
Telford and Wrekin Local Flood Risk Management Strategy (LFRMS): Strategic Environmental Assessment (SEA) Report

Prepared for
Telford and Wrekin Council

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Acronyms and Abbreviations

AONB	Area of Outstanding Natural Beauty
CPRE	Campaign to Protect Rural England
Defra	Department for Environment, Food and Rural Affairs
GI	Green Infrastructure
HER	Historic Environment Register
HLS	Higher Level Stewardship
HRA	Habitat Regulations Assessment
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
SEA	Strategic Environmental Assessment
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TWC	Telford and Wrekin Council
WFD	Water Framework Directive

1 Introduction

1.1 Background

CH2M HILL was commissioned by Telford and Wrekin Council (TWC) to undertake a Strategic Environmental Assessment (SEA) of their emerging Local Flood Risk Management Strategy (LFRMS) in November 2013.

As a Lead Local Flood Authority (LLFA), TWC is required under Section 9 of the *Flood and Water Management Act 2010* to develop, maintain, apply and monitor a LFRMS. An SEA is required for the LFRMS to fulfil the requirements of the SEA Directive, which is transposed into English legislation by the *Environmental Assessment of Plans and Programmes Regulations 2004* (the 'SEA Regulations').

The scope of this SEA was consulted upon through correspondence with the statutory consultees for SEA; the Environment Agency, Natural England and English Heritage. A formal SEA Scoping Report was not produced. This Environmental Report therefore includes the baseline information that would normally be included in a SEA Scoping Report. It also contains details of the assessment methodology used, a plans, programmes and policies review and a high level assessment of the LFRMS.

The assessment of the LFRMS is described in terms of its likely significant effects on the environment. The purpose of an Environmental Report is also to: describe mitigation measures for any adverse effects predicted; describe environmental enhancement measures; and include a monitoring framework.

1.2 Study Area

The LFRMS and SEA cover the whole of the Borough of Telford and Wrekin. The principal settlement in the borough is Telford. The next largest town is Newport, a market town to the north of Telford. The borough borders Staffordshire, but is mostly surrounded by the county of Shropshire. In order to assess existing flood risk, the LFRMS splits the borough into four catchment areas; Rural West, Rural East, North Telford and South Telford. The LFRMS contains a description of each of these catchment areas.

1.3 Strategic Environmental Assessment

1.3.1 Introduction

SEA is the systematic appraisal of the potential environmental impacts of policies, plans, strategies and programmes, before they are approved. It ensures that any implications for the environment are fully and transparently considered before final decisions are taken and is required by *EC Directive (2001/42/EC) on the assessment of the effects of certain plans and programmes on the environment*, known as the SEA Directive, which came into force in 2004.

The Directive is implemented in England through the *Environmental Assessment of Plans and Programmes Regulations (SI 1633 2004)*, also known as the SEA Regulations. This legislation makes SEA a legal requirement for certain plans and programmes which are likely to have significant effects on the environment.

LFRMS are statutory plans that could potentially have significant effects on the environment and are therefore subject to the requirements of SEA. The principal steps in the SEA process in relation to the assessment of the LFRMS are shown in Table 1.1:

Table 1.1 SEA Stages

SEA Stage	What is involved
Stage A: Scoping	Setting the context and objectives, establishing the baseline and deciding on the scope
Stage B: Interim Assessment of LFRMS Option Development	Developing and refining LFRMS alternative options and assessing environmental effects in SEA matrices
Stage C: Preparing the Environmental Report	Presenting the predicted environmental effects of the LFRMS, including alternatives, in a form suitable for public consultation and use by decision-makers.
Stage D: Consulting	Consultation on the draft LFRMS and the Environmental Report (and taking into account consultation feedback received)

1.3.2 Applying SEA to an LFRMS

LLFAs need to take a proportionate approach to applying SEA to local strategies, particularly when environmental effects are not evident in the early stages of strategy development. As the strategy develops more detail, the scope of the SEA needs to be reviewed.ⁱ

This Environmental Report summarises the environmental baseline for Telford and Wrekin in Appendices A and B, focusing on potentially significant issues that are relevant to flood risk and surface water management. It also presents a series of SEA objectives which have been used to assess the LFRMS, and a high level assessment of the draft LFRMS policies.

The environmental effects of alternative strategic flood risk management approaches and objectives have been assessed using the SEA objectives. The results have been used to help select preferred options which are economically viable, meet environmental objectives and comply with legal requirements to protect designated sites of nature conservation, cultural heritage or landscape interest. The approach used is based on our knowledge of the area, professional judgement and supported by published literature. Further description of the methodology is provided in Chapter 5.

The SEA Regulations state that the scope and level of detail of the information to be included within an SEA should be consulted upon with the statutory consultees for SEA. The statutory consultees and key stakeholders have provided comments on the scoping of this SEA (see Section 2.4) and these comments have been taken into account in this Environmental Report. Further detail on the consultation process is provided in Chapter 2.

1.4 SEA Directive Compliance

This report incorporates the requirements for an Environmental Report as set out in the SEA Directive (Annex I). Table 1.2 summarises the requirements of the SEA Directive, identifies how the requirements have been met and where these are located in the Environmental Report.

Table 1.2 Compliance with the SEA Directive

Requirement of SEA Directive (abridged)	Where addressed in this report
a) An outline of the contents, main objectives of the plan.....and its relationship with other relevant plans and programmes.	Chapter 3 and Appendix C
b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan.	Appendix A
c) The environmental characteristics of areas likely to be significantly affected.	Appendices A, B
d) The environmental problems which are relevant to the plan including, in particular those relating to any areas of a particular environmental importance.	Appendix A

Requirement of SEA Directive (abridged)	Where addressed in this report
e) The environmental protection objectives which are relevant to the plan.....and the way those objectives and any environmental considerations have been taken into account during its preparation.	Chapter 5 and Section 3.3
f) The likely significant effects on the environment...	Chapter 6 and Appendix E
g) The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment...	Section 6.3 and Chapter 7
h) An outline of the reasons for selecting the alternatives dealt with.....and a description of how the assessment was undertaken.....including any difficulties encountered...in compiling the required information	Chapter 3
A description of the measures envisaged concerning monitoring	Chapter 8
j) A non-technical summary of the information provided under the above headings	Separate document
Consultation with: • authorities with environmental responsibility, when deciding on the scope and level of detail of the information to be included in the environmental report...and on the draft plan...and accompanying environmental report...	Chapters 2 and 4 and Appendix D
Taking the environmental report and the results of the consultations into account in decision making	Chapters 6 and 7

1.5 Habitats Regulations Assessment

The Conservation of Habitats and Species Regulations 2010 (known as the Habitats Regulations) consolidate all the various amendments made to the *Conservation (Natural Habitats, &c.) Regulations 1994* in respect of England and Wales. The 1994 Regulations transposed *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora* (the Habitats Directive) into national law. The Habitats Regulations also implement the provisions of *Directive 2009/147/EC on the conservation of wild birds* (the Birds Directive).

The Habitats Regulations set out the requirement to assess potential effects on these European designated nature conservation sites. It is government policy also to apply the same considerations to internationally important wetland sites that have been identified under *The Convention on Wetlands of International Importance especially as Waterfowl Habitat* (Ramsar Convention).

There are no internationally designated nature conservation sites within the Borough of Telford and Wrekin. The nearest is Midland Meres & Mosses Phase 2 Ramsar site, which lies within Staffordshire to the north east of Newport. This is largely unconnected to the catchments within the borough, although some part may drain towards the Strine Lower catchment in the Rural East Catchments Area. As the LFRMS has no policies extending into Staffordshire and no policies that could affect this upstream designated site is, the Habitats Regulations are not considered further in this SEA.

A screening assessment under the Habitats Regulations is unlikely to be required.

1.6 Water Framework Directive Assessment

The Water Framework Directive (WFD)ⁱⁱ is a European Directive which provides a strategic planning process to manage, protect and improve the water environment. It came into force on 22 December 2000 and was transposed into UK law in 2003. The Directive helps to protect and enhance the quality of:

- Surface freshwater (including lakes, streams and rivers);
- Groundwater;
- Groundwater dependant ecosystems;

-
- Estuaries; and
 - Coastal waters out to one mile from low-water.

