provides key actions for improving the water quality of water bodies in the various catchment areas within the plan area.
Derbyshire Derwent Abstraction Licensing Strategy, (2013)	The Environment Agency produced this document to set out how water abstraction in the Derbyshire Derwent catchment will be managed, so that the needs of the people and the environment are met sustainable. There are also equivalent documents for the Lower Trent and Erewash and Dove catchment areas.
Groundwater Protection: Principles and Practice (GP3, 2013)	The Environment Agency produced this document to describe how they manage and protect groundwater now and for the future.

Existing and projected baseline: Water Quality

5.5.2 Ecological status and chemical status together define the overall surface water status of a water course. Ecological status applies to surface water bodies and is based on the following quality elements: biological quality, general chemical and physico-chemical quality, water quality with respect to specific pollutants (synthetic and non-synthetic), and hydromorphological quality. There are five classes of ecological status (high, good, moderate, poor or bad). Chemical status is assessed by compliance with the environmental standards for chemicals that are listed in the Environmental Quality Standards Directive 2008/105/EC[27], which include priority substances, priority hazardous substances and eight other pollutants. Furthermore, the level of risk that a number of pressure elements[28] poses to a water body is graded by the EA.

5.5.3 The River Basin Management Plan for the Humber River Basin District (prepared by the EA in December 2009) includes information in relation to key characteristics and the water quality of the three river catchment areas within the Derby and Derbyshire area. The catchment for the River Derwent covers an area of 1,194km^2, covering much of the County of Derbyshire. There are 41 river water bodies and six lakes within the River Derwent catchment. The Dove catchment incorporates an area of South Derbyshire. There are 37 river water bodies and four lakes within the Dove catchment. The Lower Trent and Erewash catchment covers an area of 2,045km^2, extending from the River Dove confluence with the River Trent, south west of the city of Derby, to the Humber Estuary. There are 76 river water bodies and nine lakes in the Lower Trent and Erewash catchment.

[27] The European Parliament and the Council of the European Union (2008) Environmental Quality Standards Directive 2008/105/EC. Available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:348:0084:0097:EN:PDF (accessed 12/2013)
[28] Pressure elements include point source pollution risk, diffuse pollution risk, combined source sanitary risk, combined source nutrients risk, water abstraction and flow regulation risk, physical or morphological alteration risk, and alien species risk.

Table 5-10 below sets out the key river and lake water body quality indicators associated with each of the river catchment areas and the target for 2015.

TABLE 5-9: RIVER AND LAKE WATER BODIES QUALITY INDICATORS FOR RIVER CATCHMENTS IN DERBY AND DERBYSHIRE

Indicator	Derbyshire and Derwent Catchment		Dove Catchment		Lower Trent and Erewash Catchment		Average for Humber River Basin District	
	2010	2015	2010	2015	2010	2015	2010	2015
% at good ecological status or potential	28	30	39	41	5	5	18	19
% assessed at good or high biological status	40	43	65	74	17	17	22	27
% assessed at good chemical status	88	88	100	100	86	86	-	-
% at good status overall (chemical and ecological)	28	30	39	41	5	5	-	-
% improving for one or more elements in rivers	-	24	-	11	-	12	-	-

Existing and projected baseline: water supply

5.5.4 The amount of water available for the environment and for abstractions is determined through a Catchment Abstraction Management Strategy (CAMS), which considers the amount of freshwater available, the amount the environment needs and the amount of water already licensed for abstraction. These strategies can be used to classify catchments as having water available, no water available, over-licensed or over-abstracted at low flows.

5.5.5 Figure 5.5 is taken from the Water Resources Strategy Regional Action Plan for the Midlands Region (prepared by the Environment Agency and published in December 2009). It shows the water available for abstraction at low flows in the Midlands. Most of the region has issues with water availability, with either no water available or over licensed resources; and some catchments are already over abstracted at low flows. Compared to the national average, the Midlands Region has fewer catchments with water available and more catchments classified as over-abstracted and no water available, which highlights that the region's water resources are already under pressure.

5.5.6 Water availability varies across Derby and Derbyshire. Towards the north of the area, water availability is either over licensed or no water is available and the area towards the west is over abstracted. Water is available towards the south of Derby and Derbyshire.

5.5.7 Severn Trent Water is the main water supplier for Derby and Derbyshire. The use of water metering is a method that can be used for reducing demands for water. Figure 5.6 shows the actual and forecasted households with water meters within the Midlands. It shows that the percentage of Severn Trent Water customers using water meters has increased since 2000-01. However, this percentage is lower than England & Wales average.

Figure 5-5: Water Available for Abstraction at Low Flows (Surface water and groundwater combined)

(Source: Water Resources Strategy Regional Action Plan for the Midlands Region - December 2009)

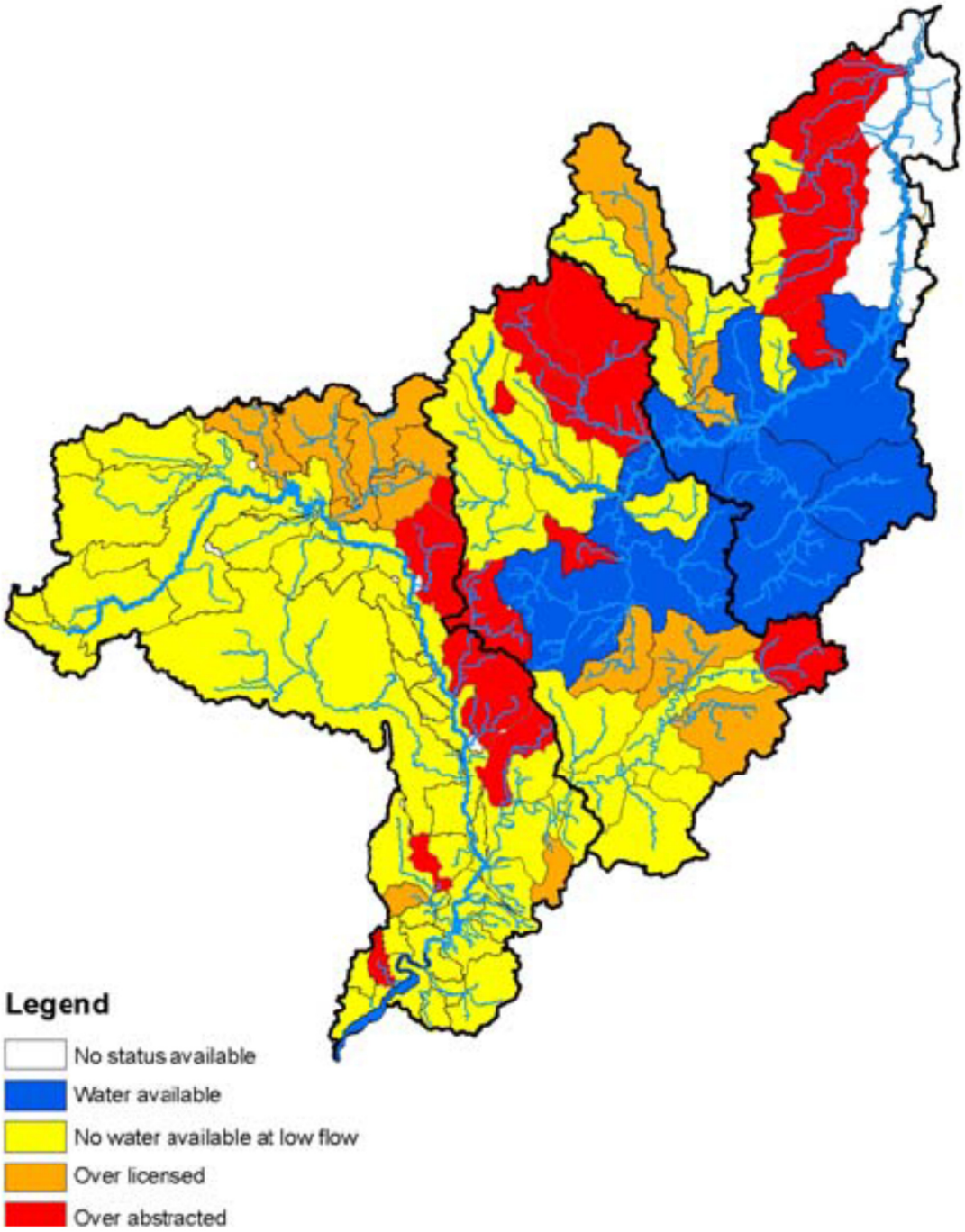
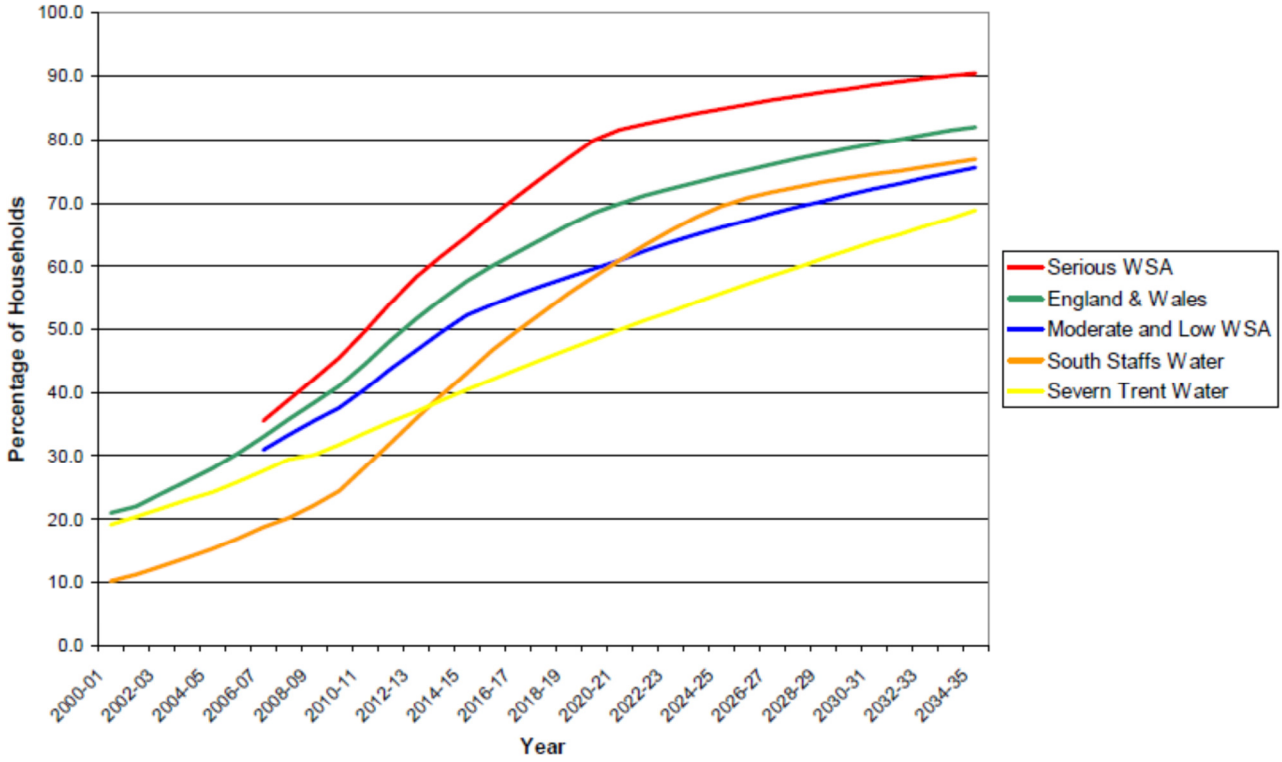


Figure 5-6: Actual and Forecasted Households with Water Meters in the Midlands



5.6 Key Issues: Environmental Resources

5.6.1 The key sustainability issues arising from the context review and baseline assessment for Environmental Resources in Derbyshire are listed below, though not in any order of importance.

TABLE 5-10: KEY ISSUES FOR ENVIRONMENTAL RESOURCES

Key Issue	Relevance to the LFRMS
Biodiversity, Fauna and Flora There are a number of European designated sites (SACs, SPAs and RAMSAR sites), SSSIs, NNRs and LNRs located within and surrounding Derbyshire, which support habitats and species. Threats to these sites include increased development planned in the area, increased leisure and recreation pressure, predation, **flooding**, and atmospheric pollution.	Flooding can have an effect in terms of facilitating or hindering the achievement of BAP targets. The strategic approach in the LFRMS could be an influencing factor. Where possible the LFRMS should seek to identify ways to protect and enhance the natural environment.
Landscape The character of the landscape is valued across the County. The character of some areas is shaped by the presence of water features.	Flooding could have an adverse or positive effect on the character of landscapes, particularly those where watercourses are a key feature. Where possible the LFRMS should seek to identify ways to protect and enhance the natural environment.
Historic Environment and Heritage There is a wealth of heritage assets across the County. In some areas, the character and setting of these features could be affected by flooding. Some heritage assets could benefit from the maintenance of high water tables, for examples archaeological artifacts in peat layers.	Flood risk management presents an opportunity to improve the resilience of areas to the effects of flooding. This is especially important where the asset is of national or international significance, such as the Derwent Valley Mills World Heritage Site. Where possible the LFRMS should seek to identify ways to protect and enhance the natural environment and the historic environment.
Water Quality and Resources There is limited water availability at low-flow in most parts of Derbyshire; particularly to the North East. There is also a need to improve the water quality of some watercourses across the County.	The LFRMS presents the framework for helping to improve the local water environment and encouraging sustainable development and drainage (SUDS) in Derbyshire.