The WFD is aimed at protecting the physical, chemical and biological quality of all water bodies. Its purpose is to establish a framework for the protection of water bodies (including terrestrial ecosystems and wetlands directly dependent on them) which aims to:

- Prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Achieve at least good ecological and chemical status for all waters. Where this is not possible, good status should be achieved by set deadlines ranging from 2015 to 2027;
- Promote sustainable use of water as a natural resource;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Contribute to mitigating the effects of floods and droughtsⁱⁱⁱ.

The LFRMS has been assessed for WFD compliance to ensure that LFRMS strategic options to manage flood risk are not at odds with the WFD's objectives and, ideally, contribute to achieving these objectives. The Environment Agency has advised that '*WFD assessment can be incorporated into the SEA*'^{iv}. In response to this, the SEA objective covering water quality incorporates underlying criteria to assess potential impacts on the physical, chemical or biological status of water bodies. SEA objective 6 is also aimed at assessing the LFRMS in terms of minimising any adverse effects that it may have on water hydromorphology and natural processes. The complete list of SEA objectives is provided in Chapter 5 of this report.

In general, the spirit of the WFD is to work with natural processes or to use soft engineering solutions to flood management, rather than hard engineering.^v The LFRMS should therefore reflect this in its recommended policies and action plans.

1.7 Limitations

It should be noted that there is a plethora of environmental information available. However, the information presented in this review has been selected on the basis that it may be influenced or affected by the LFRMS. Effort has been made to avoid including baseline information or plans and programmes which are of no clear relevance to the LFRMS, for example on SEA topics that have been scoped out. The information presented in this report is the result of a desk-based review and no formal requests for records have been made.

It is likely to be necessary to collect further data against which to assess the potential environmental effects (and scope any monitoring requirements) of the delivery of site-specific LFRMS options, as these are developed following adoption of the LFRMS. For example, at LFRMS option implementation stage a formal data request will need to be made to Telford and Wrekin's Historic Environment Record team to ensure all cultural heritage assets in an appropriate study area are identified and taken account of in the assessment. Similarly, a detailed biological records search will also be required.

2 Consultation

2.1 Introduction

Effective stakeholder engagement is central to the development of the LFRMS and the SEA, in order to arrive at a strategy that is acceptable to as many parties as possible and to engage those parties in the process. The objectives of consultation, in relation to the LFRMS, are to:

- Meet regulatory requirements for consultation under the EU SEA and Floods Directives; and
- Contribute to the success of the strategy and improve decision-making by;
 - Raising awareness of flood risk issues within Telford and Wrekin;
 - Informing stakeholders of the strategy development process and how decisions have been made;
 - Informing the development of the LFRMS by involving and working closely with stakeholders to understand their views, concerns and values;
 - Gathering information from stakeholders to inform the development of the strategy; and
 - Minimising project risks and adverse public relations.

2.2 SEA Consultation Requirements

The methodology for the SEA was consulted upon during the SEA for similar LFRMS projects. The responses from the Environment Agency^{vi} and Natural England^{vii} in December 2011 gave broad suggestions regarding the scope and methodology for LFRMS SEAs generally.

For all such SEAs, the Environment Agency advised that it is...

'up to the lead local flood authority to decide on the scope as this will depend on the local issues in the area and the scope of the local strategy. SEA should be integrated into the development of the local strategy'.

The Environment Agency also recommended reference should be made to the ODPM guidance on SEA^{viii} and advice within Local Government Association guidance on developing strategies for LFRM^{ix}.

Natural England recommended following the advice provided in joint guidance produced by the Environment Agency, the former Countryside Agency, English Nature (sic) and English Heritage, 'Environmental Quality in Spatial Planning'^x, in particular, Supplementary File 14 within it, which details how to protect or enhance receptors that fall under all of the SEA topics.

2.3 Partnership Working

All LLFAs must establish appropriate partnerships to help with the collection and sharing of data, and the effective management of flooding within the Borough. The objective of the partnership is to provide a forum of relevant senior Telford and Wrekin Council officers and Cabinet Members along with representation from the Environment Agency, utility companies and the emergency services to develop a strategic approach to drainage and flood management and receive reports from specific working groups and where applicable to inform other related working groups such as the Local Resilience Forum.^{xi}

2.4 Scoping Consultation

The statutory SEA consultees were introduced to the LFRMS and consulted on draft SEA objectives for the Telford and Wrekin LFRMS SEA in December 2013^{xii}. Natural England responded to this consultation to say they were content that *'in general this approach enables assessment of the national and internationally protected flora, fauna and landscape that is within the Natural England remit.'*^{xiii} English Heritage also submitted comments on our proposed approach to the SEA^{xiv}, in relation to how the LFRMS could influence or be influenced by cultural heritage and the principal aspects of baseline information and plans and programmes to consider. English Heritage also provided advice on suitable SEA objectives, sub-objectives and monitoring indicators. As a result, the SEA objectives in Table 5.1 and the monitoring indicators provided in Table 8.1 were updated accordingly. The Natural England and English Heritage letters are provided in Appendix D.

3 Telford and Wrekin LFRMS

3.1 Overview and Purpose of Strategy

One of Telford and Wrekin’s overarching responsibilities as a LLFA is to develop, maintain, apply and monitor a strategy for local flood risk management in the borough (a ‘local flood risk management strategy’)^{xv}. The LFRMS sets out TWC’s high level vision for local flood risk management, and provides the framework for identifying and prioritising the specific measures which should be undertaken. The LFRMS also identifies how TWC will work together with equivalent Risk Management Authorities^{xvi}, other stakeholders, and local communities to manage local flood risk. Furthermore, the LFRMS provides the evidence base to target future capital and operational investment to manage flood risk in the borough. The LFRMS focuses on managing flood risk to people and property due to surface runoff, ordinary watercourses and groundwater, in accordance with the TWC’s statutory duties and responsibilities.

3.2 LFRMS Policies

Table 3.1 lists the policies of the LFRMS, grouped according to the principal themes (and Chapter headings) of the LFRMS. The compatibility of these policies with the SEA Objectives has been assessed and is provided in Appendix E.

Table 3.1 LFRMS Policies

LFRMS Theme	Policy
Properties at Risk from Fluvial Flooding	01 – Where appropriate TWC will contact properties shown to be in Flood Zone 3 to raise awareness of flooding and increase preparedness.
	02 – TWC will where possible improve the flood mapping for all ordinary watercourses to better identify properties at risk of fluvial flooding.
Properties at Risk from Pluvial Flooding	03 – TWC will investigate any areas where more than 20 properties have been identified at risk of flooding within a 250m ² grid square, or where more than 10 properties have been identified at risk of flooding within adjacent 250m ² grid squares.
Properties at Risk from Reservoir Inundation	04 – TWC will continue to work with the owners of reservoirs to ensure that they are managed in line with the updated Reservoirs Act. TWC will produce Emergency On and Off Site Plans for all large raised reservoirs within the Borough.
Properties at Risk from Groundwater Flooding	05 – TWC will aim to gain a better understanding of flooding from ground water in the Borough.
Future climate change	06 – TWC will ensure that climate change is taken into account in future flood alleviation projects and when checking the suitability of future development proposals within the Borough.
Level of significant flooding in the Borough of Telford and Wrekin	07 – Any flood event within the Borough affecting 3 or more properties, 2 or more business premises, or lengthy flooding of critical or transportation infrastructure will be deemed “Locally Significant” by TWC. In addition, any single property internally flooded on more than one occasion during a year will also be deemed “Locally Significant”.
Duty to investigate Locally Significant Flood Events	08 – TWC will work with appropriate stakeholders and land owners to investigate any Locally Significant Flood events.