6 RESOURCE MANAGEMENT AND MATERIAL ASSETS

6.1 Introduction

6.1.1 Whilst the term 'material assets' is not specifically defined within the SEA Directive, for the purposes of this Scoping Report, material assets refers to buildings and infrastructure in the County.

6.1.2 This chapter sets out the relevant policy framework/contextual review and baseline position for the following topics that have been grouped under the theme of 'Resource Management and Material Assets':

- Community facilities and critical infrastructure;
- Housing;
- Economy; and
- Agriculture and land use.

6.1.3 The chapter concludes by drawing together the evidence presented to identify a series of key issues and opportunities that relate to 'Resource Management and Material Assets' and which should be a focus for the SEA.

6.2 Community Facilities and Critical Infrastructure

6.2.1 Critical infrastructure in the context of the LFRMS are those where flooding could compromise the delivery of community services, thereby threatening the health and safety of a wider population. Table 6-1 below presents a review of the key plans, policies, and programmes relating to 'community facilities and critical infrastructure'.

TABLE 6-1: COMMUNITY FACILITIES & CRITICAL INFRASTRUCTURE: CONTEXTUAL REVIEW

Source	Key Messages
Strategic Framework and Policy Statement on Improving the Resilience of Critical Infrastructure to Disruption form Natural Hazards, (2010)	This document sets an approach to managing risk to infrastructure: • Build a level of resilience into critical infrastructure assets that ensures continuity during a worst case flood event. • Considering the threat from current and future natural hazards in the design of new assets. • Increase the robustness and resilience of existing services or assets by building additional network connections. • Identifying key components and moving them out of harm's way. • Improved arrangements for sharing of information on infrastructure network performance and standards. • Enhancing skills and capabilities to respond to emergencies arising from natural hazards.
National Infrastructure Plan, (2010)	Forecasts a 20% increase in congestion by 2025 and requires a change of how infrastructure is planned, coordinated and delivered with adaptation to provide security and resilience. Private sector capital is to be attracted and the cost of capital for projects needs to be reduced.
National Planning Policy Framework (NPPF, 2012)	Sets out how planning should contribute to sustainable development. Development plan policies should take account of environmental issues such as the potential impact of the environment on proposed developments by avoiding development in areas at risk of flooding, and as far as possible by accommodating natural hazards and the impacts of climate change.

Existing and projected baseline

6.2.2 Community facilities and strategic infrastructure are critical to the health, safety and accessibility of the population. For example, the blockage of key transport routes could affect productivity and the ability to access facilities. Community buildings not only provide a focal point for community development activities, but they can also be important during and after flood events.

6.2.3 It is important to ensure that critical infrastructure such as hospitals, police stations, schools and energy generation/transmission facilities are well located and resilient to the effects of flooding. Table 6-2 identifies a non-exhaustive list of the types of community facilities and critical infrastructure found across the County. Where possible, specific facilities/ infrastructure have been identified.

TABLE 6-2: COMMUNITY FACILITIES AND CRITICAL INFRASTRUCTURE	
Critical Infrastructure in Derbyshire	
Health - GP Surgeries and health centres. - Chesterfield Royal Hospital (A&E). - Royal Derby Hospital (A&E).	Community Cohesion and Safety - 23 Police stations.[29] - 31 Fire Stations.[30] - Community centres and places of worship.
Education - There are 416 schools in Derbyshire including Nursery, Infant, Junior, primary and secondary level.[31] - Derby City University has a campus located within Buxton, Derbyshire.	Utilities - Drakelow D Power Station (possible CCGT). - Derwent Power Station, Spondon, Derby. (214 MW CCGT). - High voltage electricity transformers. - Waste Water Treatment Works.
Transport Infrastructure - The M1 is the main motorway link serving Derbyshire. It runs north/south and lies on the eastern border of the County. - East Midlands Airport is located just south of Derbyshire County and Doncaster Robin Hood Airport is located north east of the County. - The HS2 railway line will pass through parts of Derbyshire but there are no planned stations within the County.	

6.2.4 The River Don Catchment Flood Risk Management Plan identifies the following critical infrastructure at risk of flooding (although these do not all fall within the administrative area of Derbyshire); 155 gas and electricity assets, 9 educational facilities, 22 health facilities, 26 wastewater treatment works, 4 Emergency Services Buildings.

6.2.5 The River Trent Catchment Flood Risk Management Plan identifies the following critical infrastructure at risk of flooding (although these do not all fall within the administrative area of Derbyshire); two-hundred and thirty gas and electricity assets, thirty-two caravan parks, thirteen care homes, thirty-nine health facilities, thirty-one wastewater treatment works, seven railway stations, 111.1km of railway, 43.9km of A-road, forty-eight waste management sites, and twenty-six emergency response centres.

[29] www.derbyshire.police.uk
[30] www.derbys-fire.gov.uk
[31] Data from Derbyshire County Council: http://www.derbyshire.gov.uk/education/schools/search_schools/default.asp

6.3 Housing

6.3.1 Actions arising from the LFRMS could affect the homes, buildings and infrastructure within flood risk areas. Conversely, housing trends and development could affect flood risk, and influence flood management decisions. Table 6-3 below presents a review of the key plans, policies, and programmes relating to 'housing'.

TABLE 6-3: HOUSING: CONTEXTUAL REVIEW

Source	Key Messages
NPPF, (2012)	The NPPF sets out the need to deliver a wide choice of high quality homes. Local planning authorities are also called upon by the NPPF to 'widen opportunities for homeownership' and to 'create sustainable, inclusive and mixed communities'.
Laying the Foundations: A Housing Strategy for England, (2011)	The Housing Strategy sets out a package of reforms to: • get the housing market moving again; • lay the foundations for a more responsive, effective and stable housing market in the future; • support choice and quality for tenants; and • improve environmental standards and design quality. The new strategy will address concerns across the housing market making it easier to secure mortgages on new homes, improving fairness in social housing and ensuring homes that have been left empty for years are lived in once again.

Existing and projected baseline

6.3.2 The majority of the County's residents live in urban areas, which include the main towns of; Chesterfield, Swadlincote, Bolsover, Long Eaton, Ilkeston, Ashbourne, Matlock, Buxton and Glossop.

6.3.3 There are approximately 349,810 dwellings currently within Derbyshire[32]. Addressing the future housing need has become a key issue for LPA's nationally. Table 6-4 below shows the data on house building completions for Derbyshire from 2009-2013.

TABLE 6-4: HOUSE BUILDING COMPLETIONS[33]

Area	2009-10	2010-11	2011-12	2012-13
Amber Valley	-	196	198	178
Bolsover	165	255	133	104
Chesterfield	95	186	159	102
Derbyshire Dales	84	141	67	175
Erewash	299	189	193	165
High Peak	168	76	78	84
North East Derbyshire	113	122	112	152
South Derbyshire	242	326	401	308
Derbyshire	1,166	1,591	1,341	1,268
England	119,912	107,874	117,599	107,819

6.3.4 A dwelling is regarded as complete when it becomes ready for occupation or when a completion certificate is issued. Caution should be taken when looking at these figures as they reflect the downturn in economic activity over the last 5 years.

[32] DCLG, 2013 Live Tables: https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants
[33] DCLG Open Data (2013) Permanent dwellings completed, 2009/10 to 2012/13, England, District by Tenure at http://opendatacommunities.org/data/house-building/completions/tenure

6.3.5 The Local Plans of each LPA within Derbyshire identify development allocations, which will (as they progress) affect the population numbers, distributions and patterns across the County. Appendix I sets out the current planning status of each Local Authority Local Plan in Derbyshire and where strategic development is expected to occur. The majority of development is proposed to take place as urban extensions to the main settlements within the County.

6.4 Economy

6.4.1 Economic activity and growth can be affected by flood events and flood risk. The LFRMS could therefore influence how Derbyshire's economy responds to and is likely to be affected by flood risk. Table 6-5 below presents a review of the key plans, policies, and programmes relating to 'economy'.

TABLE 6-5: ECONOMY: CONTEXTUAL REVIEW

Source	Key Messages
NPPF, (2012)	The NPPF aims to plan proactively to meet the development needs of business and support an economy fit for the 21st century. A commitment to securing economic growth is set out in the NPPF. This is in order to 'create jobs and prosperity', to build on 'the country's inherent strengths' and to meet the 'twin challenges of global competition and of a low carbon future'. This should include supporting existing, new and emerging business sectors, including positively planning for 'clusters or networks of knowledge driven, creative or high technology industries'.
Derby Sub Regional Investment Plan, (2010 – 2013).	Priorities of the Investment Plan include: • Attract investment and support businesses to start, survive and grow; • Improve skills and expand the employee pool; • Support growth through the City's physical assets; and • Respond to the opportunities and challenges of climate change.
The D2N2 Local Enterprise Partnership : Strategic Economic Plan, (2014)	The combined LEP for Derbyshire, Derby, Nottinghamshire and Nottingham seeks to build on the strengths of the regional economy by: • Delivering 55,000 new jobs in the private sector; • Enhancing connectivity; • Enhancing the positive impacts of the urban and rural economies; and • Protecting and valuing the high quality natural environment and iconic landscapes.
Derby Economic Strategy, (2011)	Relevant key objectives include: • Supporting growth of companies and relocation opportunities; • Improving Derby as an investment proposition; • Addressing barriers to employment; • Reinforcing cultural and leisure facilities and the City's infrastructure; • Pursuing low carbon economy opportunities; • Developing a vibrant City centre; and • Realising the potential of Derby's heritage and tourism assets.

Existing and projected baseline

6.4.2 Gross Value Added (GVA) data is used to provide an estimate of a local areas contribution towards the UK economy. In 2009, Derbyshire's businesses contributed a total of £10.85bn, 1.02% of the GVA for England as a whole. The total GVA figure was 3.6% lower than the previous year, reflecting the effects of the global recession. In 2008 Derbyshire's GVA[34] per resident head was[35] £14,752; which is lower than the national average.

[34] GVA per head of population is the standard measure of economic performance.
[35] Derbyshire Local Economic Assessment 2012 (original source ONS 2009)

6.4.3 The 2013 employment rate[36] in Derbyshire stood at 75.1%, which was higher than both the regional (71.4%) and national (71.2%) rates[37]. Across the County, High Peak had the highest employment rate and Chesterfield the lowest. Across the County, 78.9% of people were economically active in Derbyshire; this activity rate is higher than the regional (77.5%) and national average (77.4%)[38].

6.4.4 The decline of coal mining and traditional manufacturing in the north-east of Derbyshire and the impact of the recession has left concentrations of areas where there are higher levels of unemployment and deprivation.

6.4.5 Peak unemployment levels hit Derbyshire in February 2010 with almost 18,500 people claiming Job Seekers Allowance (JSA). The trend has improved somewhat in recent years falling to 13,903 in May 2013. This is 14.8% less than at the same time in the previous year (16,314)[39].

6.4.6 The economy of Derbyshire benefits significantly from the nearby location of the East Midlands Airport which is very busy for freight distribution. It acts as a major employer and is also attractive for businesses with travel requirements. The 2005 survey of on-site employees at the airport indicated that there were a total of around 7,000 employees based on or near the airport site, employed by a total of 103 companies.

6.4.7 The economy of the north west of Derbyshire and the Peak District is based principally on quarrying and agriculture, although hill farming has declined in profitability and now employs fewer people with increasing part time employment. The further development of tourism and new leisure activities is helping to supplement incomes and support farm diversification in these areas.

6.5 Agriculture and Land Use

6.5.1 The majority of Derbyshire is rural, characterised by open countryside and small-medium sized towns. As such, agriculture is an important land use across the County. Agricultural practices and other land uses can affect patterns of surface water run-off, which can have an effect on flooding. Conversely, flood risk can have adverse impacts on certain uses of land.

6.5.2 **Table 6-6** presents a review of the key plans, policies, and programmes relating to 'agriculture and land use'.

TABLE 6-6: AGRICULTURE & LAND USE: CONTEXTUAL REVIEW

Source	Key Messages
NPPF (2012)	Chapter 3 of the NPPF stresses the importance of agriculture in supporting the rural economy. The **NPPF** recognises that both new and existing development should not contribute to, be put at unacceptable risk from, or be adversely affected by unacceptable levels of soil pollution or land instability.
Safeguarding our Soils: A Strategy for England (2009)	Sets a vision for the future of soils in the country; "*By 2030, all of England's soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations*". An element of this vision is the condition of soils in urban areas, which are to be *'sufficiently valued for the ecosystem services they provide and given appropriate weight in the planning system'.* Good quality soils in urban areas are recognised in this strategy as being 'vital in supporting ecosystems, facilitating drainage and providing urban green spaces for communities'.

[36] The percentage of the working age population who are employed including the self-employed.
[37] Nomis, Employment and Unemployment (Oct 2012-Sep 2013)
[38] Nomis, Employment and Unemployment (Oct 2012-Sep 2013)
[39] Nomis, Annual Population Survey May 2013

Existing and projected baseline

6.5.3 The national Agricultural Land Classifications associated with different areas throughout Derbyshire are summarised in Table 6.7 below. The majority of land is classified as Grade 3 (good to moderate quality agricultural land) or 4 (poor quality agricultural land) and there is also a substantial area of Grade 2 (very good quality agricultural land) agricultural land. There is no Grade 1 (highest quality) agricultural land located within the area. In total 48.5% of Derbyshire's agricultural land is classified as 'Best and Most Versatile land'.

TABLE 6-7: AGRICULTURAL LAND CLASSIFICATION (SOURCE: DERBYSHIRE COUNTY COUNCIL)

Agricultural Land Classification	Area (ha)
1	0
2	17,073
3	58,239
4	75,846
5	4,134
Non-agricultural Land	2,131
Urban Land	16,222
Total	173,644

6.5.4 **Figure 6.1** below shows the spatial distribution of agricultural land within Derbyshire. Grade 2 agricultural land is located towards the North West and South of the City of Derby. Land towards the north of the County is predominantly Grade 4 and 5; with the exception of pockets of Grade 2 land within Bolsover.

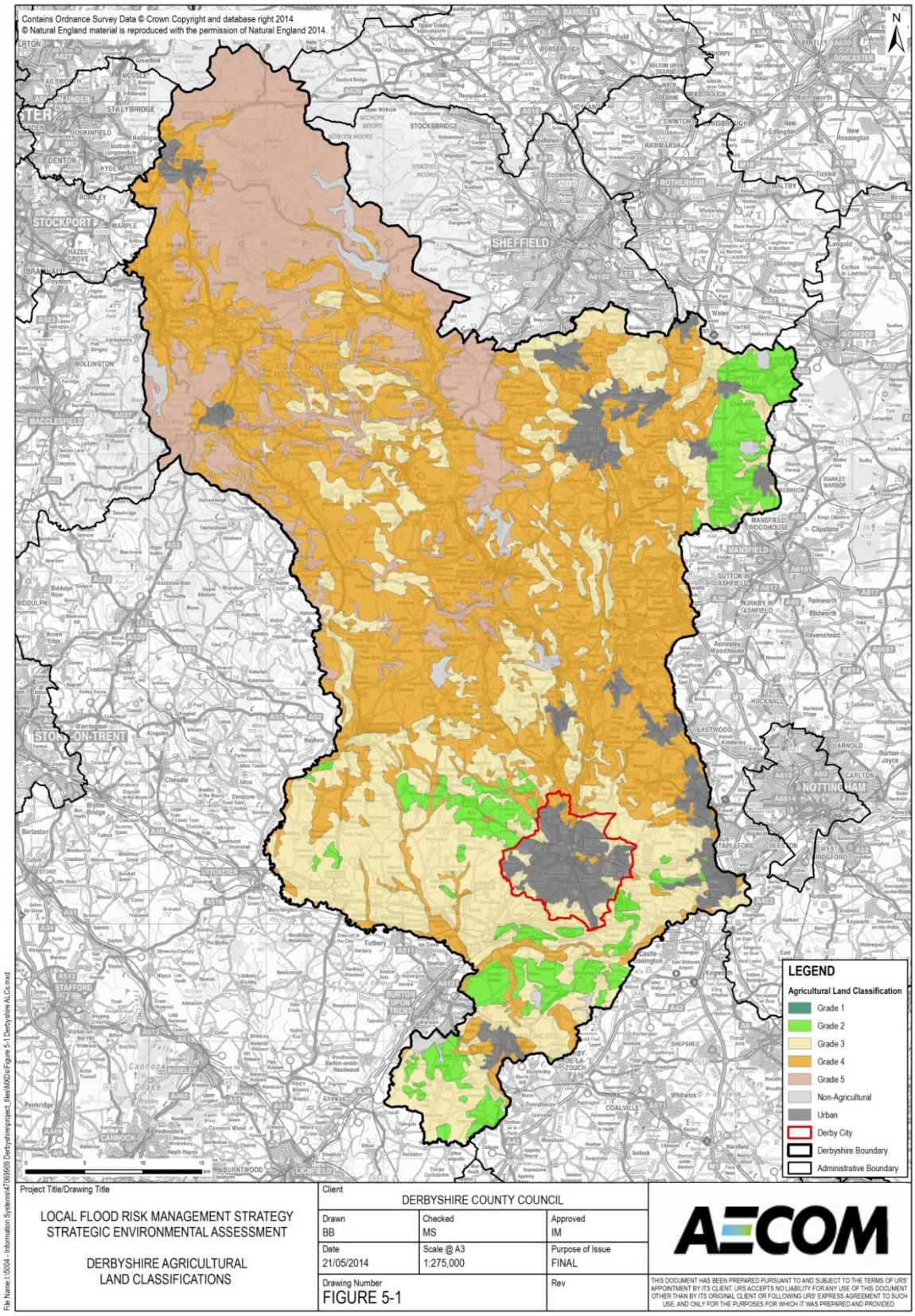
6.5.5 Agricultural practices can have a significant impact on local flooding issues, often simple measures, such as ploughing fields against the direction of water flow or introducing filter strips alongside watercourses can make a big difference. Such measures are set out in the Environment Agency Rural SUDS Report 2012.

6.5.6 It is a possibility that LFRMS measures could change the frequency and extent of flooding, which could lead to changes in the suitability of land for certain uses; for example by affecting versatility, productivity, soil quality and mineral resources.

6.5.7 There are a number of areas across the County where Environmental Stewardship Agreements have been agreed. This will help to ensure that agricultural practices do not have a detrimental impact on the environment in these areas. There are also a number of energy crop schemes that have been implemented, for example within Bolsover District.

6.5.8 Housing development at strategic urban extensions across the County will lead to the loss of some land classified as 'best and most versatile land'. This will lead to long term changes in the amount of productive land across the County.

Figure 6-1: Derbyshire Agricultural Land Classifications (Source: Natural England, 2014)



6.6 Key Issues: Resource Management and Material Assets

6.6.1 The key issues arising from the contextual review and baseline assessment for 'Resource Management and Material Assets' in Derbyshire are listed below, though not in any order of importance.

TABLE 6-8: KEY ISSUES FOR RESOURCE MANAGEMENT AND MATERIAL ASSETS

Key Issue	Relevance to the LFRMS
Community facilities and critical infrastructure There is a need to ensure that community facilities and critical infrastructure is resilient to the effects of flooding.	Critical infrastructure should be taken into account when identifying 'areas of greatest risk'. The LFRMS should identify ways to further develop an understanding of flood risk in Derbyshire, including identifying assets across the county that may cause or exacerbate flooding.
Housing There will be a significant increase in housing development to support local population growth.	Increased housing will lead to higher demand and increased reliance on water and wastewater treatment infrastructure. Changes in land use can also affect surface water run-off and flood risk. The LFRMS will need to take account of these factors and seek to identify ways to ensure appropriate and sustainable development in Derbyshire.
Economy There is a need to ensure that the infrastructure is in place in Derbyshire to continue to retain and attract investment and high quality business growth.	Improving the resilience of the local economy to flood risk will help to retain and attract investment. The LFRMS should identify ways to further develop an understanding of flood risk in Derbyshire to inform the spatial distribution of development across Derbyshire which should help to mitigate the financial damages associated with flooding. The amount of land currently designated as undevelopable due to flood risk concerns also has a huge impact of the economy. An increased understanding of flood risk will also help to release these areas of land for development if appropriate measures are taken to deal with flood risk.
Agriculture and Land Use Agricultural land is under pressure from changing land use and housing development.	A change in the way that land is managed has the potential to affect flood risk. The LFRMS will need to take account of these factors and seek to identify ways to ensure the appropriate and sustainable use of land in Derbyshire.

7 INTER-RELATIONSHIPS

7.1.1 It is useful to consider the interrelationships between the different environmental factors discussed in Chapters 4 to 6. This gives a clearer indication of the baseline position and how changes to one aspect of the environment can be beneficial or detrimental upon other aspects of the environment.

7.1.2 For example, an increase in the delivery of housing and jobs would be likely to have a beneficial effect on the health and wellbeing of communities and the local economy; whilst flooding in areas that are important for agriculture could have a negative impact on the local economy.

7.1.3 Flood risk to areas with high levels of deprivation may also disproportionately affect human health if people and their neighbourhoods are less able to address the consequences of flooding. **Figure 7-1** illustrates that the majority of the most deprived communities in Derbyshire are located to the North East of the County in the urban areas of Bolsover, Chesterfield, Staveley and within the centre of Derby. Some of these deprived areas fall within Environment Agency defined Flood Zones 2 and 3 and could therefore be more adversely affected by the impacts of flooding. Conversely, flood risk management measures such as storage areas can have a positive effect on wellbeing through the creation of multi-functional amenity areas. Where these measures are implemented in deprived urban areas, the benefits can be more profound.

7.1.4 **Figure 7-1** also shows that some settlements are surrounded by a concentration of agricultural land classified as Grade 2 and 3. Flooding could affect the productivity of these areas, with knock-on impacts on the local economy. Changes in the use of agricultural land could also have a positive or negative effect on flood risk. For example, allowing areas of agricultural land to be used as a flood water retention area.

7.1.5 Of those deprived areas at risk of fluvial flooding, North East Derbyshire and Derby City in particular are at a higher risk of Groundwater Flooding (**See Figure 7-3**). The hazards and risks associated with surface water flooding can also be exacerbated in urban environments due to the enhanced impermeable surfaces associated with urban development. **Figure 7-4** illustrates the extent of surface water flooding in a 1 in 100 year flood event. Whilst it is clear that surface water flooding occurs extensively across the county, there is a greater risk to urban areas such as Derby and Chesterfield.

7.1.6 It can be seen on **Figure 7-2** that many of the nationally designated heritage assets across Derbyshire lay within areas at risk of fluvial flooding. Flood risk from groundwater and surface water can also have an impact on these assets. Many of these areas also fall within areas of deprivation, so the effects of flooding (and flood risk management measures) could have greater impacts in these areas compared to others where there are fewer sensitive receptors.

7.1.7 Water quality and biodiversity are also both closely related; as changes in water quality could have a significant effect on aquatic and water-margin habitats and the species they support. Both of these environmental aspects can also be affected by flooding and flood risk management measures. Conversely, environmental opportunities may also be delivered that deliver multiple benefits including environmental, economic and social benefits (e.g. through increased tourism, increased open space areas).

7.1.8 **Figure 7-3** shows that the north-west of the County contains several SSSIs and SPAs that are associated with watercourses. These areas are mainly rural in nature, so flooding here might be less likely to affect communities due to the lower number of properties compared to 'built up communities' (although flooding in a village can be equally as devastating as flooding in a city). However, flooding and flood management schemes such as attenuation areas could impact more upon water dependent SSSIs in this area.

Limitations

7.1.9 The information gathered as part of the SEA process has been obtained through desk-based assessment. Potential impacts e.g. potential construction impacts arising during the building or raising of flood defences are more appropriately addressed through project level Environmental Impact Assessment undertaken for specific schemes and are thus not covered in the SEA. However, where environmental opportunities or constraints are broadly identifiable, they will be highlighted in the SEA to avoid adverse effects and facilitate positive environmental opportunities at an early stage of delivery.

7.1.10 The strategic nature of the LFRMS and the area of coverage (Derbyshire) means that it is difficult to present some information without looking at smaller geographical areas. It can also be difficult to interpret the data at a strategic level. However, it is important to keep the scope of the SEA proportionate to the LFRMS.