LFRMS Theme	Policy
Flood Risk Asset Registers and Records	09 – TWC will maintain a register of structures and features, both man-made and natural, which act to reduce flooding, whether this is their primary purpose or not
Flood Risk from New Development	10 – TWC will adopt SuDS features that adhere to the requirements of current national guidance documents.
	11 – TWC will publish developer guidance in relation to the design and adoption of SuDS in the Borough of Telford and Wrekin.
	12 – TWC will require an additional 3% modelling allowance on all residential developments to account for the increased areas of hard standing associated with urban creep.
Improving Flood Risk Management	13 – TWC will work with partner organisations to continue and improve the publication of emergency information via its social media accounts during a flood event. TWC will also promote the following of social media for properties known to be at risk from all sources of flooding.
	14 – TWC will promote the use of Flood Warning Services where applicable. TWC will also aim to establish flood warning services for ordinary watercourses where deemed necessary and if financially viable.
	15 – TWC will promote the use of Flood Resilience measures where it is unlikely that large scale flood defence schemes are planned or possible.
	16 – TWC will keep a register of its existing drainage assets and produce Drainage Infrastructure Operation Plans for complex assets.
	17 – TWC will aim to cleanse highway gullies on a yearly basis, and cleanse priority gullies on a quarterly basis. Priority will be given to flooding emergencies, and any reported blocked gullies will be cleared within 2 weeks where possible.
	18 – TWC will take the lead in consenting appropriate works on Ordinary Watercourses within the Borough unless the works lie within the boundary of the Strine IDB.
	19 – TWC will contact riparian owners in high risk areas to remind them of their responsibilities and if necessary take enforcement action to ensure that flows are maintained.
	20 – TWC will assist in disputes between landowners where possible and take enforcement action if an amicable resolution cannot be achieved.
	21 – TWC will aim to raise awareness of the risks posed by flooding and methods of reporting with both residents and local business.
Enhancement of the Natural Environment	22 – Assess development proposals to culvert and actively promote daylighting and de-culverting of watercourses on future developments.
	23 – TWC will work with land owners to promote Catchment Sensitive Farming.

3.3 Integration of Environmental Considerations

The *Flood and Water Management Act* aims to improve the sustainability of flood risk management – for example by setting new requirements and the basis for national standards for SuDS.

The Act includes a duty for local authorities, highways authorities and internal drainage boards to contribute to sustainable development in discharging their flood and coastal erosion risk management (FCERM) functions.

The Act also provides environmental powers for works that:

- a) Have a net beneficial impact;
- b) Are consistent with the national FCERM Strategy; and
- c) Are deemed by the relevant authority to be desirable for the natural environment, the historic environment, landscape, or have amenity or leisure benefits.^{xvii}

The LFRMS should in principle, therefore, have a positive impact on the environment. It can also influence and complement existing spatial planning policy and direct where development can and cannot occur and potentially the design of developments.

The SEA has been fully integrated into the development of the LFRMS to ensure that environmental considerations were taken into account and to show how the SEA has influenced the LFRMS process at the Environmental Report and LFRMS submission stage. The integration of the SEA and LFRMS has been achieved through regular liaison with TWC and the provision of interim SEA assessment matrices. Figure 3.1 illustrates the basic iterative process of LFRMS and SEA development

Figure 3.1 General Procedure for Integrating SEA with Plans



The LFRMS includes a Chapter entitled '*Enhancement of the Natural Environment*'. This focuses on the culverting of watercourses and the general environmental issues associated with culverting. It also describes some of the environmental benefits of de-culverting. The Chapter also describes the importance of sustainable land management to ameliorate the effects of flooding from farmland. There are two policies in the Chapter, one relating to culverting and the other relating to Catchment Sensitive Farming.

Where possible, the Environmental Report identifies opportunities for environmental enhancement as well as mitigating any potentially adverse effects of the LFRMS. These opportunities are described in Section 7.

When TWC becomes a SuDS approval body, the Council will also produce local SuDS guidance as a Supplementary Planning Document and help secure resources to ensure SuDS are delivered. As a consequence, this could help to ensure environmental and amenity enhancements associated with the SuDS are also delivered.

4 Baseline Information

4.1 Introduction to Environmental Topics in SEA

The SEA Regulations identify environmental receptors that must be initially considered for all SEAs. These include:

- Population and human health;
- Biodiversity, flora and fauna;
- Soil;
- Water;
- Air;
- Climatic factors;
- Material assets;
- Cultural, architectural and archaeological heritage;
- Landscape; and the
- Relevant inter-relationship between the above factors.

Each of these environmental receptors and topics has been considered in respect of the LFRMS and reviewed in consultation as set out in Section 2 of this report. Table 4.1 lists which ones were subsequently scoped into or out of the Environmental Report, and also provides the rationale for these decisions.

The Environmental Report does not address any impacts likely to occur during the implementation of any built solution, for example construction impacts that might arise during the building or raising of flood defences. These issues are more appropriately considered during project level EIA and HRA undertaken for specific schemes.

Baseline information is provided in Appendix A and maps of landscape designations, nature conservation designations, cultural heritage features, green infrastructure and landfill sites are provided in Appendix B.

Table 4.1 Scoping of Environmental Issues

Receptor/Topic		Scope and Justification	
		Scoped out	Scoped In
Population and Human Health	Population & properties at risk from flooding		Actions arising from the LFRMS will directly and indirectly affect the population and properties within flood risk areas.
	Quality of life/social deprivation		Almost a quarter of the borough's total population currently lives within the 20% most deprived areas of the country. Quality of life is affected by flooding; more socially deprived communities are likely to be more significantly affected by the impact of flooding
	Employment		Level of flood risk could have a significant effect on existing industry and employment.
	Noise	The LFRMS will not have a significant effect on noise. The effects of any local flood risk management activities on noise would be considered at project EIA stage.	
	Tourism and recreation of national and regional importance		There is a variety of recreational resources in the borough, including parks and gardens, footpaths and cycle-ways, leisure facilities and recreation grounds. Telford and Wrekin has a Public Rights of Way network that contains over 900 individual routes, totalling over 360km. Telford Town Park Local Nature Reserve covers 160ha and attracts over 1 million visitors each year. Ironbridge Gorge is an important tourist attraction and is the only World Heritage Site in the West Midlands. Actions arising from the LFRMS could affect tourist, recreational and amenity resources and could present opportunities to deliver recreational benefits.
Material Assets	Infrastructure		The M54 runs directly through Telford linking with the M6 in the east. Telford Central Railway Station facilitates frequent trains to and from Birmingham, with connections beyond. Telford has a significant and growing distribution sector and is recognised as a developing regional logistics centre within the West Midlands. Other critical infrastructure within the borough includes sewerage, pumping stations, electricity and communications, health, emergency services, educational facilities, leisure facilities and residential properties. Actions arising from the LFRMS have the potential to affect transport routes and other critical infrastructure.
Biodiversity, Flora and Fauna	International nature conservation sites and known supporting sites	None present within the Borough or adjacent to and downstream of the Borough.	

Receptor/Topic		Scope and Justification	
		Scoped out	Scoped In
	National nature conservation sites		There are eight Sites of Special Scientific Interest (SSSI) and one National Nature Reserve in the Borough. Actions arising from the LFRMS could have direct or indirect effects on the features of nationally designated sites that are potentially affected (positively or negatively) by current or future flooding.
	Local nature conservation sites		There are currently five Local Nature Reserves covering approximately 190ha within the Borough. There are also 40 wildlife sites, including Dothill Park, Ladywood and Priorslee Lake. Locally designated sites of nature conservation importance may be affected (positively or negatively) by current or future flooding.
	Nationally and regionally important habitats and species (UK and local Biodiversity Action Plan, BAP)	The 'Wrekin' is part of a series of hundreds of wetlands associated with peatland and water filled glacial hollows supporting diverse wetland features including UK and local BAP habitats. Significant areas of grazing marsh are found on the Severn floodplain. Arable habitats support nationally important assemblages of arable birds. Detailed information on BAP species and habitats should be considered at the project EIA stage.	
	Key habitat areas		Two 'Priority Areas for Action' identified in Shropshire's BAP fall within the Borough of Telford and Wrekin. Flooding could potentially change the nature of habitats and therefore needs to be taken into account.
Soil, Geology and Geomorphology	Soils		Soils range from thin stony hill-top soils supporting rough moorland, to water logged areas supporting wet heath and bog, to a range of soils suitable for agriculture. The latter include: dry sandy soils to the east of the Severn; heavier soils associated with mixed arable and pasture use in the Mid Severn Sandstone Plateau to the west; fertile and productive clay soils on the Shropshire Staffordshire Plain; fertile and well-drained soils supporting arable land and pasture in the Shropshire Hills Natural Character Area. LFRMS measures could alter the extent or duration of flooding and thus influence soil quality.

Receptor/Topic		Scope and Justification	
		Scoped out	Scoped In
	Designated earth heritage sites		The Shropshire Geodiversity Action Plan identifies no geological SSSIs but several Regionally Important Geological Sites (also known as Local Geological Sites) distributed around the Borough, but with a significant clustering at The Wrekin to the west of Telford. LFRMS measures could have direct impacts on designated geological sites by changes in flooding or erosion risk.
	Geology	The LFRMS will not have a significant effect on geology. Any interactions between FCERM actions and geology would be considered at project EIA stage.	
	Contaminated land		There are a number of landfill sites within the borough (Appendix B). Changes in water management could result in improved protection for areas of contaminated land or landfill sites, or could negatively affect these sites by flooding or erosion which may lead to wider pollution.
Land Use and Land Management	Land use		Almost three quarters of land within the borough (approx. 21,000ha) is rural open countryside. The remaining 27% is urban, primarily located in the south east. Agriculture is one of the most important sectors in the West Midlands, not only in land use terms, but also through its contribution to society and the environment. Strategic LFRM measures could be affected by, and have direct or indirect effects on, land use.
Water	Water Framework Directive (WFD)		Any physical LFRMS interventions with direct and indirect effects on water bodies (surface and ground) will require assessment of compliance with WFD environmental objectives. SEA does not have the scope for a detailed WFD Assessment, but assesses the likelihood of LFRMS options meeting the WFD's requirements.
	Water quality		The borough includes reaches of the River Severn, Coal Brook, River Meese, Upper Strine, Lower Strine, River Roden and River Turn. There are 10 water bodies defined in the Severn River Basin Management Plan under the Water Framework Directive (see below); 4 have been classified as 'poor' ecological status and 6 as 'moderate' ecological status. LFRM measures could have direct and indirect effects on water quality.
	Flood Risk	Options and measures should mitigate flood risk.	
	Water resources		Water resources are likely to be under increasing pressure from a growing population and increased demand for wastewater treatment and drinking water over the duration of the strategy. Water resource availability, quality and links to local geology (e.g. groundwater levels) could be affected by LFRMS measures.

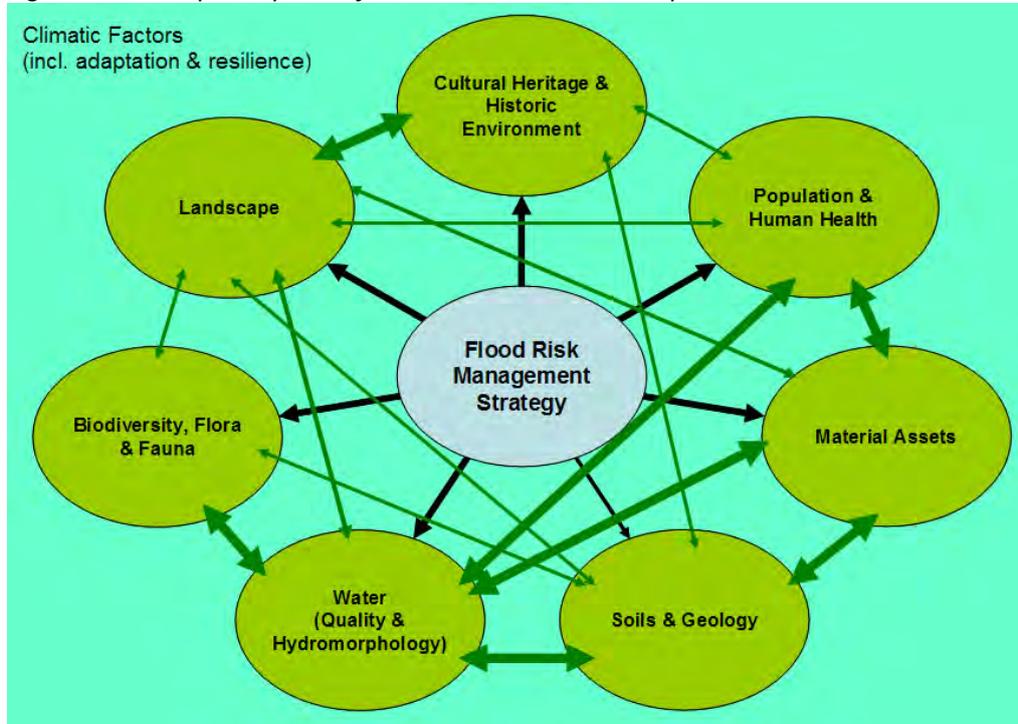
Receptor/Topic		Scope and Justification	
		Scoped out	Scoped In
Air and Climate	Air quality	LFRMS options will not be affected by, or have an effect on, air quality.	
	Climatic factors	LFRMS options will not significantly affect the impacts of climate change; they will only accommodate them. LFRMS options and measures should minimise contributions to future climate change.	
Historic Environment	Historic Landscape Character		Historic landscapes can include historic water management systems such as leats and flood embankments. Flood schemes have the potential to erase historic landscape signatures which can erode or change historic landscape character.
	World Heritage Site		Ironbridge Gorge, named after the bridge that stands over the River Severn, is the only World Heritage Site in the West Midlands. The designation recognises the area's unique contribution to the birth of the Industrial Revolution in the 18th century. By the close of the century it was the most technologically advanced area in the world. Any LFRMS measures which impacted the surviving built and natural environment including its museums, monuments and artefacts need to be considered.
	Scheduled Monuments		Almost 40 Scheduled Monuments have been identified within the borough, including Charlton Castle which is identified as in 'very bad condition', St Leonard's priory, the Canal aqueduct over the River Tern, and a moated site and fishpond at Charlton. LFRMS measures could potentially affect Scheduled Monuments and/or their settings, and should seek to reduce any existing flood risk to such assets.
	Registered Parks and Gardens		Grade II Registered Parks and Gardens are: Orleton Hall, Lilleshall Hall and Chetwynd Park. Lilleshall Hall is identified as in a highly vulnerable condition within the 2013 Heritage at Risk Register records. LFRMS measures may affect the physical attributes, character and setting of Registered Parks and Gardens.
	Listed Buildings		There are almost 800 Listed Buildings within the borough. LFRMS measures may affect them directly or indirectly affect views and setting.
	Conservation Areas		There are seven Conservation Areas designated for their historic buildings. LFRMS measures may affect the character and setting of Conservation Areas.

Receptor/Topic		Scope and Justification	
		Scoped out	Scoped In
	Other known and unknown features of archaeological and/or heritage interest	It is not practicable to assess effects of LFRMS measures on every known feature of heritage interest or on unknown archaeology; such effects would be considered at project EIA stage.	
Landscape and Visual Amenity	Designated landscapes		There are a number of designated landscapes within the borough including the Shropshire Hills Area of Outstanding Natural Beauty (AONB) and Conservation Areas. In addition to the AONB, over a third of the borough is designated as part of the council's 'Green Network' of important environmental, wildlife and recreational resources. Assessment of LFRMS impacts on landscape will help to guide and influence the choice of options.
Inter-relationship between above factors	e.g. Water quality and biodiversity; Land Use and landscape; Quality of life and recreation	Inter-relationships are included where relevant i.e. where LFRMS measures give rise to the potential for secondary or cumulative impacts.	

4.2 Inter-relationships of Environmental Issues

Figure 4.1 shows the key links between the relevant SEA topics as identified in Table 4.1; it should be noted that 'Air' and 'Climatic Factors' are scoped out of the SEA and excluded from the diagram.