Figure 7-1: Interrelationships between Fluvial Flood Risk (Main Rivers), Deprivation and Land Use

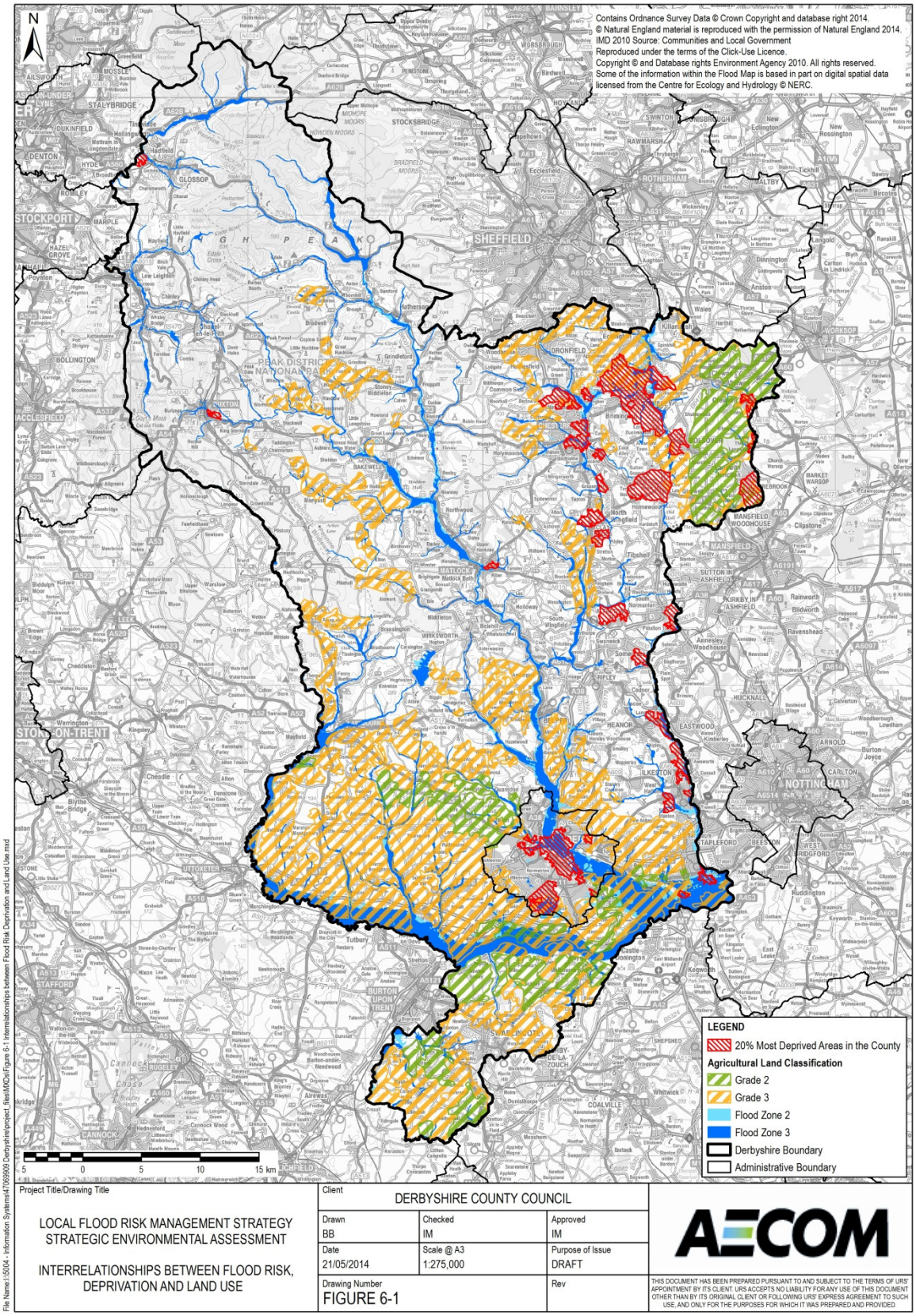


Figure 7-2: Relationship between Fluvial Flood Risk (Main Rivers) and Heritage Assets

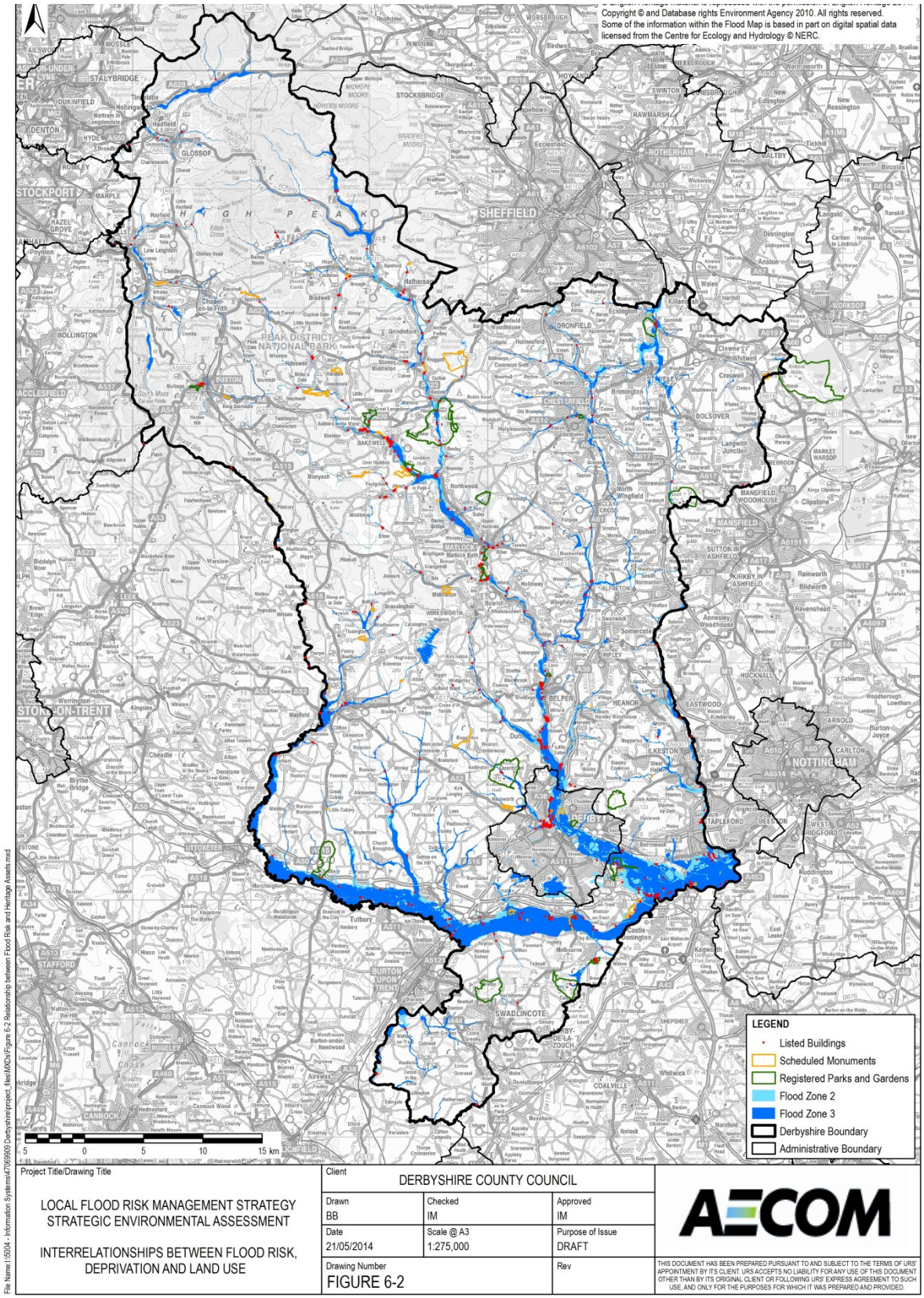
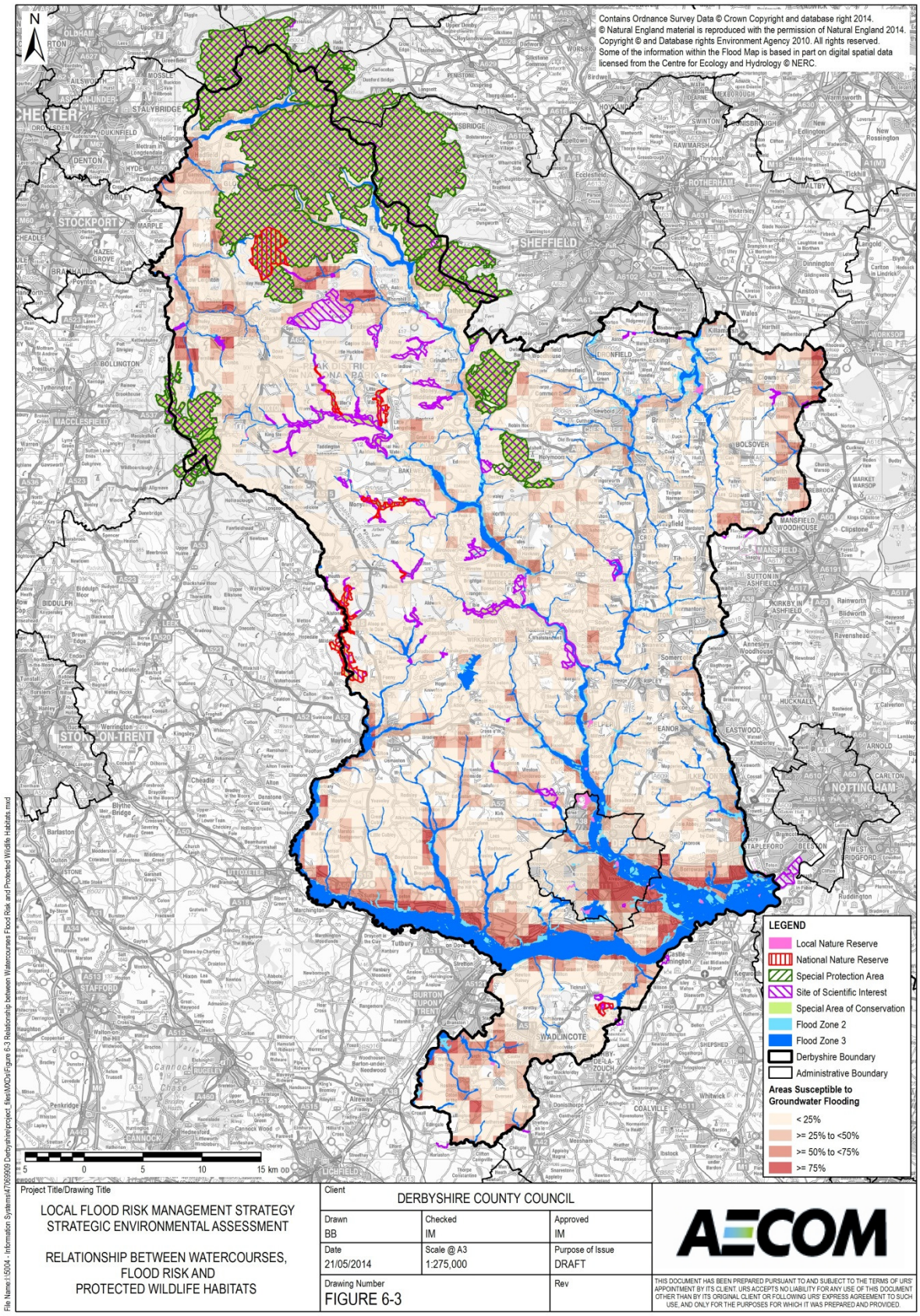


Figure 7-3: Relationship between Watercourses, Fluvial (Main River) and Groundwater Flood Risk and Protected Wildlife Habitats



File Name:I:\5004 - Information Systems\47069900 Derbyshire\project_files\MXDs\Figure 6-3 Relationship between Watercourses Flood Risk and Protected Wildlife Habitats.mxd

Project Title/Drawing Title	Client		
LOCAL FLOOD RISK MANAGEMENT STRATEGY STRATEGIC ENVIRONMENTAL ASSESSMENT RELATIONSHIP BETWEEN WATERCOURSES, FLOOD RISK AND PROTECTED WILDLIFE HABITATS	DERBYSHIRE COUNTY COUNCIL		
	Drawn BB	Checked IM	Approved IM
	Date 21/05/2014	Scale @ A3 1:275,000	Purpose of Issue DRAFT
	Drawing Number FIGURE 6-3		Rev

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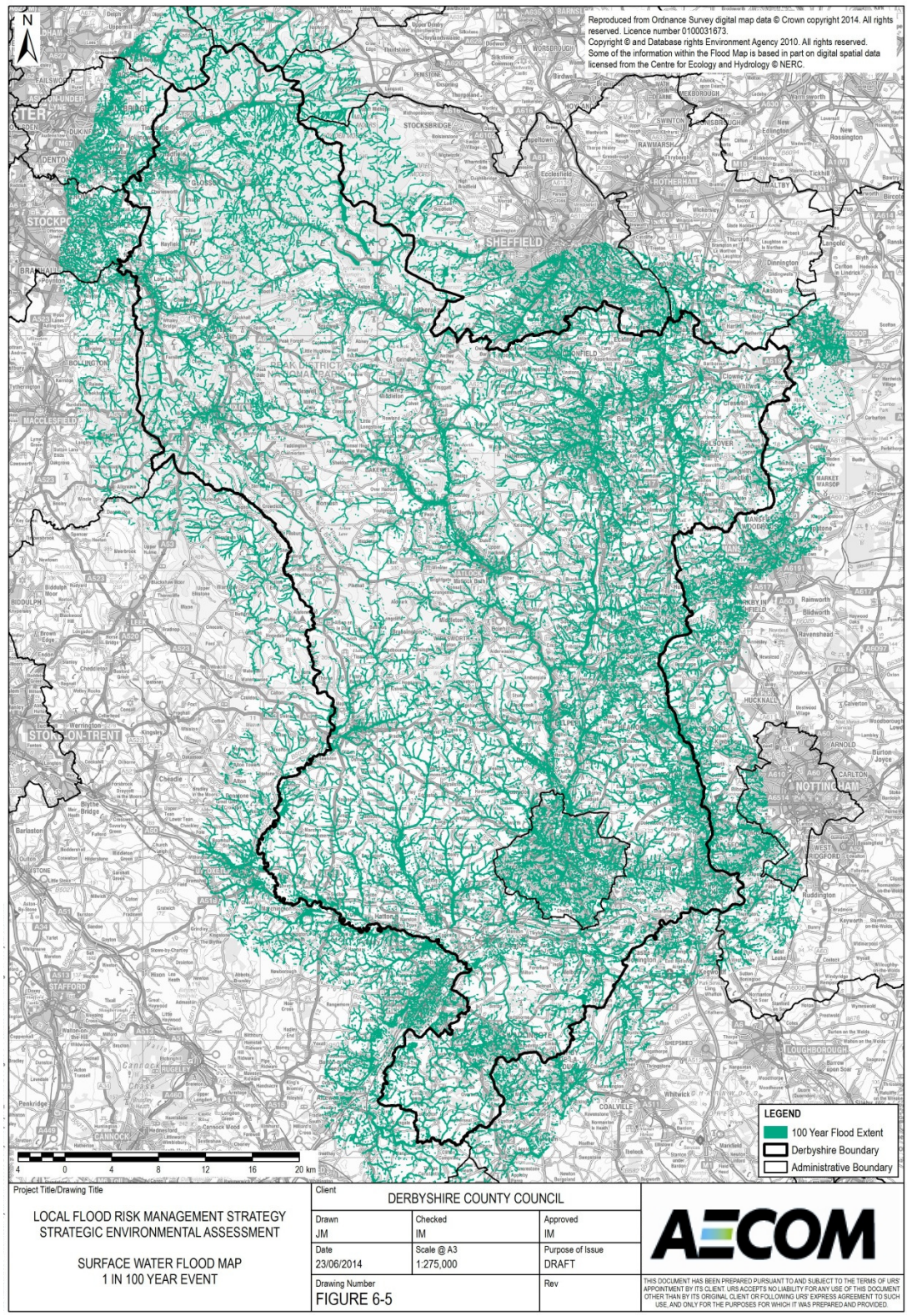
Figure 7-4: Surface Water Flooding (1 in 100 year flood extent)



8 THE SEA FRAMEWORK

8.1.1 **Table 8-1** presents the proposed SEA framework; which consists of 7 objectives, each with supporting indicators. These objectives have been derived from the key issues identified in chapters 2 through 7 of this Environmental Report.

The SEA framework provides a methodological framework by which the environmental effects of the Strategy can be assessed by examining how the LFRMS would impact upon the baseline position relating to each environmental objective.

TABLE 8-1: SEA CRITERIA

Key Environmental Issue	**SEA Objectives (assessment Criteria)**	**Possible Indicators** (relevant to the scope of the LFRMS)
Population and Human Health		
Deprivation Reduce the inequalities between deprived and more affluent areas. Deprived communities are more vulnerable to the effects of flooding.	1) Help to tackle deprivation and reduce inequalities between communities.	- % change in the number of dwellings in deprived areas that are at risk of flooding.
Health One of the priorities for local health care is to reduce the levels of obesity and inactivity. It is important to ensure that housing, healthcare, leisure and recreational facilities are protected from increased flood risk across Derbyshire.	2) Help to support and encourage more active lifestyles.	- Access to flood risk management schemes implemented that promote multi-benefits. - Measures taken to reduce the risk of flooding to public health, leisure and recreational facilities.
Resilience to climate change Climate change is anticipated to exacerbate flood risk.	3) Improve resilience to the effects of flooding and climate change; particularly in deprived areas.	- Flood risk management schemes implemented. - Increase in SUDS techniques for new developments and retrofitting.
Environmental Resources		
Biodiversity, flora and fauna There are a number of European designated sites (SACs, SPAs and Ramsar sites), SSSIs, NNRs and LNRs located within and surrounding Derbyshire, which support habitats and species. Threats to these sites include increased development planned in the area, increased leisure and recreation pressure, predation, **flooding**, and atmospheric pollution.	4) Protect, restore and enhance the quality, availability and connectivity of wildlife habitats and water resources.	- Net contribution towards habitat creation / improvement (hectares)
Water resources and quality There is limited water availability at low-flow in most parts of Derbyshire; particularly to the North East. There is also a need to improve the water quality of some watercourses across the County.		- Supporting the EA with the achievement of Water Framework Directive Targets.

TABLE 8-1: SEA CRITERIA		
Key Environmental Issue	**SEA Objectives (assessment Criteria)**	**Possible Indicators** (relevant to the scope of the LFRMS)
Landscape Derbyshire contains valued landscapes, which will come under increased pressure from new development, land use changes and flood risk. Heritage Derbyshire contains a wealth of heritage assets, some of which could be affected by the effects of flooding.	5) Conserve and enhance the condition and setting of Derbyshire's landscape, historic environment and heritage assets; seeking to enhance local character wherever possible.	- Change in landscape character. - Number of heritage assets at risk of flooding.
Resource Management		
Housing There will be a significant increase in housing development to support an increasing and aging population. This is likely to lead to higher demand for water abstraction and wastewater treatment and is likely to affect surface water run-off patterns.	6) Support the provision of sustainable, well designed and resilient housing.	- Change in number of properties at risk of flooding. - Resilience measures implemented.
Economy There are aspirations to achieve sustainable growth focusing on improved connectivity, high quality jobs and innovation. Community facilities and Critical infrastructure Key public services, facilities and infrastructure need to be resilient to flood risk to support the development of Derbyshire's economy.	7) Support the growth of a resilient and sustainable economy.	- Change in insurance claims due to flood events.

9 APPRAISAL OF REASONABLE ALTERNATIVES

9.1 Introduction

9.1.1 Due to the strategic nature of the LFRMS, it is considered that there are limited alternatives to the guiding principles and actions within the LFRMS.

9.1.2 The LFRMS and action plan do not contain specific detail about the location of flood management schemes. Therefore, it would not be possible to undertake a meaningful assessment of significant environmental effects in this context either.

9.2 Are there reasonable alternatives at a strategic level?

9.2.1 The strategic approach adopted in the LFRMS is to focus flood management activities into areas of 'greatest need' through a prioritisation of resources, which takes into account economic, social (and to a lesser extent) environmental factors.

9.2.2 In determining whether there may be 'reasonable alternatives' to this broad approach, several alternative strategic approaches were considered. However, it was determined that these alternatives were not reasonable for the following reasons:

- Do nothing / business as usual - It is considered that these are not 'reasonable' or appropriate approaches because the LFRMS is required by the Flood and Water Management Act. Taking positive action on flood risk is also inherently positive, given that approaches are often focused on achieving multiple benefits to the economy, communities and the environment.

- Focusing resources and actions in all areas at risk of flooding - (i.e. respond and plan for flooding without a prioritisation approach) - Addressing flood risk wherever it occurs rather than targeting the highest risk areas (i.e. a dispersed approach) is not effective and spreads resources too thinly. It is considered that this approach is not appropriate and is not likely to happen given how Defra prioritises flood defence funding.

10 APPRAISAL OF THE LFRMS

10.1 Introduction and methodology

10.1.1 The following chapters present an assessment of the LFRMS against each of the seven objectives in the SEA Framework (**In Table 8.1**). The assessment takes account of the actions and objectives, which are linked together to make-up the LFRMS (**see Appendix A).**

10.1.2 Effects have been forecast taking into account the criteria presented within Schedule 2 of the SEA Regulations[40] and current levels of knowledge. Hence, account has been taken of the probability, duration, scale, frequency and reversibility of effects as far as possible.

10.1.3 These factors have helped to form an opinion on the extent of the effects, as represented by one of the following symbols.

- Positive ✓✓
- Minor positive ✓
- No effect -
- Minor negative ×
- Negative ××

10.1.4 The effects have been recorded in a table (*see example below in figure 10.1*) for each of the six objectives proposed in the LFRMS. The assessment presented is reflective of the specific actions that are proposed under each of the LFRMS objectives (as presented in **Appendix A**).

Figure 10.1: Presenting effects for the LFRMS Objectives

LFRMS Objectives		Effects on SA Objective 1
1.)	To further develop an understanding of the flood risk to Derbyshire and the impacts of climate change working collaboratively with all other Risk Management Authorities and relevant groups/bodies to ensure a coordinated response to flood risk management for Derbyshire.	✓
2.)	To continue to work with all relevant bodies to ensure appropriate and sustainable development in Derbyshire.	…
3.)	To aim to reduce the level of flood risk to the residents of Derbyshire.	…
4.)	To continue to prioritise limited resources effectively to support communities most at risk in Derbyshire.	…
5.)	To continue to help and support the local communities of Derbyshire to manage their own risk.	…
6.)	To continue to help protect and enhance the natural and historic environment of Derbyshire	…

10.1.5 It is important to note that these assessment scores are not necessarily indicative of 'significant effects' (in terms of affecting the baseline position) but are to provide an indication of the broad implications of each of the LFRMS objectives.

10.1.6 However, further discussion of the significance of effects is presented for each sustainability objective to illustrate the effects of all the LFRMS actions and objectives when considered together 'as a whole' (i.e. the cumulative effects).

[40] Environmental Assessment of Plans and Programmes Regulations, 2004

10.1.7 Where relevant and appropriate, this discussion also includes recommendations for enhancement or mitigation (of significant effects) that are likely to occur as a result of adopting the LFRMS.

Limitations

10.1.8 The ability to forecast effects is limited by understanding of the baseline and (in particular) the future baseline and also the challenge of relating policy to the effects that result from its implementation. In light of this, where likely significant effects are forecast this will be supported by explanation of the assumptions made[41].

10.2 Appraisal of the draft LFRMS

10.2.1 In January 2015, an SEA was undertaken on the draft LFRMS. The Environmental Report was published for consultation alongside the draft LFRMS between 16th February 2015 and 16th March 2015. Following this, Derbyshire County Council has revised the LFRMS to take on board findings set out in the Environmental Report relating to the draft LFRMS and consultation responses received.

[41] As stated by Government Guidance (The Plan Making Manual, see http://www.pas.gov.uk/pas/core/page.do?pageId=156210): *"Ultimately, the significance of an effect is a matter of judgment and should require no more than a clear and reasonable justification."*

10.3 Population and Human Health

Introduction

10.3.1 This chapter outlines the effects of the LFRMS on the baseline relating to 'population and human health', which includes consideration of population, deprivation, health, climatic factors and adaption to climate change'. The appraisal has been guided by the following SEA objectives and sub-questions.

SEA Objective 1: Help to tackle deprivation, rural isolation and reduce inequalities between different groups and communities.

- *How will it affect deprived communities?*
- *Will it affect different groups of people equally?*
- *How will it affect the health and wellbeing of communities?*

SEA Objective 2: Help to support and encourage more active lifestyles.

- *How will it affect access to open space?*

SEA Objective 3: Improve resilience to the effects of flooding and climate change; particularly in deprived areas.

- *How will it affect flood risk and resilience to flood events?*
- *Will it help to adapt to the wider effects of climate change?*

LFRMS Objective	SA1	SA2	SA3
1. To further develop an understanding of the flood risk to Derbyshire and the impacts of climate change working collaboratively with all other Risk Management Authorities and relevant groups/bodies to ensure a coordinated response to flood risk management for Derbyshire.	-	-	✓
2. To continue to work with all relevant bodies to ensure appropriate and sustainable development in Derbyshire.	✓	✓	✓
3. To aim to reduce the level of flood risk to the residents of Derbyshire.	✓?	-	✓
4. To continue to prioritise limited resources effectively to support communities most at risk in Derbyshire.	✓?	-	✓
5. To continue to help and support the local communities of Derbyshire to manage their own risk.	✓	-	✓
6. To continue to help protect and enhance the natural and historic environment of Derbyshire.	-	✓	✓

Discussion of effects

10.3.2 LFRMS Objective 1 deals mainly with procedural actions based around improving understanding of flood risk. Therefore it is difficult to determine that there would be any specific effects on health and wellbeing. However, actions that seek to improve understanding and management of climate change risk could have positive implications for those communities that are 'on the fringes' of existing risk. For example, by including these areas in engagement / communications plans.