Figure 4.1 Principal Impacts of the LFRMS on the SEA Topic Areas and Inter-relationships



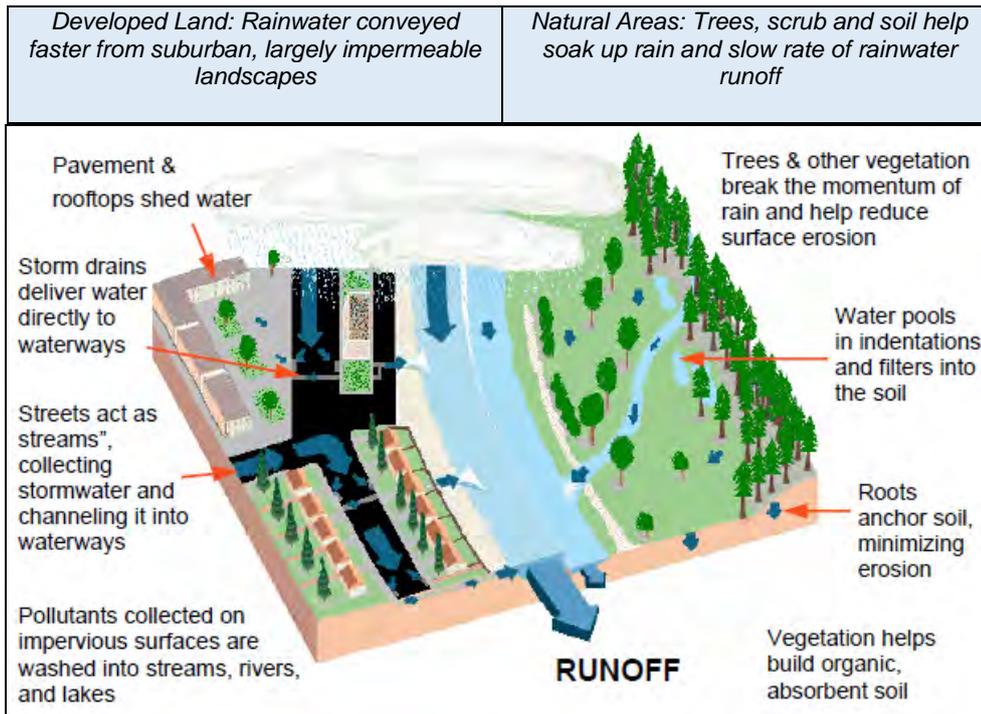
Key:

- Impact (+ve or -ve): →
- Connections with: ↔
- Strong impact or connection: →

Figure 4.1 is intended to simplify the depiction of potential impacts and not portray all conceivable indirect impacts. The thickness of the line shows the relative importance of the link and influence between the topic areas. For example, it has been assumed that the LFRMS could have greater influence on water quality and hydromorphology than on soils and geology due to the expected nature of LFRM actions. Effects on soils were considered to be more indirect, for example, changes in soil quality as a result of changes in water quality. Green arrows represent the links between SEA topic areas. For example, if the LFRMS were to reduce flood risk to material assets, such as housing or infrastructure, there would also be a beneficial impact on human health. This would result from there being a reduced physical risk to people from flooding and reduced potential for contaminated flood water (e.g. sewerage overflow) and exposure to waterborne disease. To take another example, cultural heritage is seen as closely linked to landscape as heritage features, such as medieval field systems and historic buildings, are often an integral part of the people's perception of visual landscape and aesthetics. Finally, any changes to water quality could have a significant effect on aquatic and water-margin habitats and species.

Figure 4.2 shows some of the interactions between water runoff and management and soil, biodiversity and water quality.

Figure 4.2 The Water Cycle in the Urban and Natural Environment^{xviii}



4.2 General Flood Risk in Telford and Wrekin

TWC hold data on existing and potential flood risk in the Borough. This includes detailed mapping of Flood Zones associated with main rivers and ordinary watercourses (fluvial flooding), areas susceptible to flooding during extreme rainfall events (pluvial flooding), areas potentially at risk of flooding due to reservoir failure, and areas susceptible to groundwater flooding. Areas and properties at risk are detailed in the LFRMS Chapters 5, 6, 7, and 8.

4.3 Policies, Plans and Programmes Review

A review of the policies, plans and programmes most relevant to the LFRMS is provided in Appendix C.

The review shows that there are no policies, plans or programmes that have a direct conflict of interest with the draft policies of the LFRMS presented in Table 3.1.

The review has also shown that the LFRMS is unlikely to have any tangible conflicts with other plans or programmes. Through partnership working with the Environment Agency, the LFRMS should harmonise with Environment Agency plans, such as Catchment Flood Management Plans.

In general the LFRMS has the potential to complement the objectives and actions of existing and proposed plans, for example the Shropshire Biodiversity Action Plan (BAP), 2009. The LFRMS will also need to harmonise with Telford and Wrekin's development site allocations and policies.

The LFRMS has significant potential to enhance biodiversity associated with future LFRMS measures, as well as complement plans to boost local economies, for example by enhancing the recreational amenity associated with schemes.

5 SEA Methodology and Objectives

The LFRMS measures have been evaluated in light of their potential significant environmental effects on the different SEA topics. The assessment of these environmental effects has been informed by professional judgement and experience with other LFRMS SEAs.

For each measures the assessment evaluates how the environment would be affected by the implementation of the plan in relation to the objectives and indicators that comprise the environmental baseline. All LFRMS measures are assessed based on their type and their likely impact duration and magnitude. Results of the assessment are then considered in light of the evolution of the environment in the absence of the plan.

Effects of the LFRMS are described in terms of whether they are expected to be major, minor or neutral and beneficial/positive or adverse/negative, as shown in Table 5.1. In addition, each effect is considered in terms of its:

- (a) Duration (timescale over which an effect is anticipated):
 - Short term effects in the next 1 to 5 years;
 - Medium term effects in the next 5 to 10 years;
 - Long term effects in the next 10+ years.
- (b) Permanence and reversibility:
 - A permanent effect is one which results from a physical change that is anticipated to last beyond the life of the LFRMS;
 - A temporary effect is one which results from an operational change which could change if there is a change of policy, or a short term condition such as a construction phase related impact;
 - A reversible effect is an environmental effect that can be reversed, for example an incident of water pollution can be cleaned up;
 - An irreversible effect is an environmental effect that cannot be reversed such as the loss of a historic feature or the loss of agricultural soil due to erosion.
- (c) Spatial Scale:
 - Local effect restricted to the immediate location of the proposal or to a specific site or settlement within Telford and Wrekin;
 - Regional effect is anticipated to cover a significant proportion of the counties surrounding Telford and Wrekin; and
 - National effect where a nationally (or internationally) important asset is impacted.

Table 5.1: SEA Magnitude of Effects

++ Major Positive	The option would be significantly beneficial to the SEA objective by resolving an existing environmental issue and/or maximising opportunities for environmental enhancement.
+ Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing environmental issue and/or offering opportunity for some environmental enhancement. This effect would not be considered to be of significance.
N Neutral	The option would have a neutral effect on the SEA objective.
? Uncertain	There is insufficient detail available on the option or the baseline situation in order to assess how significantly the SEA objective would be affected by the option.
x Minor	The option would partly undermine the SEA objective by contributing to an environmental problem and/or partially undermine opportunities for environmental

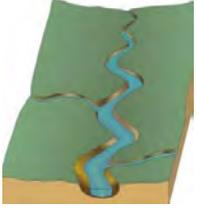
Negative	enhancement. This effect would not be considered to be of significance.
xx Major Negative	The option would severely undermine the SEA objective by contributing to an environmental problem and/or undermining opportunities for environmental enhancement. This would be considered to be a significant effect.

The significance of effects upon each of the SEA objectives is evaluated using the criteria outlined in Table 5.2. The determination of significance takes into account the criteria set out in the SEA Directive's Annex II.

Any cumulative, synergistic or secondary effects are noted. Similarly, if there are any positive or negative synergies between the LFRMS and other plans, programmes or projects these are noted.