10.3.3 The proposed actions associated with LFRMS Objective 2 would help to facilitate the delivery of SuDS (particularly in relation to Key Action 2.2) and would also support natural flood management schemes, which could include the provision of open space. These actions would be likely to have a positive effect on health by both reducing flood risk and enhancing green infrastructure. Encouraging developers to '*design for exceedance'* and the retrofitting of SuDS ought to have a **significant positive effect** in terms of the baseline associated with SEA Objective 3, as it should lead to reduced run-off and improved network capacity, helping to reduce flood risk and improve resilience to climate change.

10.3.4 The actions that support LFRMS Objective 3 are inherently positive in terms of helping to reduce flood risk to communities (and thus avoid potential negative effects on health and wellbeing).

10.3.5 Seeking to engage with people that may have never been affected by flooding before could have positive effects for some communities (by improving their understanding of flooding, which could consequently help them reduce their own risk). However, it will be important to ensure that a range of communication techniques are utilised to reach 'hard to reach groups'. This is alluded to under LFRMS Objective 5, which contains actions to *develop and action a communication strategy and prioritise communication'.*

10.3.6 LFRMS Objective 4 is likely to have a positive effect in securing flood management schemes in areas that may not be eligible for other sources of funding. This could help to protect health and wellbeing for certain communities. In particular, Key Action 3 for this objective also seeks to empower communities so that they can better manage their own flood risk and become more resilient at the community level.

10.3.7 A key aspect to the actions that support LFRMS Objective 4 is the adoption of a 'prioritisation' approach to allocating resources. There are particular concentrations of deprivation in communities to the North West of the County such as Chesterfield, Derby City, Alfreton, Clay Cross and Bolsover. Most of these areas also fall within areas at risk of flooding from watercourses, groundwater and surface water. It is reasonable to suggest that resources may be secured that help to protect these areas and improve community resilience. However, these issues are difficult to explore at the strategic level. It will therefore be important to monitor the effects of the LFRMS on different communities.

10.3.8 LFRMS Objective 5 covers the issue of community engagement, seeking to improve communications with at risk communities. This is inherently positive in terms of improving awareness and resilience to flood risk, which would help to prevent adverse effects on health and wellbeing. The LFRMS should help to improve awareness and community resilience for groups that are less well engaged in flood risk management at the moment.

10.3.9 Prioritisation of resources would be based upon predictive data, and so those communities at greatest risk of flooding would be targeted, and would benefit most. It is reasonable to assume that this approach would help to reduce inequalities (in respect of flood risk) between areas that are currently at greater risk of flooding compared to those that are not. Inevitably, some communities at a lower risk of flooding might not be as well prepared for flood events should they occur. However, the LFRMS does allude to the fact that all levels of flooding will be addressed when the issues are brought to the attention of the flood risk management team.

10.3.10 LFRMS Objective 6 will help to protect and enhance water quality, biodiversity and the historic environment, which could have positive knock-on effects on health and social well-being. However, the effects are not considered to be significant.

10.3.11 Key Actions 1 and 2 that support Objective 6 seek to promote sustainable and multi-benefit flood risk management activities, which may help to increase tree cover and enhance green and blue infrastructure. In turn, this could involve the creation of accessible open space for residents. These actions, along with actions that seek to encourage natural flood management (such as SuDS) are also likely to have a positive effect in terms of improving resilience to climate change.

Summary

10.3.12 Overall, the LFRMS is likely to have a **significant positive effect** on health and wellbeing. This would be achieved directly by reducing the risk of flooding to communities, and indirectly through the implementation of risk flood management activities, which may enhance open space, tree cover and environmental quality; which can all contribute to wellbeing and health and also make communities more self-resilient.

10.3.13 It is uncertain how different communities will be affected, as this will depend upon the approach to prioritisation. However, the LFRMS seeks to ensure that certain activities are targeted appropriately to a range of communities.

10.3.14 Deprived (and possibly more vulnerable) communities are found more predominantly in the urban settlements of Derbyshire. It is likely that such urban areas (that typically contain a greater number of properties at risk of flooding) will benefit most from flood management actions. Therefore, it is anticipated that the LFRMS would help to tackle health issues where they are most chronic.

10.4 Environmental Resources

Introduction

10.4.1 This chapter outlines the effects of the draft LFRMS on the baseline relating to 'environmental resources'. This section includes 'Biodiversity, fauna and flora, landscape, the historic environment and heritage and water quality and resources'. The appraisal has been guided by the following SEA Objectives and sub-questions.

SEA Objective 4: Protect, restore and enhance the quality, availability and connectivity of wildlife habitats and water resources.

- *Will it help to protect designated habitats from the negative effects of flooding?*
- *Will it enhance or create habitats through the use of natural flood management techniques?*
- *Will it help to ensure that Water Framework Directive Targets are met?*
- *Will it help to protect soil quality and make the best use of agricultural land?*

SEA Objective 5: Conserve and enhance the condition and setting of Derbyshire's landscape, historic environment and heritage assets; seeking to enhance local character wherever possible.

- *Will it reduce the risk and effects of flooding on settlement or landscape character?*
- *Will it help to protect the condition of heritage assets?*
- *Will it help to maintain access to heritage assets?*

LFRMS Objective	SA4	SA5
1. To further develop an understanding of the flood risk to Derbyshire and the impacts of climate change working collaboratively with all other Risk Management Authorities and relevant groups/bodies to ensure a coordinated response to flood risk management for Derbyshire.	-	-
2. To continue to work with all relevant bodies to ensure appropriate and sustainable development in Derbyshire.	✓	-
3. To aim to reduce the level of flood risk to the residents of Derbyshire.	✓	✓
4. To continue to prioritise limited resources effectively to support communities most at risk in Derbyshire.	-	✓
5. To continue to help and support the local communities of Derbyshire to manage their own risk.	-	-
6. To continue to help protect and enhance the natural and historic environment of Derbyshire.	✓	✓

Discussion of effects

10.4.2 LFRMS Objective 1 mainly considers actions to improve knowledge and working relationships to help reduce flood risk and improve resilience. Whilst the outcomes of these actions are likely to lead to better flood risk management (with knock-on positive effects for environmental protection), it is unlikely that there would be any direct effects on the environment.

10.4.3 The actions associated with LFRMS Objective 2 would have indirect positive effects on the quality of watercourses and wildlife habitats/species. This would be achieved through actions such as de-culverting, the promotion of natural flood management schemes and a strategic approach to catchment management.

10.4.4 LFRMS 3 is concerned with reducing flood risk to people, whilst LFRMS Objective 4 seeks to prioritise resources to areas that are at greatest risk of flooding. Actions that support LFRMS

Objective 5 are focused upon improving communications, supporting communities and gathering information about flood risk so that communities are better equipped to manage their own risk.

10.4.5 Much of the supporting actions to these three objectives would not have a direct significant effect in terms of protecting or improving environmental quality. However, actions to manage flood risk might include measures to encourage changes to land use that provide opportunities to incorporate ecological benefits.

10.4.6 LFRMS Objective 5 seeks to enhance relationships with other Risk Management Authorities and groups across borders to help deliver schemes than can address multiple sources of flood risk. This is also reflected by the promotion of a strategic approach to catchment management. This integrated approach is positive, as it is likely to help to improve the overall quality of water in catchments through a reduction in pollution arising from surface water run-off / flood events.

10.4.7 LFRMS Objective 6 is likely to have a **significant positive effect** on the baseline associated with SEA Objective 4. In particular Key Action 1 seeks to promote sustainable and multi-benefit flood risk management activities (which may include upland storage areas, increased tree coverage, and green infrastructure). These would contribute to enhanced habitat quantity and connectivity. Given the prioritisation to the protection of people and property, it is likely that improvements to wildlife habitats are more likely to occur in and between built up urban areas.

10.4.8 Action 2 for LFRMS Objective 6 seeks to support the Environment Agency in implementing the objectives of the Water Framework Directive. Alongside measures such as SuDS and catchment sensitive farming, it is likely that LFRMS Objective 6 would have a positive effect on the baseline for SEA Objective 4.

10.4.9 The LFRMS does not explicitly seek to protect or enhance landscape and settlement character (and the affect it could have would be limited). However, the actions that support the development of green infrastructure are likely to have a positive effect in this respect.

10.4.10 LFRMS Objective 6 identifies the need to help protect and enhance the natural and historic environment of Derbyshire. Positive effects have been predicted for SEA Objective 5, but they are not considered to be significant. It is unlikely that heritage assets would be prioritised for protection from flooding purely by virtue of their cultural / historic importance. However, many designated heritage assets are located in built-up areas that are likely to be the focus of flood risk management actions and resources (by virtue of the increased risk to people and property in these areas). Reducing flood risk in these areas should therefore have the effect of helping to protect heritage assets and their settings.

10.4.11 Particular areas that could benefit from flood management schemes that also contain important heritage assets include, Duffield, Belper, Ambergate and Matlock.

10.4.12 The LFRMS seeks to promote conscientious land and asset management practice including sustainable schemes and farming techniques that help to reduce surface water runoff and sediment movement (LFRMS Objective 3, Key Action 4). This helps to protect soil from being washed directly into local watercourse and thus limiting a detrimental impact on the riparian environment. The LFRMS encourages a balanced approach to flood risk management encouraging both urban and rural landowners to work together.

Summary

10.4.14 The LFRMS is likely to have a **significant positive effect** on water quality by supporting actions that encourage more natural patterns of drainage, reduce surface water run-off, and manage farming practices in a more environmentally friendly way. The promotion of SuDS in urban areas can also increase habitat cover and function. These factors should have knock-on benefits for the quality of wildlife habitats, as well as specific actions that could help to enhance and create habitats and tree cover.

10.4.15 It is likely that heritage assets in areas at risk of flooding will benefit from actions that seek to reduce flood risk and improve resilience to the communities within which they are located. However, it is very unlikely that heritage assets would be prioritised for protection from flooding purely by virtue of their cultural / historic importance. The same could also be said for other environmental assets such as Grade 2 agricultural land and wildlife habitats.

10.4.16 Nevertheless, a balanced approach for flood risk management will be promoted to aim to limit the economic impact on communities and infrastructure as well as farmers and their livelihood.

10.5 Resource Management

Introduction

10.5.1 This chapter outlines the effects of the LFRMS on the baseline relating to 'resource management' it includes 'housing, economy and community facilities and critical infrastructure'. The appraisal has been guided by the following SEA Objectives and sub-questions.

SEA Objective 6: Support the provision of sustainable, well designed and resilient housing.

- *Will it reduce the number of properties at risk of flooding?*
- *Will it help to steer new development to areas of lower risk?*

SEA Objective 7: Support the growth of a resilient and sustainable economy.

- *Will it help to improve the resilience of local business to flood risk? In particular Small and Medium Enterprises (SMEs)?*
- *Will it help to protect and secure the infrastructure required to support economic growth in both rural and urban areas?*

LFRMS Objective	SA6	SA7
1. To further develop an understanding of the flood risk to Derbyshire and the impacts of climate change working collaboratively with all other Risk Management Authorities and relevant groups/bodies to ensure a coordinated response to flood risk management for Derbyshire.	✓	✓
2. To continue to work with all relevant bodies to ensure appropriate and sustainable development in Derbyshire.	✓	✓
3. To aim to reduce the level of flood risk to the residents of Derbyshire.	✓	✓
4. To continue to prioritise limited resources effectively to support communities most at risk in Derbyshire.	✓	✓
5. To continue to help and support the local communities of Derbyshire to manage their own risk.	✓	✓
6. To continue to help protect and enhance the natural and historic environment of Derbyshire.	✓	✓

Discussion of effects

10.5.2 Actions associated with LFRMS Objective 1 should help to improve the resilience of critical infrastructure through an improvement in the knowledge base, and by incrementally updating the asset register. The development of a strategic prioritisation tool (which is flagged as a priority action – Action 1.3.7) will also help to identify areas that are in particular need of intervention to help manage flood risk and support economic growth.

10.5.3 LFRMS Objective 2 is likely to have a positive effect on both SEA Objectives 6 and 7 by encouraging new development to incorporate SuDS (Action 2.2.4) and to accommodate rainfall that exceeds their drainage capacity (Action 2.2.3). These actions would help to reduce flood risk, and improve the capacity of the drainage network, helping to support economic growth without increasing flood risk and unlocking the potential of development sites that may otherwise be very difficult to develop.