Table 5.2 SEA Assessment Criteria

SEA Topic(s)	Draft LFRMS SEA Objective	Underlying Assessment Criteria Would the LFRMS, in combination with other plans...
<p>Biodiversity, Flora and Fauna</p> 	<p>1. To conserve and enhance the biodiversity, flora and fauna of Telford and Wrekin.</p>	<ul style="list-style-type: none"> • Reduce damage to, fragmentation or loss of existing designated wildlife sites (with local, national or international designations), wildlife corridors and priority habitats? • Support opportunities to create and enhance biodiversity? • Maintain or improve existing water levels and water quality? • Address biodiversity risk associated with low flow conditions? • Reduce the risk of spreading non-native invasive species?
<p>Historic Environment plus Landscape and Visual Amenity</p> 	<p>2. Conserve and enhance Telford and Wrekin's historic environment, heritage assets and their settings.</p>	<ul style="list-style-type: none"> • Reduce the number of heritage assets at risk of flooding? • Harm the significance of designated and non-designated heritage assets, including their setting? • Help secure the sustainable use of a heritage asset and or improve its maintenance? • Lead to changes in groundwater levels or chemistry that could alter the hydrological setting of water-dependent heritage assets, including palaeo-environmental deposits? • Involve hydro-morphological adaptations comprising the modification/removal of weirs or other in-channel structures and physical changes to rivers including de-canalisation or re-cutting old meanders? • Conserve and enhance the local character and distinctiveness of historic townscapes and landscapes? • Increase public awareness and understanding of appropriate responses for heritage assets affected by flooding and the design and implementation of other measures aimed at risk management or improving resilience? • Provide opportunities for improved access, understanding and enjoyment of the historic environment?
<p>Landscape and Visual Amenity</p> 	<p>3. Protect and enhance the unique setting and landscape character of Telford and Wrekin.</p>	<ul style="list-style-type: none"> • Cause permanent visual intrusion in areas of notable landscape character or alter the character of locations regarded as locally distinctive? • Relieve intrusion or disturbance from existing areas of high landscape value? • Enhance the range and quality of the public realm, including viewpoints and open spaces?
<p>Water plus Population and Human Health plus Biodiversity, Flora and Fauna</p>	<p>4. Minimise adverse effects of drainage on the aquatic environment.</p>	<p><u>Drainage</u></p> <ul style="list-style-type: none"> • Result in improved drainage and attenuation (e.g. installation of SuDS), so that surface run-off is controlled to reduce pollution of soils and watercourses as well as run-off rates? <p><u>Water quality</u></p> <ul style="list-style-type: none"> • Improve water retention in dry areas? • Reduce flood risk to the sewerage network, including sewage treatment works?

SEA Topic(s)	Draft LFRMS SEA Objective	Underlying Assessment Criteria Would the LFRMS, in combination with other plans...
		<ul style="list-style-type: none"> • Reduce flood risk for known areas of contaminated land? • Result in deterioration of the physical, chemical or biological status of surface freshwater (including lakes, streams and rivers), groundwaters, estuaries, or coastal waters out to one mile from low-water? • Improve the ecological conditions of water bodies, with respect to the Water Framework Directive? • Prevent or assist future improvement of the physical, chemical or biological status of surface freshwater, groundwaters, estuaries, or coastal waters out to one mile from low-water?
Water plus Population and Human Health plus Biodiversity, Flora and Fauna 	5. Minimise adverse effects on water resource availability	<ul style="list-style-type: none"> • Result in changes in flow regime (e.g. low flow, variability of flow/ levels) • Affect the quantity (total storage capacity) or quality of water used for abstraction? • Improve groundwater recharge?
Water 	6. Minimise adverse effects on water hydromorphology and natural processes	<ul style="list-style-type: none"> • Improve or reduce the morphological status of ordinary water courses – i.e. will it: <ol style="list-style-type: none"> a) Minimise changes to hydromorphology and/or improve current status? b) Cause changes to bank structure? c) Result in opening of existing culverts? d) Increase potential for bank-side erosion? d) Lead to loss of floodplain wetlands? e) Lead to loss of bank-side vegetation? f) Result in removal of sediment or gravels? g) Result in the installation of in-channel structures? • Help restore riparian corridors, including floodplain connectivity and natural processes?
Soil, Geology and Geomorphology 	7. Protect soils and geological resources in Telford and Wrekin.	<ul style="list-style-type: none"> • Require or encourage LFRMS scheme construction on previously undeveloped land? • Reduce risk of soil contamination, e.g. through remediation of contaminated land, or reducing flood risk for known areas of contaminated land? • Retain or affect sections of geological or geomorphological importance (SSSIs and Local Geological Sites)? • Retain or enhance groundwater levels to improve soils? • Retain or enhance flood attenuation rates and water retention capacity of soil where necessary to protect soil structure or soil biodiversity? • Protect soil function and structure, i.e. reduce risk of compaction and sealing and promote best practice land management during construction of any FRM measures? • Reduce soil erosion caused by flooding?
Material Assets	8. Minimise adverse impacts of local flood risk on key	<ul style="list-style-type: none"> • Improve protection of existing or proposed key transport routes (recreational and commercial) or infrastructure e.g. closures/ restrictions?

SEA Topic(s)	Draft LFRMS SEA Objective	Underlying Assessment Criteria Would the LFRMS, in combination with other plans...
	infrastructure, land assets and properties	<ul style="list-style-type: none"> • Ensure the protection of services, including water, power and telecommunications? • Reduce flood risk to properties? • Have a positive impact on the local economy? e.g. through improved flood protection or enhanced recreation opportunities and green infrastructure provision • Reduce flood risk to areas of high quality agricultural land? • Reduce flood risk to areas important for their mineral resources? • Reduce flood risk to the access routes used to access any of the above assets?
Population and Human Health 	9. Conserve and seek to enhance open spaces, recreational areas and rights of way	<ul style="list-style-type: none"> • Create new/additional recreational facilities, or improve potential to increase amenity/access to the countryside/ green infrastructure? • Protect and enhance existing open spaces, recreational areas, facilities and rights of way in the long term? • Affect any recreational fisheries associated with ordinary watercourses?
Population and Human Health 	10. Protect human health	<ul style="list-style-type: none"> • Reduce flood risk and the risk of direct physical impacts of flooding on people? • Restrict people's access to medical services, such as hospitals, doctor's surgeries and pharmacies? • Help provide safe development? • Reduce fear of flooding? • Create areas of standing water or new water channels that could become a potential health hazard due to safety or increased disease risk?

6 Assessment Results

6.1 Introduction

The actions arising from the LFRMS strategy have been evaluated in light of their potential significant environmental effects on the different SEA topics i.e. how the environment would be affected, positively or negatively, from the implementation of the plan in relation to the objectives, the underlying assessment criteria and the environmental baseline. The assessment of these environmental effects has been informed by professional judgement and experience with other LFRMS SEAs.

The appraisal methodology used during the assessment is presented in Section 5. The assessment matrices in Appendix E present the assessment of the compatibility of the LFRMS Policies with the SEA Objectives from Table 5.2.

6.2 Compatibility of LFRMS Policies with SEA Objectives

Appendix E assesses each of the draft LFRMS Policies against each of the SEA objectives. The assessment results show positive, neutral or uncertain outcomes for all LFRMS objectives, with no negative impacts identified.

6.3 Avoidance and Mitigation Measures

The assessment has identified that no significant negative impacts are likely at the strategic level. Therefore, there are no recommended mitigation measures at this stage. Mitigation will be considered at scheme level as part of any EIAs that are required to ensure that the identified environmental sensitivities in Telford and Wrekin are safeguarded when designing and delivering particular FRMS projects.

7 Environmental Opportunities with Multiple Benefits

7.1 Introduction

The Natural Environment White Paper *The Natural Choice: securing the value of nature*, published in 2011, recognises that a healthy, properly functioning natural environment is the foundation of sustained economic growth, prospering communities and personal well-being. The National Planning Policy Framework also recognises the importance of the natural environment to wellbeing and sustainable development. Through the development of LFRMS, LLFAs can help deliver LFRMS schemes that have environmental, social and economic benefits, thereby contributing to sustainable development.

Defra's *Making Space for Water*^{xxix} makes a case for flood risk management that delivers the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles^{xx}. The *National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England*^{xxi} also includes a section entitled 'Achieving wider environmental objectives and other benefits', which sets out key obligations for flood risk management authorities. These obligations relate to compliance with the WFD, Habitats and Birds Directives and other domestic commitments, notably including:

- Environmental objectives under the WFD, including conservation objectives for protected areas under Article 4.1;
- SSSI conservation objectives - as public bodies, every flood authority has a duty under Section 28G of the Wildlife and Countryside Act 1981 to take reasonable steps, consistent with the proper exercise of its functions, to further the conservation and enhancement of the features for which the SSSI was designated;
- Physical restoration of lakes and rivers to meet both SSSI objectives for designated sites and WFD objectives for other water bodies; and
- National and local biodiversity targets - Section 40(1) of the Natural Environment and Rural Communities Act 2006 places a duty on flood authorities to have regard, so far as is consistent with the proper exercise of their functions, to conserve biodiversity, including restoring or enhancing species populations or habitats. FCERM activities should involve no net loss of BAP habitat.

The LFRMS also presents opportunities to deliver social and environmental benefits. Improving green infrastructure, biodiversity, recreation areas or access to these areas is likely to complement schemes such as the 'Living Landscapes' project promoted by the Wildlife Trusts and Natural England's 'Access to Nature' grant scheme^{xxii}, which is aimed at encouraging people from all backgrounds to understand, access and enjoy the natural environment.