10.5.4 In combination, the actions that support LFRMS Objective 3 are likely to have an indirect positive effect on SEA Objectives 6 and 7 by supporting the coordination of drainage maintenance programmes, awareness raising activities and partnership working arrangements.

10.5.5 Actions that seek to improve resilience to flooding would have a positive effect by helping communities and businesses to take steps to reduce risk and be more effective at responding.

10.5.6 Action 4.6.4 seeks to support emergency planning activities, which should have positive implications in terms of improving reactions to and recovery from flood events. This should help to reduce the economic and social effects of flooding (such as lost business time, reduced access to services), which is positive in terms of SEA Objective 7.

10.5.7 The approach to prioritisation of resources and interventions (as set out in LFRMS Objective 4) acknowledges that effects on critical infrastructure constitute a high priority. Given the influence and importance of certain buildings and critical infrastructure to the local economy, this approach is positive in respect of SEA Objective 7.

10.5.8 LFRMS Objective 5 consists of actions that seek to improve awareness of flood risk (to residents and businesses), improve communications and strengthen relationships with emergency agencies. All these actions are positive in terms of reducing flood risk and improving resilience.

10.5.9 LFRMS Objective 6 supports actions to implement natural food management schemes that bring multiple social, economic and environmental benefits. Such measures are likely to have indirect positive effects in terms of managing flood risk in areas downstream, which could include protection of critical assets, residential and business premises.

Summary

10.5.10 Overall, the draft LFRMS is likely to have a **significant positive effect** on the economy by helping to manage the extent and effects associated with flood events. This is likely to reduce the costs of flooding in terms of lost productivity, damage to property and assets and effects on health. The proposed actions would also help to improve awareness and preparedness amongst residents and businesses, which would contribute to improved community resilience.

10.5.11 In particular, the encouragement of developments to adopt SuDS and to deliver upgrades to the drainage network would help to support economic growth. Building strong links with spatial planning policies and the development management process are vital. The LFRMS should aim to influence planning policy so that any new development is planned for proactively from a flood management and water resource perspective.

11 SUMMARY OF EFFECTS

11.1.1 The effects of the LFRMS considered 'as a whole' have been summarised below.

11.1.2 Overall, the LFRMS is unlikely to have any significant adverse effects. The main benefits relate to improved resilience to flooding and climate change, which would have a positive effect on communities and businesses in areas of need.

11.1.3 Promotion of natural flood management schemes and SuDS should also help to reduce flood risk contribute to better water quality and present opportunities to enhance wildlife habitats.

11.1.4 The approach to communication should help to engage with a range of social groups that may be at risk of flooding. Improving community resilience to flood events may also help to improve wellbeing, and reduce risks to health.

11.1.5 Minor changes have been made to some objectives and Key Actions since the draft LFRMS was published for consultation. The updated SEA has not identified any significant changes to the implications of the LFRMS. However, Objective 6 could have positive implications for SEA Objective 5, as it now explicitly references the need to protect and enhance the historic environment.

TABLE 11-1: SUMMARY OF EFFECTS

SEA Objective	Summary of effects
1) Help to tackle deprivation and reduce inequalities between communities.	Actions within the LFRMS will help to reduce flood risk in areas of deprivation and will avoid inequalities by seeking to provide advice and support in different ways to meet the needs of different groups.
2) Help to support and encourage more active lifestyles.	The LFRMS promotes the provision of open space through natural flood risk management schemes. Whilst this is positive, it is not considered that the effects would be significant on the baseline position.
3) Improve resilience to the effects of flooding and climate change; particularly in deprived areas.	The LFRMS is likely to improve awareness of flood risk and equip communities to become more resilient and self-reliant in managing flood risk. Wider actions at the catchment level should also contribute to a reduction in flood risk, which is considered to be a **significant positive effect**.
4) Protect, restore and enhance the quality, availability and connectivity of wildlife habitats and water resources.	The LFRMS is likely to have a **significant positive effect** on water quality by supporting actions that encourage more natural patterns of drainage, reduce surface water run-off, and manage farming practices in a more environmentally friendly way. These factors should have knock-on benefits for the quality of wildlife habitats, as well as specific measures that could help to enhance and create habitats and tree cover.

TABLE 11-1: SUMMARY OF EFFECTS

SEA Objective	Summary of effects
5) Conserve and enhance the condition and setting of Derbyshire's landscape, historic environment and heritage assets; seeking to enhance local character wherever possible.	Actions / measures that reduce flood risk and improve resilience are likely to include areas that contain heritage assets and their settings. This ought to have a positive knock-on effect in terms of protecting heritage, but is not considered to be significant. LFRMS Objective 6 also seeks to ensure that the historic environment is protected and enhanced, which would have positive implications. These effects are not significant, as the main driver behind flood management actions is the effect on people and property.
6) Support the provision of sustainable, well designed and resilient housing.	Although no significant effects are anticipated, the LFRMS is likely to improve the resilience of housing to flooding.
7) Support the growth of a resilient and sustainable economy.	Overall, the LFRMS is likely to have a **significant positive effect** on the economy by helping to manage the extent and effects associated with flood events. This is likely to reduce the costs of flooding in terms of lost productivity, damage to property and assets and effects on health. The LFRMS will also help to unlock the potential of development sites that may otherwise be constrained by flood risk.

12 NEXT STAGES

12.1 Introduction

12.1.1 This Part of the Environmental Report explains the next steps that will be taken as part of the strategy-making / SEA process, including in relation to monitoring.

12.2 Consultation

12.2.1 The County Council engaged with a range of stakeholders to seek their input and feedback on the draft LFRMS. The formal consultation took place between the 16th February 2015 and 16th March 2015. During the consultation period, a Strategy Stakeholder Workshop was held for flood risk management in Derbyshire, where a number of stakeholders were represented. This allowed for their feedback regarding the overall LFRMS, the Objectives and Key Actions.

12.2.2 A draft version of the Environmental Report was also made available alongside the LFRMS to enable stakeholders to understand the sustainability implications of the LFRMS. In-line with the requirements of the SEA Regulations. The Environmental Report was also sent directly to the three 'statutory bodies', which are:

- Historic England
- Natural England
- The Environment Agency

12.2.3 Following the consultation period, the Council worked alongside partners to finalise the LFRMS, taking into account consultation responses, new evidence and the findings of the SEA (as appropriate).

12.2.4 This Environmental Report presents the assessment findings relating to the final LFRMS.

12.3 Strategy adoption and monitoring

12.3.1 At the time of Adoption a 'Statement' must be published that sets out (amongst other things):

- How this Environmental Report and responses received as part of the current consultation have been taken into account when finalising the strategy; and
- Measures decided concerning **monitoring.**

12.3.2 At the current stage (i.e. within the Environmental Report), there is a need to present 'measures envisaged concerning monitoring' only. As such, set out below are measures that might be taken to monitor the **significant effects** that have been identified in the SEA.

12.3.3 It is not necessary to monitor every possible effect that may occur as a result of the LFRMS, However, a number of further monitoring indicators/measures are included within the SEA Framework that may also be used as contextual indicators (see table 12.1).

TABLE 12-1: PROPOSED MONITORING MEASURES

SEA Objective	Significant effects	Monitoring measures
3. Improve resilience to the effects of flooding and climate change; particularly in deprived areas.	The LFRMS is likely to improve awareness of flood risk and equip communities to become more resilient and self-reliant in managing flood risk. Wider actions at the catchment level should also contribute to a reduction in flood risk, which is considered to be a **significant positive effect**.	- The number of schemes that have considered the impact of climate change. - Increase in SUDS techniques for new developments and retrofitting. - The number of specific actions that have been delivered in deprived areas. - % change in the number of dwellings in deprived areas that are at risk of flooding.
4. Protect, restore and enhance the quality, availability and connectivity of wildlife habitats and water resources.	The LFRMS is likely to have a **significant positive effect** on water quality by supporting actions that encourage more natural patterns of drainage, reduce surface water run-off, and manage farming practices in a more environmentally friendly way.	- Monitor the number/area of designated sites that will benefit from flood risk management actions, the number of schemes where flood management measures have created habitat, increased or restored connectivity. - The number of watercourses that reach/or maintain good quality under the Water Framework Directive.
7. Support the growth of a resilient and sustainable economy.	Overall, the LFRMS is likely to have a **significant positive effect** on the economy by helping to manage the extent and effects associated with flood events. This is likely to reduce the costs of flooding in terms of lost productivity, damage to property and assets and effects on health.	- The number of properties, buildings and critical infrastructure assets benefitting from a reduced risk of flooding.

APPENDIX A: LOCAL OBJECTIVES, KEY ACTIONS AND DETAILED ACTIONS

The following tables set out six Objectives for the LFRMS, as well as a series of Key Actions that are then broken down into detailed actions. For each detailed action, a priority level has been set, as well as establishing the timescale over which this will be delivered and whether this represents an existing work process that should be continued, one that needs to be developed or the need for a new role or service area (see the key below).

Priority	
H	High
M	Medium
L	Low

Timescales	
Long (L)	Over 5 years
Medium (M)	2 to 5 years
Short (S)	1 to 2 years

Status	Description
Continue	Continue to carry out existing role in the future
Develop	Develop and expand upon existing roles or increase existing service area
Establish	Establish a new role or service area
Achieved	Action is already achieved

Local Objective 1

To further develop an understanding of the flood risk to Derbyshire and the impacts of climate change working collaboratively with all other Risk Management Authorities and relevant groups/bodies to ensure a coordinated response to flood risk management for Derbyshire

	Key actions	Ref No	Breakdown of action to achieve the overarching objective	Priority	Timescales	Status
1	Identify and strengthen how Risk Management Authorities in Derbyshire and adjoining authorities share information and resources and work collaboratively in a coordinated manner for flood risk management	1.1.1	Work closely with all relevant Risk Management Authorities on projects that manage the various sources of flood risk	H	L	C
		1.1.2	Continue to build relationships with all Risk Management Authorities, relevant stakeholders and neighboring authorities	M	L	C
		1.1.3	Support the development, enhancement and action of catchment management strategies with cross boundary authorities	M	L	E
2	Enhance and develop the team to fill the resources gap at the County Council	1.2.1	Reduce the use of consultants where possible in favor of utilising the internal skill base	M	L	C
		1.2.2	Team to undertake bespoke training to develop in house capabilities reflecting service delivery changes	H	S	E
		1.2.3	Identify and liaise with other internal staff to maximise the use of the wider County Council skill base	M	L	D
		1.2.4	Team to continue/extend networking streams with District/Boroughs and neighboring authorities to improve local knowledge and develop best practice approach to flood risk management	M	L	C
3	Quantify the current understanding and continue to develop our understanding	1.3.1	Use all data sources available to produce maps to illustrate current understanding of priority areas for flood risk	H	S	E

	of flood risk to Derbyshire	1.3.2	Analyse current and future flood risk using relevant datasets	H	S	D
		1.3.3	Develop and implement a strategic tool for prioritisation for the County	H	S	D
		1.3.4	Continue to encourage public engagement	M	L	D
		1.3.5	Continue to record and investigate flood enquiries	M	L	C
		1.3.6	Continue to engage with the public to obtain local knowledge through site visits and community meetings	H	L	C
		1.3.7	Investigate flood enquiries using a strategic prioritisation tool (see 1.3.3)	H	L	D
		1.3.8	Investigate and report on flood enquiries that trigger the County Council's locally agreed Section 19 thresholds	M	L	C
		1.3.9	Better understand the strategic impact of groundwater flood risk in conjunction with all Risk Management Authorities	M	L	E
4	Continue to collect data from all sources (predictive and historical) and manage appropriately	1.4.1	Continue to work with the Environment Agency to obtain Main River, reservoir and historical data	M	L	C
		1.4.2	Continue to work with water companies to obtain up to date sewer flooding data and understand the capacity of their network	M	L	C
		1.4.3	Continue to work collaboratively with members of the Highways/Structures teams at Derbyshire County Council	M	L	D
		1.4.4	Continue to work with District/Borough Authorities to gain further understanding of historical issues across the County	M	L	C
		1.4.5	Continue to log all flood enquiry information and develop more efficient ways of logging information	H	S	D
		1.4.6	By comparing predictive data with historical records, apply a confidence rating to all data collected	M	S	E
		1.4.7	Share any data with Risk Management Authorities and the public when requested in accordance with relevant governance	M	L	C

		1.4.8	Incrementally update the Asset Register with any identified critical assets and where necessary designate assets/structures that may have a significant impact on flood risk	M	L	C
		1.4.9	Utilise portable technology and develop more efficient ways to collect data	M	M	E
		1.4.10	Identify new sources of data amongst partner organisations and stakeholders	H	L	D
5	To work with the internal teams at Derbyshire and emergency responders to further develop a collaborative approach for flood risk management and a response to a flood event	1.5.1	Further develop the gully cleansing data capturing project across the County with the aim to create a more effective public service for the residents of Derbyshire	M	M	D
		1.5.2	Continue to develop the culvert project to better inform Highway drainage funding/investment with the aim to create a more effective public service for the residents and businesses of Derbyshire	M	M	D
		1.5.3	Support Highways/Structures teams with reviewing maintenance and management of the Highway drainage infrastructure particularly those within locally important flooding areas	H	M	D
		1.5.4	Liaise with Structures/Assets teams to update the Asset Register and agree a revised cyclic and reactive maintenance regime where necessary	M	M	D
		1.5.5	Publish a Flood Response Policy and link in with other service delivery agents' plans	H	S	E
		1.5.6	Develop relationships with Category 1 responders	M	L	D
		1.5.7	Work with the Emergency Planning team to ensure emergency plans and responses to flood incidents are effective, promoting the use of Geographic Information Systems and other flood data to prioritise a response	H	S	D
6	Develop a robust methodology and undertake an analysis for understanding the impacts of climate change on the future flood risk to Derbyshire	1.6.1	Undertake analysis of climate change information to identify and evaluate options to mitigate against increased flood risk from climate change	M	L	E
		1.6.2	Work with the internal corporate policy team to help deliver the objectives/measures within the County Council's Climate Adaptation Plan and work with other Risk Management Authorities to align climate change strategies	M	L	E

Local Objective 2

To continue to work with all relevant bodies to ensure appropriate and sustainable development in Derbyshire

	Key actions	Ref No	Breakdown of action to achieve the overarching objective	Priority	Timescales	Status
1	Continue to liaise with and enhance relationships with all Local Planning Authorities to encourage flood risk reduction in land use planning and encourage a strategic approach to catchment management	2.1.1	Aim to inform or support local spatial planning policy to reflect local flood risk and encourage that all local flood risk data is incorporated within all future Strategic Flood Risk Assessments	M	L	E
		2.1.2	Fulfill statutory consultee role for surface water drainage on new developments, working closely with the Local Planning Authorities	H	L	D
		2.1.3	Work with the Environment Agency as a statutory consultee to the planning process promoting flood risk reduction	H	S	C
		2.1.4	Work closely with cross-border authorities to ensure a strategic approach to planning and catchment management through group discussions, sharing information and working on joint initiatives	H	L	D
		2.1.5	Work with internal planning teams to help support and inform County related planning activities within Derbyshire	H	S	D
2	Promote appropriate and sustainable development in Derbyshire	2.2.1	Produce local guidance for Local Planning Authorities and developers on appropriate drainage design for new developments	H	M	D
		2.2.2	Encourage appropriate maintenance provision for SuDS that ensure efficient functionality for the lifespan of the development	H	L	E

		2.2.3	Encourage developers and all undertakers of capital works to design developments that can safely accommodate rainfall that exceeds their design standard (design for exceedance)	H	L	C
		2.2.4	Encourage and promote softer engineering techniques and retrofit SuDS to manage flood risk where opportunities exist	M	L	C
		2.2.5	Work with all Risk Management Authorities to identify sustainable schemes/options to be put forward for potential national flood risk management funding	M	L	C
3	Encourage sustainable works on or within close proximity to ordinary watercourses	2.3.1	Where possible, suggest alternative sustainable options to any proposed hard engineering options for works in or within close proximity to ordinary watercourses	M	L	D
		2.3.2	Set a policy for culverting and continue to encourage deculverting	M	S	A
		2.3.3	Set and implement an enforcement policy where any unconsented works within ordinary watercourses may increase or exacerbate flood risk	M	M	A
4	Continue to develop relationships with the local people, businesses, developers and all other relevant stakeholders surrounding local planning and development	2.4.1	Support and advise the public regarding the planning process where appropriate- in relation to proposed development land	M	L	C
		2.4.2	Encourage early engagement with developers to maximise the benefits of SuDS	H	L	C
		2.4.3	Continue to develop relationships and consult with all relevant stakeholders in relation to development activities	M	L	C

Local Objective 3

To aim to reduce the level of flood risk to the residents of Derbyshire

	Key actions	Ref No	Breakdown of action to achieve the overarching objective	Priority	Timescales	Status
1	Work collaboratively with all District/Borough land drainage officers, emergency planning teams, Local Planning Authorities, internal teams and other adjoining authorities to coordinate, optimise and secure resources, expertise and opportunities to reduce flood risk	3.1.1	Attend and Chair all appropriate groups and partnership arrangements	M	L	C
		3.1.2	Assist the Environment Agency with their work in Rapid Response Catchments	M	L	C
		3.1.3	Hold quarterly meetings with Risk Management Authorities to seek to identify any new potential flood risk management schemes	M	L	C
		3.1.4	See 1.5.7	H	S	D
		3.1.5	See 1.5.3	H	D	D
2	Continue to bid for finances from Defra for flood risk management projects in Derbyshire where the cost/benefit result is sufficient to make the project viable	3.2.1	Strive to achieve partnership funding with any relevant Risk Management Authorities and other sources to support schemes	H	L	C
		3.2.2	Continue to put forward any new viable schemes and project manage their delivery	H	L	C
		3.2.3	Attend any relevant meetings to ensure that projects move forward appropriately within the national Medium Term Plan	H	L	C
3	Promote personal resilience and empower localism within local	3.3.1	Promote and take stock of local flood risk knowledge through all avenues possible	H	L	C

	communities	3.3.2	Support Parish/Town Councils and or local community groups where appropriate in identifying and managing local sources of flooding	H	L	C
		3.3.3	Engage with communities/individuals/businesses that have an awareness of critical drainage assets in the area and promote localised priorities and enhanced maintenance where feasible/appropriate	H	L	D
		3.3.4	Enhance awareness amongst communities of local drainage infrastructure and the roles of the responsible persons for its management	H	L	D
		3.3.5	Develop a clear policy for undertaking public meetings using a prioritisation approach	H	S	D
		3.3.6	Implement flood warden schemes using a prioritisation approach, encouraging take up of the schemes and guiding communities through the scheme process	H	L	C
		3.3.7	Promote Property Level Protection	H	L	C
		3.3.8	Provide guidance for residents and businesses on how to become more resilient working closely with Parish/Town Councils and/or local flood action groups at a local level	M	L	C
		3.3.9	Continue to work with the Environment Agency and other Risk Management Authorities supporting their community work and engagement	M	L	C
		3.3.10	Encourage at risk communities to register with the Environment Agency flood warnings where appropriate	M	L	E
		3.3.11	Promote and support local flood action groups	H	S	D
4	Encourage conscientious land and asset management practice	3.4.1	Continue to work with and support riparian landowners, farmers and other landowners distributing guidance information such as 'Living on the Edge' and encouraging maintenance of privately owned land and assets emphasising their importance for flood risk management	M	L	C

		3.4.2	Promote and work with landowners, Parish/Town Councils and the National Farmers Union where possible to encourage changes to agricultural land management practices to support flood risk management that does not cause or exacerbate flood risk to their land and/or others and provides opportunities to incorporate ecological benefits	M	L	D
		3.4.3	Work in conjunction with Risk Management Authorities to identify projects with multiple benefits and work collaboratively	M	L	C
5	Continue to consent for works appropriately under Section 23 of the Land Drainage Act and exercise enforcement powers appropriately under the Land Drainage Act	3.5.1	Set good practice guidance for works within or near to ordinary watercourses in Derbyshire	H	S	A
		3.5.2	Encourage applicants to engage with the FRM team at the pre-application stage	H	L	C
		3.5.3	Set guidance for applications for Land Drainage Consent	H	S	A
		3.5.4	See 2.3.2	M	M	A
		3.5.5	See 3.4.1	M	L	C
		3.5.6	See 2.3.3	M	M	C
6	Develop and action a communication strategy and prioritise communication	3.6.1	Raise the awareness of our strategy and associated responsibilities and procedures through the use of the County Council's website, public meetings, social media, one-to-ones etc	H	L	C
		3.6.2	Create guidance material to include the different sources of flood risks, the different Risk Management Authorities, self-resilience techniques etc aimed at various different communities	M	L	A
		3.6.3	Enhance public awareness engaging with people and businesses that may have never been affected but where predictive model outputs show they might be at risk	M	L	E
		3.6.4	Prioritise future communication	M	L	C

7	Look to maximise any opportunities for funding through promoting multi-benefit schemes	3.7.1	Seek to identify and maximise any sources of funding by liaising with all internal teams and external partners	H	L	C

Local Objective 4

To continue to prioritise limited resources effectively to support communities most at risk in Derbyshire

	Key actions	Ref No	Breakdown of action to achieve the overarching objective	Priority	Timescales	Status
1	Quantify the current understanding and continue to develop our understanding of flood risk to Derbyshire	4.1.1	Refer to key action 1.3	H	S	D
2	Continue to invest resources in flood risk management schemes that are viable for National funding	4.2.1	Continue to look at possible schemes across the County and invest using a prioritised approach	H	L	C
		4.2.2	Seek to obtain sources of funding to make schemes more viable for attracting national funding	H	L	C
		4.2.3	Refer to key action 3.7	H	L	C
3	Promote personal resilience and empower localism within local communities	4.3.1	Refer to key action 3.3	H	L	D
4	Undertake flood enquiry visits based on priority or in local clusters to manage demand more effectively	4.4.1	See 1.3.7 and 1.3.8 and undertake desk-based investigations where possible	H	L	D
5	Prioritise statutory consultee response to planning applications	4.5.1	Prioritise statutory consultee response to planning applications using the consultation guidance matrix	H	L	C

6	Provide support and guidance during and after a flood event to those communities that need it most	4.6.1	See 1.5.6	H	S	D
		4.6.2	See 1.5.7	H	S	D
		4.6.3	Allocate flood resilience products as per Council policy	M	L	C
		4.6.4	Work with the Emergency Planning team to ensure resources are prioritised appropriately during emergency events as per Council policy	H	L	E
		4.6.5	Take a lead coordinative role during and within the aftermath of an emergency flood event. Develop a well-established communication link with emergency responders during and following flood events	H	L	E
7	Support the Highways team for implementing the gully cleansing project	4.7.1	See 1.5.1 and 1.5.2	M	M	D

Local Objective 5

To continue to help and support the local communities of Derbyshire to manage their own risk

	Key actions	Ref No	Breakdown of action to achieve the overarching objective	Priority	Timescales	Status
1	Develop and action a communication strategy and prioritise communication	5.1.1	Refer to key action 3.6	M	L	C
2	Promote personal resilience and empower localism within local communities	5.2.1	Refer to key action 3.3	H	L	D
3	Encourage conscientious land and asset management practice	5.3.1	Refer to key action 3.4	H	L	C
4	Work with internal Emergency Planning team and emergency responders to ensure effective response during an emergency event	5.4.1	See 1.5.6	M	L	D
		5.4.2	See 1.5.7	H	S	D
5	Continue to work collaboratively with other Risk Management Authorities on schemes where the County Council are not the lead Authority	5.5.1	Continue to develop relationships with other Risk Management Authorities and relevant groups including cross border authorities to identify schemes that deliver benefits for Derbyshire residents where the main source of flooding may not be the responsibility for the County Council to coordinate	M	L	C

Local Objective 6

To continue to help protect and enhance the natural and historic environment of Derbyshire

	Key actions	Ref No	Breakdown of action to achieve the overarching objective	Priority	Timescales	Status
1	Promote sustainable and multi-benefit flood risk management activities	6.1.1	Produce a Strategic Environmental Assessment alongside the Local Flood Risk Management Strategy to help to steer any flood risk management decisions towards those that minimise adverse environmental effects and realise environmental benefits	M	S	A
		6.1.2	Refer to key action 3.7	H	L	C
		6.1.3	Promote early engagement so opportunities for multi-benefits can be maximised, working closely with catchment partnership arrangements and other relevant groups	M	L	D
		6.1.4	See 2.2.4	M	L	C
		6.1.5	Continue to work with the County Council's internal teams to ensure that any works undertaken or consented take due regard for protected habitats, species and the historic environment	M	L	C
		6.1.6	Continue to work with partner organisations to promote land management initiatives	M	L	D
		6.1.7	See 2.3.2	M	S	C

2	Support the Environment Agency in implementing the objectives of the Water Framework Directive (WFD)	6.2.2	Liaise with internal teams at the County Council, explaining the County Council's duty to support the Environment Agency with achieving WFD objectives and working collaboratively to establish good working practice	M	L	E
		6.2.3	Advise and provide guidance to the public regarding pollution causes and the importance of the WFD	L	L	C
		6.2.4	Seize opportunities to improve the WFD status of the water environment in Derbyshire alongside any flood risk management activities, working with and supporting community based delivery groups	L	L	C
3	Continue to support local environmental groups where there are potential benefits for local flood risk management	6.3.1	Support Biodiversity Action Plan targets and relevant groups/organisations through local flood risk management functions where possible	L	L	E