Delivering green infrastructure that helps link up habitats is also in line with the government's priority of delivering biodiversity and ecosystems management that reflects both local and larger scale priorities. This government objective is shown in Defra's National Adaptation Programme.^{xxiii}

7.2 Using Green Infrastructure to Alleviate Flood Risk

The green infrastructure (GI) network includes: parks; gardens; amenity and urban greenspace; river, canal and rail corridors; allotments, community gardens and city farms; churchyards and cemeteries; and various other areas.

In relation to flood risk management in Telford and Wrekin, GI networks can be used for various purposes:

- Providing dedicated flood water storage areas thereby providing water for nature conservation or other purposes;
- Providing opportunities to aid a more natural and slower response to heavy rainfall, for example by favouring open water courses through channel restoration and de-culverting;
- Helping manage surface water, by reducing flood risk from streams, rivers and sewers. Sustainable drainage systems (SuDS) can be used to recycle grey water and harvest rainwater, or, where appropriate, reduce flash flooding; and
- Make a direct contribution to improving home and community resilience to climate change, for example through green roofs that improve localised drainage.

Research by the University of Manchester^{xxiv} has shown that:

- Increasing the green space cover in urban areas by 10% reduces surface run-off by almost 5%;
- Increasing tree cover in urban areas by 10% reduces surface water run-off by almost 6%; and
- Adding green roofs to all the buildings in town centres can reduce surface water run-off by almost 20%.

There are three ways in which trees may contribute to flood control, as described in Natural England (2013)^{xxv}:

1. Conifers use a great deal of water and increase the capacity of the soil to absorb water;
2. Higher infiltration rates of woodland soils compared to others; a shelterbelt at right angles to the slope can reduce field scale flood peaks by 40%; and
3. Wooded floodplains have a high hydraulic roughness which can reduce water velocity and increase water level within the woodland. Modelling around the river Parrett in South West England found that floodplain woodland could increase water level by up to 270 mm and thus increase flood storage by 71%.

Due to the many social and environmental benefits of GI, the LFRMS should maximise opportunities to either create new GI or help extend, link or improve the condition of existing GI. Plans for GI, including any delivered by the LFRMS, should seek to mimic natural drainage processes wherever possible. This will also help to fulfil the requirements pertaining to natural processes and hydromorphology contained in the WFD. Factors such as land cover, habitat, soil type, topography and groundwater should all be considered in planning for GI. Locating new GI features on top of groundwater source protection zones could also help to avoid risks of groundwater contamination.

It should be noted that maintenance of GI has implications in terms of staff resources and costs. However, if planned carefully according to local environmental and management requirements, the application of GI can offer a responsive system that can adapt itself to the changing climate, potentially reducing future maintenance burdens.

7.3 Use of Sustainable Drainage Systems (SuDS)

Any LFRMS scheme design should aim to minimise surface water run-off volume and flow rate in addition to meeting other design requirements. LFRMS schemes should aim to maximise the use of SuDS to encourage surface water to remain on site and infiltrate the ground. The environmental and social benefits include:

-
- Providing storm water attenuation that prevents flooding downstream;
 - Protecting and potentially enhancing surface water quality by filtering pollutants;
 - Improving groundwater recharge;
 - Providing habitats for wildlife;
 - Providing landscape amenity and increased opportunities for walking, jogging, picnicking, cycling, bird watching, green gyms and educational activities for the community; and
 - Providing potential opportunities for community engagement, management and ownership of SuDS.

7.4 The Telford and Wrekin Context

The LFRMS includes a number of policies to better manage flood risk and that either specifically target the establishment of improved drainage and riparian green infrastructure or present opportunities to encourage these. Specifically:

- Policy 10 “TWC will adopt SuDS features that adhere to the requirements of current national guidance documents” and Policy 11 “TWC will publish developer guidance in relation to the design and adoption of SuDS in the Borough of Telford and Wrekin” should both lead to the use of SuDS and the attainment of environmental benefits as detailed in Section 7.3;
- Policy 18 “TWC will take the lead in consenting appropriate works on Ordinary Watercourses within the Borough unless the works lie within the boundary of the Strine IDB” presents the opportunity to promote flood risk management techniques that work with green infrastructure as outlined in Section 7.2;
- Policy 22 “Assess development proposals to culvert and actively promote daylighting and de-culverting of watercourses on future developments” should ensure that new development proposals do not have an adverse effect on the morphological condition of rivers in the Borough, and more significantly the promotion of de-culverting could have significant environmental benefits including direct contribution to the environmental objectives of the WFD.

Further, Policy 23 “TWC will work with land owners to promote Catchment Sensitive Farming” has the potential for a range of environmental benefits, not least related to water quality as a result of decreased run-off (and associated soil, nutrient and chemical inputs) from agricultural land.

8 Monitoring Plan

Under the SEA Directive there is a statutory requirement to monitor the environmental impacts of LFRMS implementation. Monitoring of the LFRMS will ensure that TWC continues to identify any environmental problems and issues that need resolving. These are largely based on monitoring that is already being undertaken by TWC and other organisations. It is suggested that the monitoring framework shown in Table 8.1 is reviewed on a 5-year basis to coincide the LFRMS. The review would provide a good opportunity to review and describe any changes to the environmental baseline from the implementation of the LFRMS, and, how TWC will work to mitigate any adverse effects that are identified. Monitoring the success of any enhancement schemes that are implemented as a result of the LFRMS should also be undertaken by TWC, in consultation with organisations and landowners responsible for areas where any LFRMS schemes are implemented.

Table 8.1 SEA Monitoring Plan for the LFRMS

SEA Objective	Indicator	Authority Responsible for Measuring	Notes
1. Conserve and enhance the biodiversity, flora and fauna of Telford and Wrekin	% area of SSSI land in favourable condition	Natural England	TWC would need to liaise with Natural England to determine the SSSIs relevant to the LFRMS and the condition trends relevant to these sites.
	Change in area of national, regional or local nature conservation designations	Natural England	This should relate to the designations described in Appendix A and mapped in Appendix B. Already monitored annually for Telford and Wrekin Core Strategy (under Policy CS11 Open Space). As above, sites relevant to the LFRMS will need confirmation.
	Number of LFRMS measures that require habitat compensation	TWC	A safeguard in the event of any possible future negative effects of the LFRMS on habitats.
	Biodiversity enhancement implemented as part of LFRMS measures	TWC	Future liaison with organisations responsible for the site management of any enhancement areas will help to determine the short, medium and long-term success of the enhancement schemes in terms of local biodiversity targets.
2. Conserve and enhance Telford and Wrekin's historic environment, heritage assets and their settings.	Number of heritage sites and Conservation Areas classified as 'heritage at risk' as a result of FRMS interventions	English Heritage	To include Ironbridge Gorge WHS, Listed Buildings, Scheduled Monuments, Registered Parks and Gardens, Registered Battlefields, Places of Worship. This list is taken from English Heritage SEA guidance. ^{xxvi}
	Number of heritage sites and Conservation Areas at risk from flooding	TWC	
	Number of designated and non-designated heritage assets (i) harmed and (ii) improved by flood risk management measures	TWC	Including impacts on their settings.
3. Protect and enhance the unique setting and landscape character of Telford and Wrekin.	Number of visual impact assessments undertaken as part of implementation of LFRMS measures	TWC	AONB Partnership, Natural England and CPRE may also have data on visual impact assessments.
	Number of LFRMS measures located within areas of high landscape	TWC	This should include areas with landscape designations, i.e. the Shropshire Hills AONB and Areas of Special Landscape Character.

SEA Objective	Indicator	Authority Responsible for Measuring	Notes
	sensitivity		
	Number of LFRMS measures that include landscape enhancements	TWC	To be recorded as the LFRMS is implemented.
4. Minimise adverse effects of the LFRMS on the aquatic environment	Physical, chemical or biological status of river water bodies affected by LFRMS measures	Environment Agency	TWC would need to obtain this information from the Environment Agency.
5. Minimise adverse effects on water resource availability	Changes in groundwater and surface water resource availability status in areas affected by LFRMS measures	Environment Agency	Causes of change in availability will need to be confirmed; other factors besides LFRMS measures may be responsible.
	Incidences of environmentally unacceptable flows in rivers affected by LFRMS measures	Environment Agency	Causes of change in availability will need to be confirmed; other factors besides LFRMS measures may be responsible.
6. Minimise adverse effects on water hydromorphology and natural processes	Number of LFRMS measures that reduce the morphological status of a river water body	Environment Agency	
	Number of LFRMS measures that help restore riparian corridors, including floodplain connectivity and natural processes?	Environment Agency	
7. Protect soils and geological resources in Telford and Wrekin	Loss of agricultural land as a result of LFRMS measures	TWC	Focus on Grade 1, 2 and 3a best and most versatile agricultural land.
	Area of Telford and Wrekin's land falling under target areas of Natural England's Higher Level Stewardship agreements	Defra	This needs to be related to LFRMS measures; for example, are LFRMS measures likely to have an influence on the water or soil quality of land that falls within HLS target areas?
8. Minimise adverse impacts of local flood risk on key infrastructure, land assets and properties	Estimated economic cost of flood damage	Defra/ Environment Agency	Could include estimates of number of working days lost by industry due to access route disruption.
	Number and severity of flood incidents leading to disruption or damage to transport infrastructure	TWC	

SEA Objective	Indicator	Authority Responsible for Measuring	Notes
	Number of commercial premises at risk of flooding	TWC	
	Number of new minerals and waste facilities in areas of flood risk	TWC	
	Area of urban development provided with flood protection	TWC	
9. Protect and enhance open spaces, recreational areas and rights of way	Change in area, number or quality of open spaces, recreational areas and amenity facilities as a result of LFRMS	TWC	
	Proportion of recreational and amenity facilities affected by flooding	TWC	
10. Protect human health.	Number of residential properties at risk from all flood sources	TWC / Environment Agency	
	Number of flood incidents reported	TWC / Environment Agency	

9 Conclusions

9.1 Findings of the SEA

The majority of measures within the LFRMS are likely to have a neutral or positive effect on the environment and the assessment matrices of Appendix E show the 'headline' effects in terms of their positive, uncertain or neutral nature.

Significant beneficial impacts of the draft strategy are:

- Improves flood risk management benefitting local residents, businesses, workers, recreational users/tourists, key transport routes and built heritage assets affected by flooding;
- Improves the understanding, preparedness and response of the local community to flooding and potential to reduce fear of flooding, and thus may improve human health;
- Drives the delivery of flood risk management interventions that work in harmony with natural processes (SuDS, de-culverting, catchment sensitive farming) and in so doing deliver not only social benefits through improved flood risk management but also improvements in the quality of the water environment that can benefit flora and fauna, amenity access to green infrastructure and landscape/townscape quality.

No adverse effects have been identified.

However, some of the policies have uncertain impacts, primarily the potential for adverse consequences in relation to proposals that are focussed on water body management and on climate change resilience in flood risk schemes. The specific risks and suggested mitigation are as follows:

- Policy 04 "TWC will continue to work with the owners of reservoirs to ensure that they are managed in line with the updated Reservoirs Act...". Increased attention on maintenance could have consequences for reservoirs' amenity benefits, fauna and flora or landscape quality. Whilst failure of any reservoir could be detrimental to each of these, there is also the potential for reservoir maintenance or modification to have an adverse effect;
 - **Mitigation: TWC should provide advice that ensures reservoir owners employ environmentally sensitive approaches when meeting their management responsibilities;**
- Policy 06 "TWC will ensure that climate change is taken into account in future flood alleviation projects...". Considering climate change sustainability could lead to larger flood defence infrastructure with a greater risk of impacting sensitive receptors.
 - **Mitigation: TWC should provide advice that ensures riparian owners employ environmentally sensitive approaches when meeting their maintenance responsibilities;**
- Policy 19 "TWC will contact riparian owners in high risk areas to remind them of their responsibilities and if necessary take enforcement action to ensure that flows are maintained...". An increased level of maintenance by riparian owners could be beneficial to water courses (e.g. removal or obstructing structures) but also could be adverse (e.g. habitat degradation resulting from dredging);
 - **Mitigation: TWC should promote sustainable flood risk management options that work with natural processes as a priorities over engineered flood defence approaches e.g. <http://webarchive.nationalarchives.gov.uk/20140328084622/http://cdn.environment-agency.gov.uk/geho0310bsfi-e-e.pdf>**

9.2 Next Steps

This Environmental Report will be available for public viewing on Telford and Wrekin's [consultation webpage](#) for a period of **12 weeks** from **[insert date]** to **[insert date]**, as well as in hard copy **at the following location[s]**:

.....TO BE CONFIRMED

As the LFRMS is developed further, and future LFRMS schemes are considered, the SEA objectives and the underlying assessment criteria that relate to each SEA objective should be referred to. This will help to ensure that all receptors that relate to the objectives, including social, economic and cultural heritage receptors as well as natural environmental ones, are protected and enhanced, where possible.

In order to ensure positive effects of the LFRMS on the environment, it will be necessary to ensure that project level environmental appraisal and assessment influences the type, location and design of any new LFRMS measures. Detailed Environmental Impact Assessments (EIA) will be required to larger schemes as required, and will include measures to mitigate any adverse effects.

References

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- ⁱⁱ Directive 2000/60/EC Establishing a Framework for Community Action in the Field of Water Policy. It was implemented in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations (SI 2003 No. 3212).
- ⁱⁱⁱ LGA, 2011.
- ^{iv} Email received from Raahil Javaheri, LFRM Capacity Building, Environment Agency, 28/3/2012.
- ^v Environment Agency, 2011. Understanding the risks, empowering communities, building resilience: the national flood and coastal erosion risk management strategy for England.
- ^{vi} Email received from Raahil Javaheri, LFRM Capacity Building, Environment Agency, 28/3/2012.
- ^{vii} Email received from Sally King, Natural England, 30/12/2011.
- ^{viii} A Practical Guide to the SEA Directive (2006), produced by the Office of the Deputy Prime Minister (ODPM), available on <http://www.communities.gov.uk/publications/planningandbuilding/practicalguidesea>.
- ^{ix} Available on http://www.local.gov.uk/c/document_library/get_file?uuid=a2538b94-d3c1-4cec-81b0-8aefd2996c5e&groupld=10171, accessed on 22/12/2011.
- ^x Available on http://environment-agency.gov.uk/static/documents/Research/envquaplanning_main_1351823.pdf, accessed on 22/12/2011.
- ^{xi} A full list of members of the West Mercia Local Resilience Forum is available on: <http://westmerciaprepared.org/index.php?page=111>
- ^{xii} Emails sent to the Environment Agency, Natural England and English Heritage on 12th December 2013.
- ^{xiii} Natural England, 2013. Letter received from Susan Zappala, 24 December 2013 (provided as part of Appendix D).
- ^{xiv} English Heritage, 2014. Letter received from Kezia Taylerson, 24 January 2014 (provided as part of Appendix D).
- ^{xv} Section 9 of the Flood and Water Management Act defines what the Local Flood Risk Management Strategy must include
- ^{xvi} Risk Management Authorities are defined in the Flood and Water Management Act as the LLFA, district/borough councils (where present) the Environment Agency, water and sewerage companies, the highways authority and Internal Drainage Boards.
- ^{xvii} Flood and Water Management Act 2010. What does the Flood and Water Management Act mean for local authorities? Available on: <http://archive.defra.gov.uk/environment/flooding/documents/policy/fwmb/fwma-local-authority-factsheet-110721.pdf>, accessed on 19/12/2011.
- ^{xviii} Source: Adapted from the diagram shown on this source: <http://www.coastal.ca.gov/nps/watercyclefacts.pdf>, accessed on 18/5/2012.
- ^{xix} Source: Defra (2005). Making Space for Water: Taking forward a new Government strategy for flood and coastal erosion risk management in England <http://archive.defra.gov.uk/environment/flooding/documents/policy/strategy/strategy-response1.pdf>, accessed on 22/10/2012.
- ^{xx} These are available on <http://sd.defra.gov.uk/what/principles/>, accessed on 22/10/2012.
- ^{xxi} National Flood and Coastal Erosion Risk Management Strategy for England <http://www.environment-agency.gov.uk/research/policy/130073.aspx>
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^{xxv} Natural England, 2013. Microeconomic Evidence for the Benefits of Investment in the Environment – review. Natural England Research Report NERR033.

^{xxvi} English Heritage, 2010. Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment.