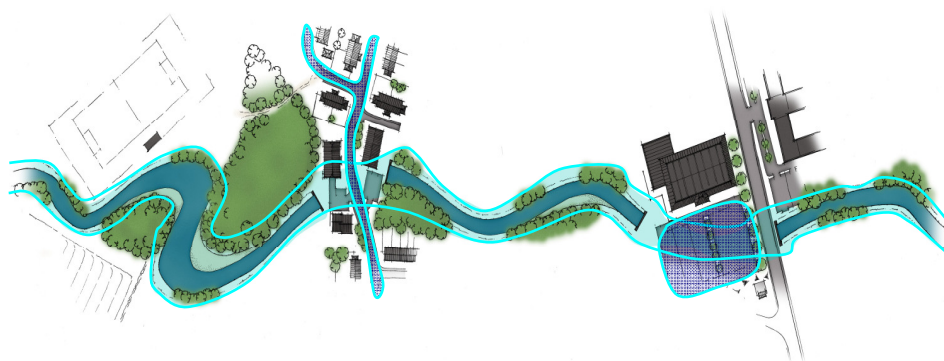


FD2619 Developing Urban Blue Corridors Scoping Study

Final Report
March 2011



Prepared for



Revision Schedule

FD2619 - Scoping Study March 2011

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05	March 2011	Final Scoping Report	Sarah Kelly Water Specialist	Jon Robinson Technical Director	Jon Robinson Technical Director

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Executive Summary

Introduction

Under the Flood and Water Management Act (2010) and Flood Risk Regulations (2009) local authorities have been given a new set of roles and responsibilities. Under the Act (2010) Lead Local Flood Authorities (LLFAs) are required to develop Local Flood Risk Management Strategies which will set out how flood risk will be managed in their local area. Under the Regulations (2009) LLFAs will have to produce Preliminary Flood Risk Assessments for their area of jurisdiction and these will provide an understanding of risk. Where 'flood risk areas' are identified, LLFAs are required to produce Flood Risk and Flood Hazard maps and flood risk management plans (Surface Water Management Plans).

The concept of Urban Blue Corridors represents a consolidation of what were previously recognised as separate flood risk management options/solutions and will form an important part of future local authority flood risk schemes. By designating overland flow paths, surface water ponding areas, urban watercourse buffer areas and multi-use flood storage areas and linking these solutions together, LLFAs can begin to more effectively manage urban flood risk. Urban Blue Corridors represent a new way of thinking about opportunities and solutions to urban flood risk management and can be applied at the local authority scale (strategic) as well as at a Masterplanning scale (community / neighbourhood) and site-specific scale.

Scoping Study

URS/Scott Wilson, Kingston University and London Borough of Croydon were commissioned by the Department for Environment, Food and Rural Affairs (Defra) under the joint Defra/Environment Agency Strategy and Policy Development theme, to undertake a Scoping Study to highlight the current gaps in the delivery of Urban Blue Corridors and to begin to quantify their benefits, whilst providing an over-arching framework for '*developing Urban Blue Corridors*'. A Scoping Report has been produced which reports the findings of the research carried out and has been overseen by a Project Steering Group made up of representatives from Defra, Department for Communities and Local Government, the Environment Agency, the London Borough of Croydon and Kingston University.

Key Findings

The development and delivery of Urban Blue Corridors offers the potential for the delivery of multiple social, environmental and economic benefits from multifunctional land use, and offers the opportunity to deliver climate change resilient development. Whilst a number of existing policies and guidance supports the multifunctional aspirations of Urban Blue Corridors, none links all the aspects together. The main policy drivers for Urban Blue Corridors, beyond those of 'making space for water' come from a flood risk perspective. However, little consideration is given at present to setting development back from overland flow paths and natural ponding areas and, in-terms of the multifunctional benefits arising from the implementation of new development; these are often overlooked or considered only within or as part of Green Infrastructure.

The delivery of Urban Blue Corridors will require overcoming a number of barriers. Common themes have emerged from the research into developing Urban Blue Corridors:

- There appears to be a general acceptance that Urban Blue Corridors will bring value but they are aspirational at this stage and their delivery is limited by lack of guidance and available resources;
- To date, management decisions/cooperation have tended to be reactive (e.g. to past events) rather than pro-active;



- There is limited awareness, particularly among planners and developers, of the Urban Blue Corridors concept or benefits;
- The successful delivery of the schemes will require improved co-ordination and communication between the different Council sectors (Emergency Planning, Spatial Planning, Drainage, Parks, Highways) and between public and private sector stakeholders (including local authorities, Government bodies, voluntary organisations, water companies and developers);
- Delivery through the spatial planning system, where it has taken place, has tended to focus on a single aspect of the scheme (i.e. flood risk reduction), with little consideration to the multi-benefits that can be derived;
- There is no legislative driver or guidance to encourage spatial planners within local authorities to consider Urban Blue Corridors, and no identified mechanism for delivery;
- There are increasingly limited funds available within local authorities, and other public bodies. Therefore, identifying funding opportunities and incentives, for example, through developers, will be essential in the delivery of Urban Blue Corridors; and,
- There is currently no mechanism in place for the establishment of long-term maintenance and responsibility of Urban Blue Corridors.

Mechanisms of Delivery

The delivery of Urban Blue Corridors can be achieved at varying scales from Strategic to Masterplanning to site scale. There are a number of documents that inform and may help to facilitate the delivery of Urban Blue Corridors, including the following:

- Local Flood Risk Management Strategies;
- Surface Water Management Plans;
- Strategic Flood Risk Assessments;
- Preliminary Flood Risk Assessments;
- Flood Risk Management Plans; and
- Green Infrastructure Strategies.

Based upon the evidence gathered through this study, a clearly defined delivery route is needed to increase the pace and viability of Urban Blue Corridor delivery. Where possible, the delivery of Urban Blue Corridors should be considered at the start of the processes identified above.

Recommendations

The delivery of Urban Blue Corridors will require a strategic planning approach where large schemes are proposed, and as such the recommended route to delivery is to plan for, and deliver, Urban Blue Corridors through minor changes to existing planning policy. This is recommended as the route that, given current Government stance and required drivers for delivery through the local planning system, offers the best route for development and delivery of Urban Blue Corridors in the local planning system. It is recognised that a 'top-down' approach is no longer the preferred route for guiding local planning decisions but that some form of driver needs to be embedded in national policy to encourage consideration of Urban Blue Corridors as part of current and future surface water management. It is proposed that through minor amendments to, for example Planning Policy Statement 25: Development and Flood Risk, this will provide the necessary lever through which local planners and developers are able to consider long-term surface water management when making local planning decisions.



The Flood and Water Management Act (2010) seeks to improve partnership working between organisations. Local Flood Risk Management Strategies and the development of Surface Water Management Plans, both of which are developed in partnership, should open up opportunities to develop and manage components of Urban Blue Corridors, for example, raising kerb heights.

A number of recommendations have been made for the delivery of Urban Blue Corridors based on the Scoping Study findings:

1. **Develop Clear Guidance** – Awareness of Green and Blue Infrastructure among the planning community rose significantly from 2000 onwards. This provides an opportunity to ensure that momentum can be maintained by embedding these topics into the new national planning regime proposed by the Coalition government. Hence, there will be a requirement to ensure that local initiatives are being promoted and implemented to ensure that Urban Blue Corridors are being given the required consideration in local planning decisions. An Urban Blue Corridor Good Practice Guide should be developed to provide this impetus.
2. **Utilise Existing Studies** – The development and delivery of Urban Blue Corridors is most appropriate at the Masterplanning level and should be developed in Local Flood Risk Management Strategies and draw heavily on the outputs of existing and emerging studies such as Surface Water Management Plans, Preliminary Flood Risk Assessments and Strategic Flood Risk Assessments.
3. **Ensure Collaborative Working** – The Flood and Water Management Act (2010) places a duty on collaborative and cooperative working and this will provide a strong driver for LLFAs and stakeholders to work closer together. As Urban Blue Corridors will aim to deliver multi-benefits and are multifunctional, there is a need for departments to work together to design, plan, implement and maintain them. Partnerships between public and private sector organisations will be required,
4. **Maximise Benefits** – When planning for Urban Blue Corridors, the potential for wider Green Infrastructure benefits should be integrated as early as possible into the process, and, where possible, enhance connectivity between other areas of Green Infrastructure.
5. **Embed Urban Blue Corridors in Existing Policy and Guidance** – The principles of Urban Blue Corridors (including Green Infrastructure) should be embedded in guidance for Sustainable Drainage Systems (SuDS), Flood Risk Management Plans and Local Flood Risk Management Strategies, which are currently in development and offer the opportunity for linkages to Urban Blue Corridors.
6. **Promote Community Engagement and Educate Communities** – In the Big Society driven by localism, there will be a need to assist and educate communities and local authorities on understanding local flood risk and on the important role Urban Blue Corridors can play in achieving multiple benefits to society. This could be achieved through a series of workshops, talks, attendance at community meetings and briefing notes.
7. **Use Urban Blue Corridors in Adaptation to Climate Change** – One of the key roles for Urban Blue Corridors is in providing the means and infrastructure to adapt to the impacts of climate change and provide resilience measures, i.e. in terms of planning for the likely impact of increased rainfall and flooding. Investing in infrastructure to adapt to the likely impacts of climate change now will be cheaper than having to deal with expected climate change impacts in the future, e.g. by providing more climate-resilient infrastructure and ‘space for water’ now, it is possible to protect societies and economies (to some extent) from its potential impacts such as surface water flooding.

The following recommendations are made for further studies to aid in ‘developing Urban Blue Corridors’:

- **Raise Awareness of Urban Blue Corridors** – As part of the new LLFA role under the Flood Risk Regulations and Flood and Water Management Act (2010) requirements, production of a series of Briefing Notes and Workshops/Seminars, summarising the concept of Urban Blue Corridors, and how they can be implemented, to a range of different audiences, all of whom will have a role to play in the development and delivery of Urban Blue Corridors. At the local level, information dissemination



could be co-ordinated through the Local Government Association and/or the Planning Officers Society.

- **Develop Urban Blue Corridors Good Practice Guide** – The production of a Good Practice Guide (GPG) aimed at planning practitioners or local flood risk managers may be one of the most effective methods of introducing the concept of Blue Corridors into the spatial planning system. A GPG would ensure ready reference and clarity for local authorities, planners and stakeholders. It could also include a Cost/Benefit Analysis for Urban Blue Corridors. The guide might either take the form of a physical document or a web-based e-learning resource. The guide would also raise the awareness of the Urban Blue Corridors concept or ‘vision’. A pilot study should be undertaken to test the proposed Good Practice Guide and illustrate how Urban Blue Corridors can be defined at a strategic level and implemented at a local scale (through Masterplanning and site-specific assessments).
- **Provide Training to Local Authorities** – It is recommended that a consultation and promotion of Urban Blue Corridors with Councillors and key members of local authorities is undertaken to ensure better knowledge regarding Urban Blue Corridors and the benefits they can deliver. These could be delivered through Councillor training and/or committee meetings.
- **Quantifying and Understanding the Benefits of Urban Blue Corridors** – Currently the benefits of Urban Blue Corridors and quantification of these are poorly understood. This study has started to identify the potential benefits of Urban Blue Corridors and how these can be delivered through sustainable flood risk management. However, further research is recommended on quantifying and understanding the benefits of Urban Blue Corridors to identify how the costs and benefits for these schemes can be assessed.



Abbreviations

Abbreviation	Description
AAP	Area Action Plan
ASSWF	Areas Susceptible to Surface Water Flooding
BAP	Biodiversity Action Plan
CABE	Commission for Architecture and the Built Environment
CBAP	Company Biodiversity Action Plan
CFMP	Catchment Flood Management Plans
CIL	Community Infrastructure Levy
CIWEM	Chartered Institution of Water and Environmental Management
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
DPD	Development Plan Document
EC	European Commission
EU	European Union
FRA	Flood Risk Assessment
FWMA	Flood and Water Management Act 2010
GPG	Good Practice Guide
GRaBS	Green and Blue Spaces
IDB	Internal Drainage Board
IDP	Infrastructure Delivery Plan
IRB	Inter Regional Board
LA	Local Authority
LBAP	Local Biodiversity Action Plan
LDF	Local Development Framework
LFRM	Local Flood Risk Management
LLFA	Lead Local Flood Authority
MKSM	Milton Keynes South Midlands
NI	National Indicator
PoMs	Programme of Measures
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
PFRA	Preliminary Flood Risk Assessment
RBMP	River Basin Management Plan
RSS	Regional Spatial Strategy
RTPI	Royal Town Planning Institute
SAC	Special Area of Conservation
SFRA	Strategic Flood Risk Assessment



Abbreviation	Description
SPARC	Strategic Partnerships in River Corridors
SPD	Supplementary Planning Document
SuDS	Sustainable Drainage Systems
SW	Surface Water
SWAAP	Staveley Works Area Action Plan
SWMP	Surface Water Management Plan
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TCPA	Town and Country Planning Association
UK	United Kingdom
URSULA	Urban River Corridors and Sustainable Living Agendas
WCS	Water Cycle Study
WFD	Water Framework Directive (2000)



1 Introduction

1.1 'Developing Urban Blue Corridors'

- 1.1.1 This scoping document reports the findings of research carried out by URS / Scott Wilson, Kingston University and the London Borough of Croydon under the joint Department for Environment, Food and Rural Affairs (Defra)/Environment Agency Strategy and Policy Development theme into '*Developing Urban Blue Corridors*' (Project Reference FD2619) (Appendix A). The Strategy and Policy Development theme sets out to provide an evidence base to support better policy in flood risk management and covers areas of strategic national interest and areas of developing policy¹. The research under this project will inform policy and its implementation in promoting sustainable approaches and adaptation.

1.2 Background and Context

- 1.2.1 Since 2004, Defra's Flood and Coastal Erosion Risk Management Strategy has been promoting the idea of 'making space for water' in the environment and has made significant advances in many areas through its programme of work in promoting sustainable approaches and adaptation. Urban Blue Corridors form part of this approach - urban development is set back from watercourses, overland flow paths and ponding areas to create a mosaic of urban corridors designed to facilitate hydrological processes whilst providing benefits including reduced urban flood risk, improved water quality, enhanced biodiversity, improved access to recreation, multifunctional green space and adaptation to climate change.
- 1.2.2 The establishment of such corridors will help relieve the pressure of flooding on upstream and downstream communities and make flood protection options within the urban area more resilient and flexible. Urban Blue Corridors can also contribute to networks of Green Infrastructure (where natural/semi-natural channels are utilised), which act as the life support systems for cities, towns and rural areas and provide a range of environmental, social and economic benefits.

1.3 Flood and Water Management Act

- 1.3.1 The Flood and Water Management Act 2010 (FWMA) supports the implementation of recommendations made by Sir Michael Pitt (2007) to work with natural processes to minimise flood risk and requires developers to incorporate sustainable drainage systems (SuDS) into new development and seeks to reduce the likelihood and impacts of flooding, reduce pollution (diffuse) and improve water quality.
- 1.3.2 Under the FWMA (2010) and Flood Risk Regulations (2009) local authorities (LAs) have been given a new set of roles and responsibilities. All Lead Local Flood Authorities (LLFAs) are required under the FWMA to develop Local Flood Risk Management (LFRM) Strategies for their areas. The outline content is specified in the FWMA and includes setting objectives for local flood risk management, the measures proposed to achieve these objectives and how and when these objectives are expected to be implemented. LFRM strategies should use, as a baseline, Preliminary Flood Risk Assessments (PFRAs, required under the Flood Risk Regulations) to understand the levels of risk and any other relevant studies such as catchment flood management plans (CFMPs) and strategic flood risk assessments (SFRAs). Where surface water management plans (SWMPs) have been completed the findings of these can be integrated into the strategy. The development of LFRM strategies can provide an excellent



opportunity to explore whether Urban Blue Corridors are a suitable management tool for local flood risk.

1.4 The Government's Vision

Decentralisation and Localism Bill

1.4.1 A proposed new Bill was introduced as part of the Queen's speech on 25 May 2010, "*to devolve greater powers to councils and neighbourhoods and give local communities control over housing and planning decisions*". According to the Government, the main aims of the proposed Bill are to:

- Empower local people;
- Give local communities a real share in local growth; and
- Provide a more efficient and more local planning system.

1.4.2 The concepts of localism and Urban Blue Corridors are seen as mutually beneficial; local planning decisions on where and when Urban Blue Corridors are implemented are driven by local councils and communities. It is hoped that through the use of Urban Blue Corridors, economic development will be facilitated and act as a catalyst for wider investment and regeneration opportunities, enabling fruitful private sector and public sector partnerships, with no increase in flood risk.

Government Position Regarding Planning

1.4.3 The Government believes that, whenever possible, planning decisions should be made at the local level. It is working to change the planning system so councils have the freedom to make their own planning decisions in the best interest of the local area. To achieve this, the Department for Communities and Local Government (DCLG) is ending top-down control over local planning decisions and ensuring democratic accountability. The Government wants councils and communities to be at the heart of a planning system that helps deliver more homes and economic growth and will introduce powerful new incentives to ensure that communities benefit from development they welcome, and new homes are matched with new jobs and investment.

1.4.4 In 'The Coalition: Our Programme for Government'², published in May 2010, the Government has said that in the longer term, it will radically reform the planning system to give neighbourhoods far more ability to determine the shape of the places in which their inhabitants live and it will publish and present to Parliament a simplified and consolidated national planning framework covering all forms of development and setting out national economic, environmental and social priorities.

Future Environmental Policy

1.4.5 In formulating future environmental policy in the United Kingdom (UK)³, the Government has recognised that:

- Issues of water management, climate change, biodiversity, health and recreation should be viewed in a more holistic way to reflect the interdependency of services and resources that we receive from the natural environment; and



- Natural systems are highly interconnected and there is a need to better understand the interactions between land and water management, and to adapt a more holistic landscape scale approach in order to protect resources.

1.4.6 A more coordinated, longer term approach to local flood risk management and the development of Urban Blue Corridors is needed, especially in the broader context of the need to adapt to likely future climate change impacts, manage associated flood risks and the need to maximise social, economic and environmental benefits from major regeneration initiatives. This approach forms part of the long term approach to Sustainable Flood Risk Management, as promoted by Defra.

Sustainable Flood Risk Management

1.4.7 Figure 1 presents a flow chart showing where Urban Blue Corridors fit within the Government’s portfolio of Sustainable Flood Risk Management.

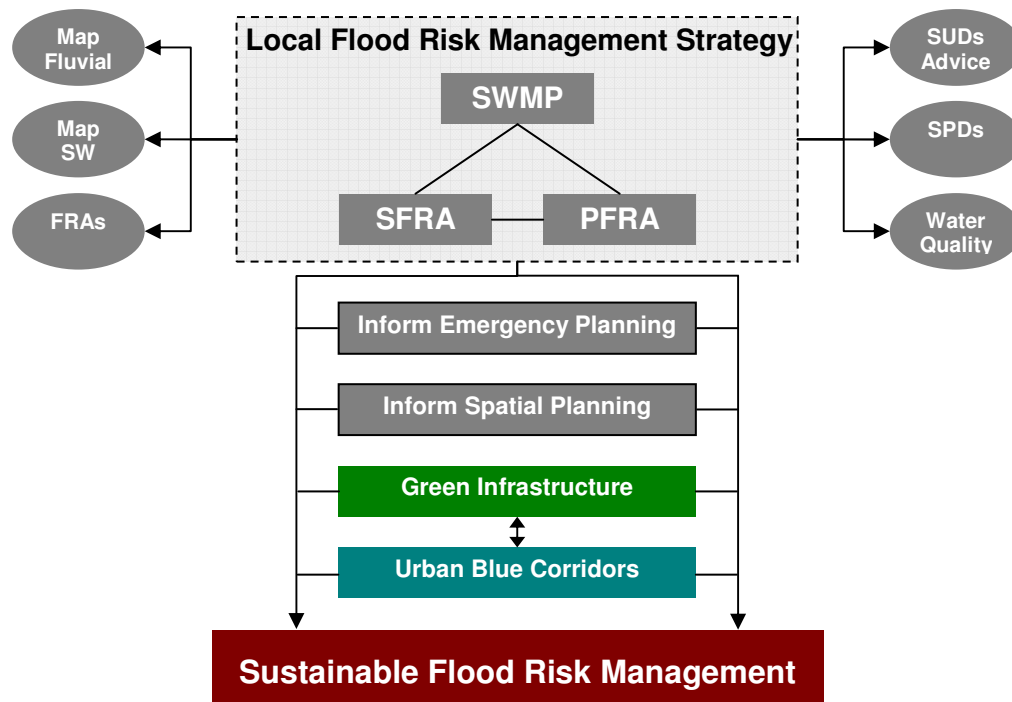


Figure 1: Approach to Sustainable Flood Risk Management

1.5 Purpose of Scoping Study

- 1.5.1 The purpose of this Scoping Study is to highlight the current gaps in the implementation of Urban Blue Corridors and to begin to quantify their benefits, whilst providing an over-arching framework for their delivery.
- 1.5.2 The Scoping Study has been overseen by a Project Steering Group made up of representatives from Defra, DCLG, the Environment Agency, the London Borough of Croydon and Kingston University.
- 1.5.3 The Scoping Report has been produced for Defra as part of the Scoping Study project aimed at examining the current literature, attitude, practices and gaps in the development and delivery of



Urban Blue Corridors, and providing a high level road map for the local delivery of schemes. This has included a literature review, targeted consultation with different departments within LAs and environmental, planning and building organisations, and demonstration of how the principles of Urban Blue Corridors can be implemented at a range of scales through the provision of three case studies. As such, it is not intended to act as guidance, but as an informative document/tool to assist communities and LAs in identifying the potential benefits and methods of realising Urban Blue Corridors (and future areas of research). It is therefore intended for a range of audiences including (but not limited to):

- Government departments including Defra and DCLG;
- Local authorities (including Spatial Planning, Emergency Planning, Structures and Drainage, Highways, Parks, Climate Change Adaptation, Regeneration/Assets and Facilities Management, Education and Urban Design departments);
- Local communities;
- Environmental organisations and legislators;
- Water companies and asset owners;
- Local voluntary groups and organisations;
- Planning practitioners and associations; and
- Developers, architects and contractors.

1.5.4 It is recognised that at the time of writing there is still some uncertainty over how the Government's emerging 'Big Society' system will materialise at a local level, especially with regards to strategic planning and development, and local community partnerships and working practices. This report has aimed to align itself with the Government's Vision for Localism and incorporate it into the 'High Level Road Map' for the delivery of Urban Blue Corridors.

Scoping Report Structure

1.5.5 The following sections report the findings of the research into Urban Blue Corridors and their current and future delivery within the spatial planning system. In particular the following issues are considered:

- What is an Urban Blue Corridor? (Section 2);
- Drivers, benefits and barriers to developing Urban Blue Corridors (Section 3);
- Approach to planning and delivery of Urban Blue Corridors (Section 4);
- Case studies (Section 5);
- High level road map for delivery of Urban Blue Corridors (Section 6); and
- Next steps in 'Developing Urban Blue Corridors'? (Section 7).



2 What is an Urban Blue Corridor?

2.1 Definition

2.1.1 Urban Blue Corridors encompass the idea that both new and existing development within the urban environment is set back from, or planned around, watercourses, overland flow paths and surface water ponding areas to create a network of urban corridors designed to facilitate natural hydrological processes whilst minimising urban flooding, enhancing biodiversity, improving access to recreation and helping to adapt to climate change.

2.1.2 Urban Blue Corridors can be applied at a number of different scales from individual sites to linear 'corridors' of natural, semi-natural and artificial overland flow paths. This could be a single flow route down a street or a network of corridors linking together existing Blue Infrastructure across an urban area (Figure 2). 'Urban Blue Corridors' is the collective name (and linking mechanism) for a number of interconnecting features, which could include, but are not limited to, the following:

- Overland Flow Paths
- Rivers and Canals
- Flood Storage Areas
- Floodplains
- Ponding Areas
- Wetlands
- Historic River Channels
- Multiuse Parks

2.1.3 From a flood management and alleviation perspective in particular, Urban Blue Corridors offer the opportunity to consider how a corridor can be created as part of new development landscape through good design, rather than draw upon the usual blue areas such as streams, rivers and storage ponds.

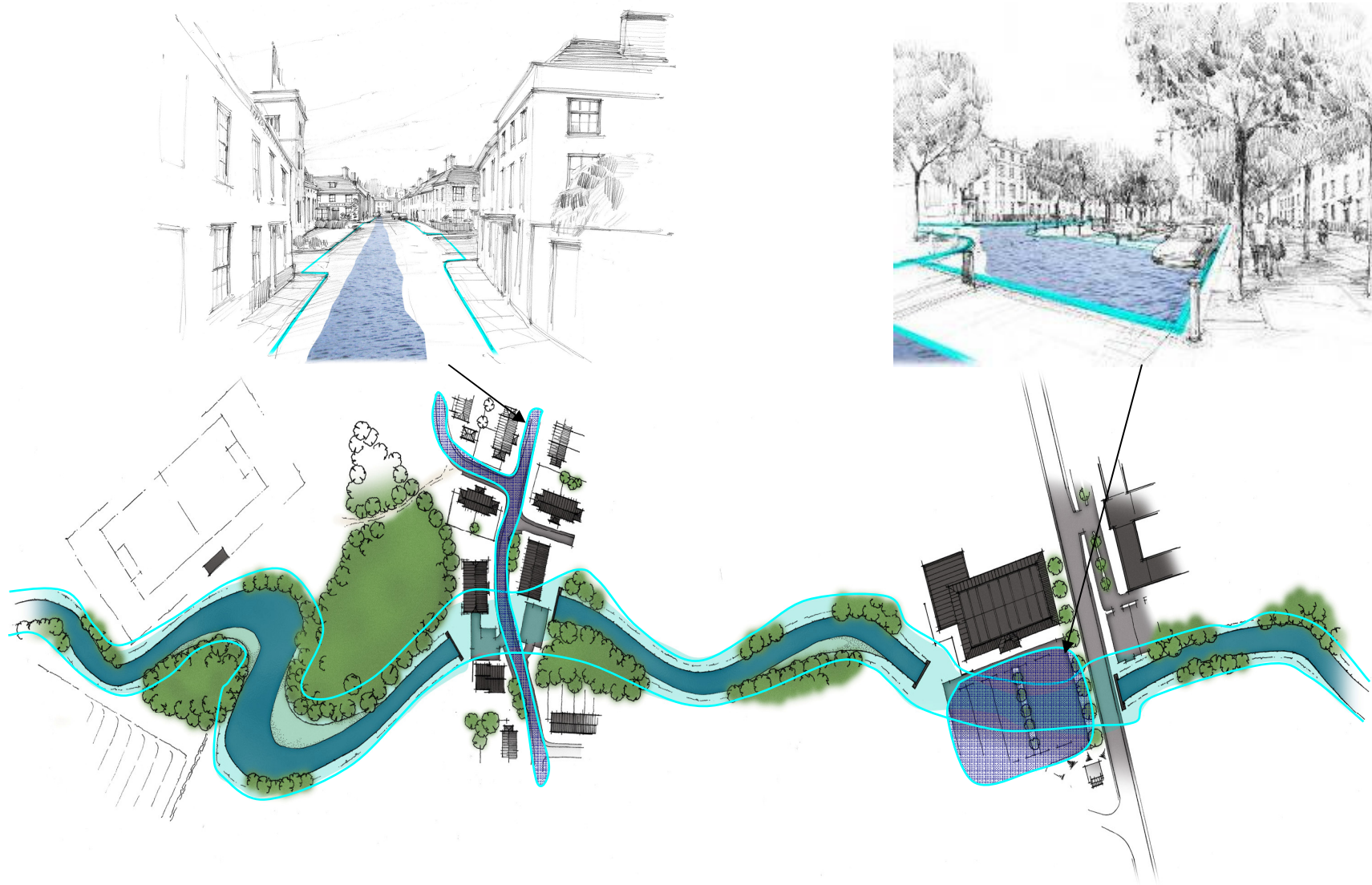


Figure 2: Urban Blue Corridors in Practice



2.2 Multifunctionality

2.2.1 One of the key aims and benefits of developing Urban Blue Corridors is to provide a network of multifunctional ‘blue’ spaces and corridors within the urban environment. Urban Blue Corridors offer the potential to allow land to perform a range of functions and provide a far greater range of social, environmental and economic benefits than might otherwise be delivered (see Figure 3), including:

- **Managing flood risk (flooding and surface water management)** through designating and protecting overland flow paths, setting back defences, deculverting and providing non-structural management options;
- **Adapting to climate change** through providing, for example, cool recreational space in times of high temperatures;
- **Improving resilience to extreme weather events** through planning for increased rainfall/storms by ‘making space for water’ and providing flood resilient measures;
- **Enhancing biodiversity** through supporting Biodiversity Action Plan (BAP) habitats and species targets by maintaining and creating wetlands and providing connectivity;
- **Improving water quality and aquatic environments** through management of surface water runoff through use of SuDS;
- **Preserving and enhancing landscape, heritage and culture** through protection and access improvement to ‘blue’ heritage sites such as canals;
- **Improving access for recreation** through providing areas to walk, cycle, watch wildlife or undertake water-based activities such as angling and canoeing;
- **Facilitating social cohesion** through inclusion in the design and management process and educational opportunities;
- **Promoting public health and well-being** through providing more aesthetic living and working environments;
- **Improving commercial interest** through increased tourism and aesthetically pleasing environments; and
- **Improving linkage to Green Infrastructure networks** through providing dynamic ‘blue’ corridors between Green Infrastructure and utilising Green Infrastructure assets for surface water management.

2.2.2 At a local level, designers will always have to seek the best compromise between stakeholder interests, as not all multifunctional benefits described above will be achievable in a single location. Urban Blue Corridors should instead be seen to be adding value and trying to identify where multiple benefits might be possible, and how these can be delivered. The recent review chaired by Professor Sir John Lawton on England’s wildlife sites and ecological network recommends:

“We need to become better at deriving multiple benefits from the ways we use and interact with our environment. There are many things that society has to do that may seem to have rather little to do with nature conservation, but could have, or even should have if we embrace more radical thinking; flood management by creating wetlands is an obvious example. We need to exploit these ‘win-win’ opportunities to the full. Being better at valuing a wider range of ecosystem services would help this process.”⁴

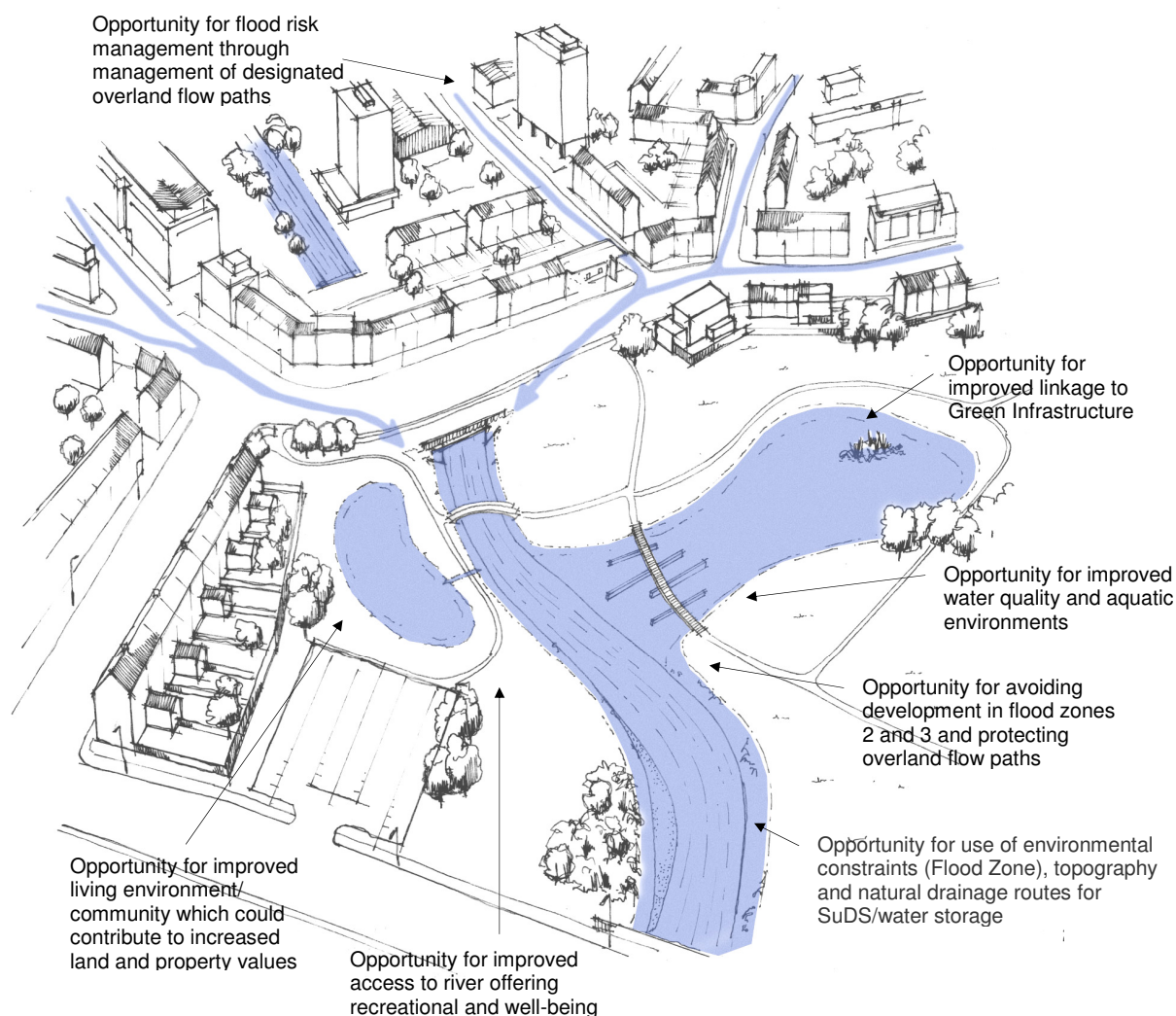


Figure 3: Multifunctional Use and Benefits of Urban Blue Corridors

2.3 Links with Green Corridors and Infrastructure

- 2.3.1 Urban Blue Corridors present the opportunity to link into existing networks of Green Infrastructure to provide dynamic hydraulic and ecological corridors in the urban environment and provide multifunctional use. This can be done in tandem with delivering environmental, social and economic benefits.
- 2.3.2 Green Infrastructure is “a network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities.”⁶
- 2.3.3 Definitions for Green Infrastructure vary in the degree to which they refer to ‘Blue’ infrastructure elements. The Natural England Green Infrastructure Guidance⁶ recognises rivers and streams within a Green Infrastructure typology, whereas other definitions make specific reference to water resources forming part of the Green Infrastructure network. Green Infrastructure elements or assets include individual sites or broader features such as urban squares, city parks, nature reserves, brown/green roofs, private gardens, railway corridors and woodland. Most assets can contribute to surface water management. However, whilst Green Infrastructure takes into account flood risk management, it does not, at present, include overland flow paths.



2.3.4 By linking with Green Corridors and Infrastructure, Urban Blue Corridors offer the opportunity to help align with national environmental aspirations. For example, Natural England, in their Position Statement on Urban Areas⁷, states that:

- The natural environment in towns and cities is fundamental to sustaining urban life and should be integral to the way in which urban areas are planned and managed;
- The distinctive fabric of the natural environment in towns and cities makes a major contribution to urban landscape and sense of place and should be valued, conserved and enhanced;
- The natural environment in towns and cities should underpin their adaptation to a rapidly changing climate and provide environmental security for communities; and
- People should have opportunities to readily access high quality natural environment in urban areas in order to enjoy the broad range of environmental and social benefits it offers.



3 Drivers, Benefits and Barriers to Developing Urban Blue Corridors

3.1 Introduction

3.1.1 This chapter establishes the drivers, benefits and barriers to developing Urban Blue Corridors, using the findings from the consultation exercise undertaken as part of the Scoping Study and a literature review of existing policy, guidance, projects, spatial plans and associated studies.

Consultation

3.1.2 A targeted consultation exercise was undertaken to gather evidence on the current understanding, approach and attitude to Urban Blue Corridors within LAs and among wider stakeholders (Figure 4). The aim was to seek a variety of views across LA departments to see if the concept of Urban Blue Corridors was being considered.

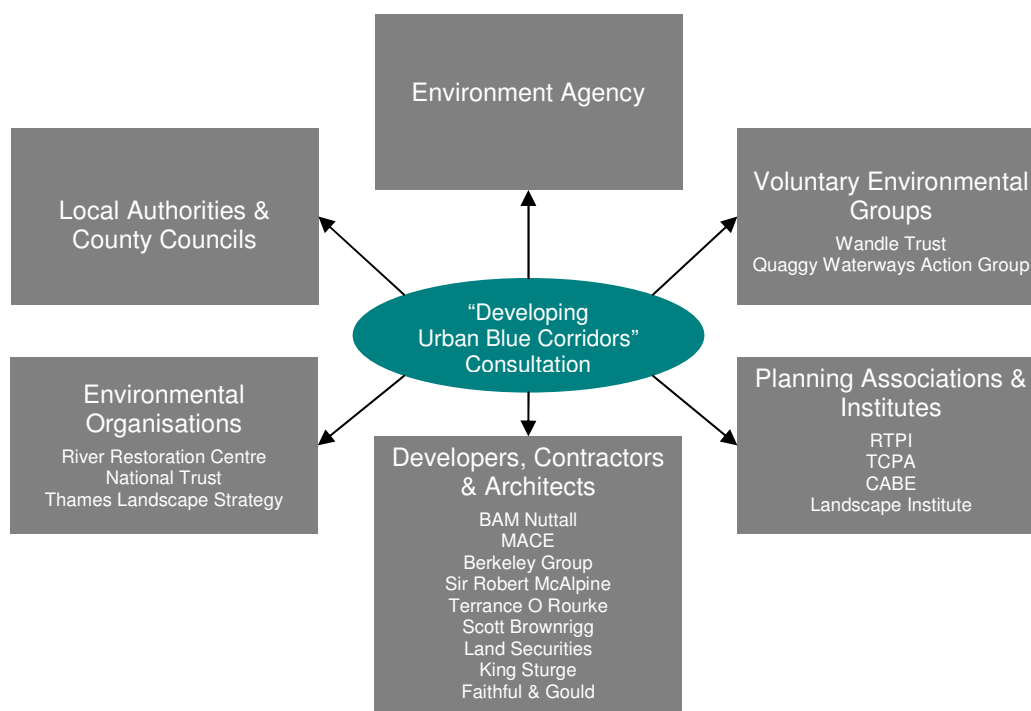


Figure 4: An Example of Developing Urban Blue Corridors Research Consultees

3.1.3 The consultation exercise aimed to elicit, through a questionnaire and telephone interviews, an understanding of the current approach and attitude towards Urban Blue Corridors and the perceived drivers, benefits and barriers to their development, providing examples of where such schemes have been undertaken and lessons learnt.

3.1.4 Appendix B – Consultation Exercise provides the questionnaire sent to LAs and environmental organisations, planning associations and institutes, and developers and architects, and the findings from the consultation exercise.



3.2 Drivers for Developing Urban Blue Corridors

Policy Support for Developing Urban Blue Corridors

- 3.2.1 Currently, there is no single piece of European or national legislation or policy requiring the implementation of Urban Blue Corridors. However, the multifunctional nature of Urban Blue Corridors means that the principles are supported by a number of legislative and policy documents at a European, national and local level.
- 3.2.2 The main drivers and existing policy support for Urban Blue Corridors are provided in Table 1, and have been assessed against the aspirations for Urban Blue Corridors, being:
- Sustainable Flood Risk Management;
 - Adaptation to Climate Change;
 - Improved Water Quality;
 - Enhanced Biodiversity;
 - Multifunctional Land Use
 - Improved access for Recreation; and
 - Sustainable Development.
- 3.2.3 At present, a combination of policy and legislation will be required to deliver the multifunctional aspirations for Urban Blue Corridors. However, with the changes in legislation and the anticipated shift to SuDS being the default option for surface water drainage there are increased drivers for Urban Blue Corridor consideration. Either an over-arching policy is required, or adaptation to existing policy to provide the driver for consideration of Urban Blue Corridors as part of the local spatial planning process. This is discussed in more detail in Section 4.
- 3.2.4 A description of the relevant legislation and policy drivers is provided in Appendix C – Policy Drivers, and the key drivers are discussed in more detail in Table 2.



Table 1: Policy Support for Developing Urban Blue Corridors

Policy/Driver		Urban Blue Corridor Aspirations						
		Flood Risk	Climate Change	Water Quality	Biodiversity	Multifunctional Land Use	Recreation	Sustainable Development
EUROPEAN	EU Floods Directive (2007)	✓						
	EU Adaptation White Paper on Climate Change (2009)		✓					
	EU Water Framework Directive (2000)			✓	✓			
	EU Habitats Directive (1992)			✓	✓			
	EC Thematic Strategy on the Urban Environment (2006)							✓
	European Landscape Convention (2000)					✓		
	European Spatial Development Perspective							✓
NATIONAL	Flood Risk Regulations 2009	✓						
	Future Water (2008)	✓		✓				
	Making Space for Water (2004)	✓		✓		✓		
	SWMP Technical Guidance (2010)	✓	✓					
	Pitt Review & Government Response (2007/2008)	✓	✓					
	Flood and Water Management Act (2010)	✓		✓				
	Civil Contingencies Act (2004)	✓						
	Climate Change Act (2008)		✓					
	PPS1: Delivering Sustainable Development							✓
	PPS: Planning and Climate Change – Supplement to PPS1		✓					
	PPS: Eco-towns – Supplement to PPS1							✓
	PPG2: Greenbelt					✓		
	PPS3: Housing							✓
	PPS9: Biodiversity and Geological Conservation				✓			
	PPS12: Local Spatial Planning							✓
	PPG17: Planning for Open Space, Sport and Recreation						✓	
	PPS25: Development and Flood Risk	✓	✓					
	Draft PPS: Planning for a Low Carbon Future in a Changing Climate		✓					
	Draft PPS: Planning for a Natural and Healthy Environment		✓			✓		
	Biodiversity Action Plan targets				✓			
Conservation of Habitats and Species Regulations 2010			✓	✓				
Sustainable Communities Act (2007)							✓	
LOCAL	Catchment Flood Management Plans	✓						
	River Basin Management Plans			✓	✓			
	Local Biodiversity Action Plans				✓			
	National Indicator 188 (Planning to Adapt to Climate Change)		✓					
	National Indicator 189 (Flood & Coastal Erosion Risk Management)	✓						
	National Indicator 197 (Biodiversity)				✓			



Table 2: Potential Drivers for Urban Blue Corridors Aspirations

Sustainable Flood Risk Management	<p>Urban Blue Corridors can contribute to working with natural processes to minimise flood risk by planning for overland flow paths and setting back development from watercourses. It can also help deliver the requirements of the FWMA by reducing the likelihood and impacts of flooding and managing diffuse pollution from urban areas to improve water quality.</p> <p>A key requirement of the FWMA is for LLFAs to work in partnership both internally and externally; working in partnership can help deliver the benefits of Urban Blue Corridors and related concepts. Increased understanding of local flood risk issues as a result of recent legislation and the requirement for LLFAs to develop Local Flood Risk Management (LFRM) strategies should enable LLFAs to make better informed decisions on surface water management which can include the consideration of Urban Blue Corridors.</p> <p>Planning Policy Statement 25 (PPS25) sets out Government policy on development and flood risk. Through ensuring that flood risk is taken into account at all stages in the planning process, from regional and local policy to individual development control decisions, PPS25 aims to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk. In particular, it seeks to safeguard land from development that is required for current and future flood management. In exceptional circumstances, where it is not possible to deliver available sites in lower risk zones through the sequential approach, policy aims to ensure that the development will be safe, without increasing flood risk elsewhere and, where possible, reducing flood risk overall. PPS25 advocates that one of the key planning objectives for reducing flood risk should be to use <i>“opportunities offered by new development to reduce the causes and impacts of flooding e.g. surface water management plans; making the most of the benefits of Green Infrastructure for flood storage, conveyance and SuDS; re-creating functional floodplain; and setting back defences.”</i></p> <p>The Environment Agency currently has polices to protect balancing ponds, river corridors, safeguarding ponding areas, water bodies and SuDS and actively encourage the creation of multifunctional open space and Urban Blue Corridors through deculverting and opening up of hidden and buried watercourses; for example, through the Environment Agency National Culverting Policy 85_10, and Conserving and Enhancing Biodiversity Policy 634_08. Catchment Flood Management Plans (CFMP) and River Basin Management Plans (RBMP) assist in delivering these policies.</p> <p>The consultation exercise has found that the majority of LAs consulted have policies to protect surface water infrastructure including SuDS, water bodies, balancing ponds and river corridors. The FWMA includes provision for the adoption and maintenance of SuDS.</p>
Adaptation to Climate Change	<p>The Planning and Climate Change supplement to Planning Policy Statement 1 (PPS1) sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions and resilience to climate change. This should take into account: the contribution to be made from existing and new opportunities for open space and Green Infrastructure to urban cooling, SuDS, conserving and enhancing biodiversity; known physical and environmental constraints on the development of land such as sea level rises, flood risk and stability, and take a precautionary approach to increases in risk that could arise as a result of likely changes to the climate.</p> <p>The recent draft PPS: Planning for a natural and healthy environment⁸ states that planning should <i>“minimise vulnerability of places, people and wildlife to the impacts of climate change and contribute to effective climate change adaptation measures by maintaining, creating and improving networks of green infrastructure within both urban and rural areas”</i>. The draft statement also includes policy which encourages LAs to protect, enhance and create Green Infrastructure <i>“particularly in locations where it will assist in reducing the impacts of climate change by providing flood water storage areas, sustainable drainage systems, urban cooling and local access to shady outdoor space”</i>. It also places an emphasis on creating and enhancing linear connections between green spaces and natural habitats, a role towards which Urban Blue Corridors will certainly contribute. It should be noted that, under the planning reforms proposed by the new Coalition Government, it is unlikely that this PPS will now be implemented.</p>



	<p>Local adaptation studies for climate change can help to plan for adaptation for the impact of climate change at a local scale and within the urban environment. Through these studies, the mechanisms for the requirement, benefits, and mechanisms for the development of Urban Blue Corridors can be realised, as evidenced by Case Study 1⁹.</p> <p>Planning for the impacts of climate change provides a vital opportunity and driver for developing Blue Infrastructure (as evidenced through the Town and Country Planning Association’s (TCPA) work as part of the EU Green and Blue Spaces (GRaBS) project (Case Study 1). Blue Infrastructure, such as Urban Blue Corridors, will play a vital role in creating climate resilient development.¹⁰</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Multifunctional Land Use and Recreation</p>	<p>Planning Policy Guidance 17 (PPG17) encourages LAs to consider open spaces, sport and recreation when preparing development plans, to ensure the delivery of the Government’s objectives for a high quality network of accessible open urban spaces, increased opportunities for community involvement and improved public health and lifestyles.</p> <p>The European Landscape Convention promotes landscape scale planning through the protection, management and planning of European landscapes and organises European cooperation on landscape issues. It requires Member States to establish and implement landscape policies aimed at landscape protection, management and planning.</p> <p>Urban Blue Corridors offer the opportunity to facilitate a high quality network of accessible open urban spaces by linking together Blue Infrastructure throughout the urban environment in conjunction with the existing Green Infrastructure network. They also offer the opportunity for increased community involvement and improved public health by offering facilities both on and beside watercourses, for exercise and leisure activities.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Improved Habitats (including water environment and biodiversity)</p>	<p>The Water Framework Directive (WFD) seeks to integrate the management of water with land use planning, biodiversity, flood risk management, tourism, leisure, recreation and health and agriculture through the implementation of RBMPs. The WFD aims for ‘good ecological status’, or good ecological ‘potential’ in the urban setting, for all water bodies, by 2015. In England and Wales, the RBMPs (11 in total) were published by the Environment Agency in December 2009 and has been developed in consultation with a wide range of organisations and individuals, to plan water management in the River Basin Districts over the next six years (up to 2015). Urban Blue Corridors can clearly contribute to the delivery of some of the WFD aspirations, but would need to be included as part of the Programme of Measures, and focus on delivering water quality and habitat benefits.</p> <p>EU Habitats Directive forms part of Europe’s nature conservation policy and aims to protect the wild plants, animals and habitats that make up the natural environment. The directive has facilitated the creation of <i>the Natura 2000 Network</i>, a Europe-wide ecological network of protected areas and species considered to be of national and international importance including Special Areas of Conservation (SAC) and Special Protection Areas (SPAs). In total, the directive protects over 1.000 animal and plant species and over 200 "habitat types" (including wetlands) which are of European importance.</p> <p>Recommendation 4 of England’s Wildlife Sites and Ecological Network states:</p> <p><i>“Public bodies and statutory undertakers planning the management of water resources should:</i></p> <ul style="list-style-type: none"> • <i>make space for water and wildlife along rivers and around wetlands;</i> • <i>restore natural processes in river catchments, including in ways that support climate change adaptation and mitigation; and</i> • <i>accelerate the programme to reduce nutrient overload, particularly from diffuse pollution.”¹¹</i>



Sustainable Development	<p>PPS1 – Delivering Sustainable Development encourages the development of sustainable, durable and adaptable development which takes into account flooding, optimises the potential of a site to accommodate development, create and sustain an appropriate mix of uses (including green and other public space), reinforce local distinctiveness, be locally attractive as a result of appropriate landscaping and be accessible and usable by society. At a local level, the Sustainable Communities Act aims to strengthen the role of communities and provide information to enable LAs, their partners and communities to take better informed decisions about the priorities they choose to pursue to promote sustainability in their local community.</p> <p>The European Commission’s Thematic Strategy on the Urban Environment promotes the improvement of the environmental performance of cities through a more integrated approach to environmental management and sustainable urban transport plans, and encourages the dissemination of best practice between cities.</p> <p>PPS12 – Local Spatial Planning sets out the role in the overall task of place shaping and the delivery of land uses and associated activities, through the development of local plans. It states the need for the core strategy to be supported by evidence of the physical, social and Green Infrastructure that is needed to enable the amount of development proposed for the area.</p> <p>Whilst there is no statutory requirement to include Urban Blue Corridors in local plans, there is clearly a role for them, either through their close linkages with Green Infrastructure which is considered within the planning system, or through their potential to help manage and potentially mitigate flood risk, with SFRAs a statutory evidence base for core strategies.</p>
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Perceived Drivers

- 3.2.5 The consultation exercise asked respondents to identify the five key policy drivers that they considered to be the main drivers for developing Urban Blue Corridors. The responses showed that the main drivers were considered to be through flood management policy, with the FWMA and PPS25 identified as the main policy drivers for developing and implementing Urban Blue Corridors within the existing spatial planning system (Figure 5). However, these are predominantly biased towards fluvial flooding, and a higher profile for surface water flooding, particularly in relation to overland flow paths and ponding areas, may be required to ensure these are given adequate consideration within the urban planning system.
- 3.2.6 Water environment and biodiversity policies and guidance were less well recognised as potential drivers, and are mainly only recognised by the Environment Agency, those respondents working in Parks Conservation department and/or where Urban Blue Corridors have been implemented and therefore thought behind the drivers and mechanisms for developing these have previously been considered. This may be because the consequences of flooding are relatively easy to assess in terms of economics, whereas the 'economic' benefits of ecological services are difficult to cost as they are less tangible to assess.

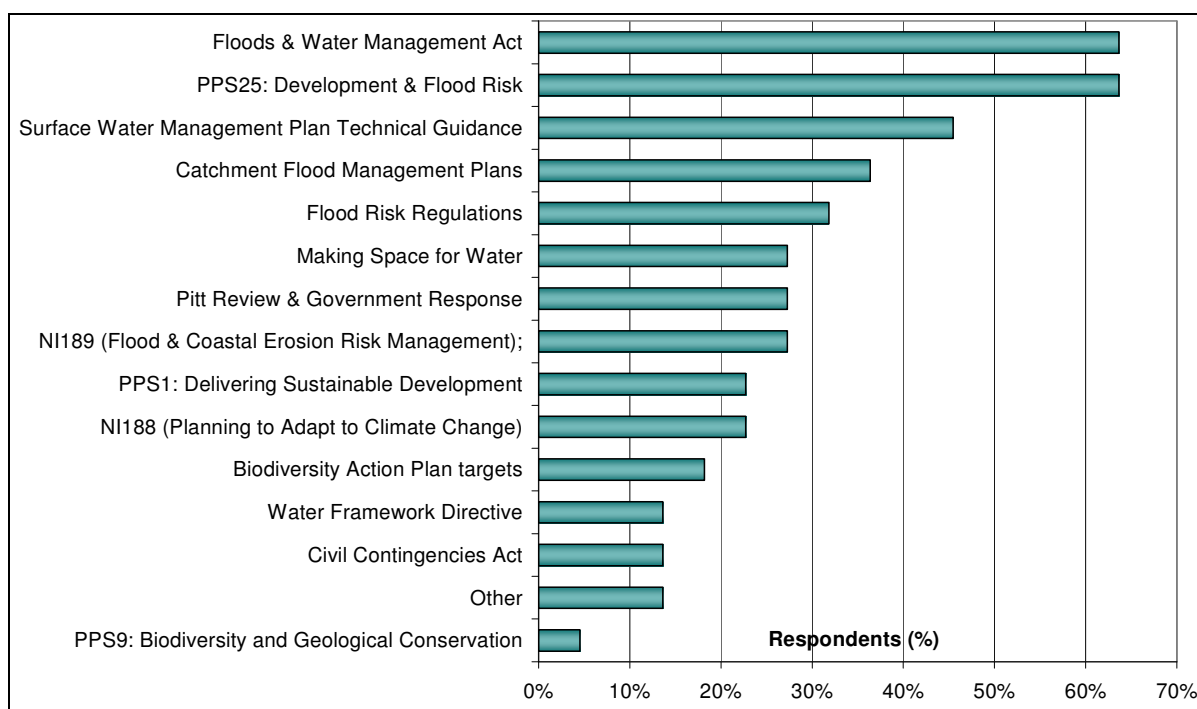


Figure 5: Perceived Policy Drivers for Developing Urban Blue Corridors



3.3 Benefits of Developing Urban Blue Corridors

3.3.1 Planning for Urban Blue Corridors provides the opportunity to develop a network of multifunctional ‘blue’ spaces or corridors within the urban environment. There are a wide range of benefits across a wide range of specialisms that can be derived from the implementation of Urban Blue Corridors; these are summarised in Table 3.

Perceived Benefits

3.3.2 Whilst this study has identified numerous potential benefits from the implementation of Urban Blue Corridors, the current perceived benefits identified during the consultation exercise with LAs, the Environment Agency, local voluntary groups, Government organisations and developers, is much narrower, with flood risk and surface water management seen as the main benefit (Figure 6). Climate change adaptation, amenity, water environment and social benefits are less widely recognised, and economic benefits almost ignored.

3.3.3 It is therefore clear that there needs to be a wider promotion of the benefits of Urban Blue Corridors amongst those involved in their development and delivery; particularly with respect to adapting to the impacts of climate change where the benefits of strong and early action outweigh the economic costs of not acting¹²

3.3.4 The benefits that could be derived from the implementation of Urban Blue Corridors are discussed in more detail below.

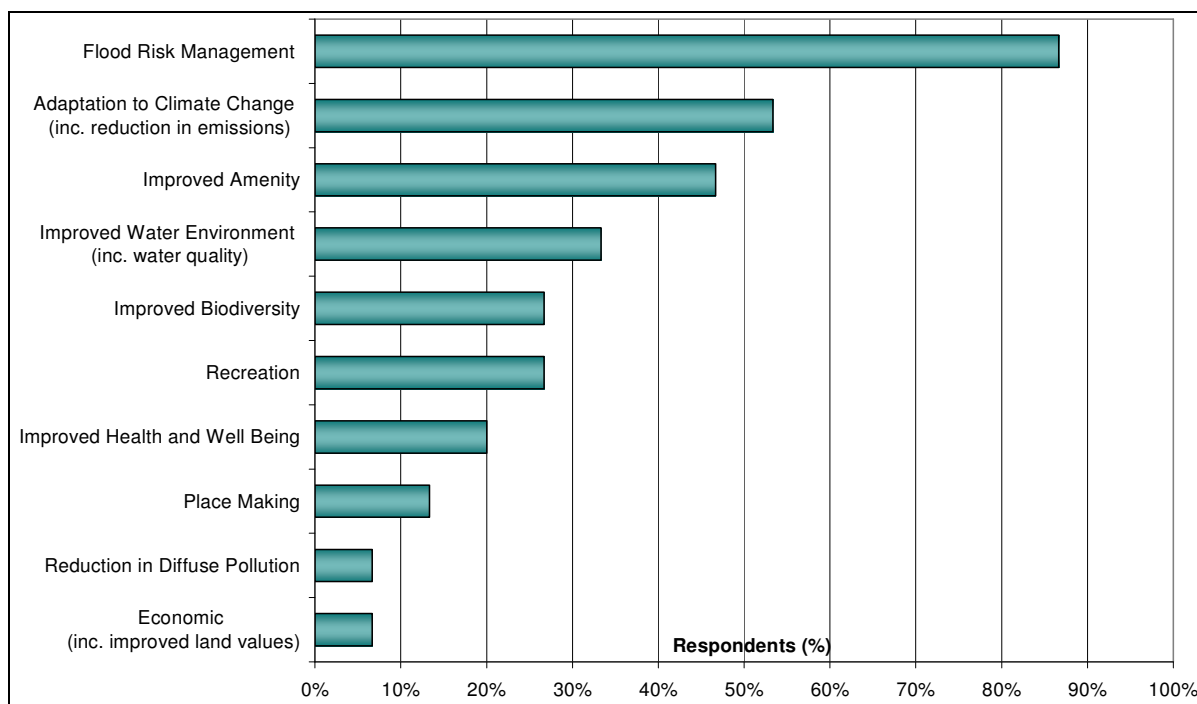


Figure 6: Perceived Benefits from Developing Urban Blue Corridors



Table 3: Potential Benefits from Urban Blue Corridors

Social	<p>Improved Amenity and Place Making - The concept of place-making is embedded in PPS1¹³ and is promoted by Natural England in both its spatial targeting work and Green Infrastructure Guidance⁶. It has recently been incorporated in a number of Green Infrastructure strategies prepared, for example, for the Thetford Growth Point¹⁴ and draft Ashford Green and Blue Grid Strategy¹⁵. The latter example is particularly relevant in that it plans for ‘Blue’ as well as Green Infrastructure, whereas the blue element is hidden within the green in the Thetford example.</p> <p>‘Place-making’ refers to recognising the character and distinctiveness of different locations and ensuring that policies and programmes respond accordingly⁶. The aim is to design an area to make it more attractive to, and compatible with, the people who use it, through an integrated and transformative process that connects creative and cultural resources to build authentic, dynamic and resilient communities or places. This could include the creation of economically vibrant, aesthetically attractive and lively and engaging places¹⁶.</p> <p>Place making should:</p> <ul style="list-style-type: none"> • Reveal and respond to the true character of the place; • Involve people in the planning and activation of the place; • Respond to people’s emotional needs and aspirations; • Be ‘attractive’ to people by providing them with multiple experiences; and • Create pleasurable experiences that evoke ‘aesthetic’ delight¹⁷. <p>Urban Blue Corridors can contribute to place-making through forming design principles which respond to landscape character and sense of place, and evoke the key natural characteristics of Natural Landscape Areas, as highlighted through the London’s Natural Signatures project¹⁸. They can also contribute through identifying opportunities for community involvement in projects through design and implementation to foster ownership and involvement. Through this, a sense of place can be created and the social benefits derived from Urban Blue Corridors achieved.</p>
	<p>Improved Access for Recreation - The physical and mental health benefits of sport are widely recognised and there are various targets for engagement and guidance on integrating recreation into all strategic planning guidance. Demand for water related recreation is growing, and there is a need for ‘doorstep’ opportunities¹⁹.</p> <p>Urban Blue Corridors can provide benefits for recreation and relaxation; for example, some components of an Urban Blue Corridors can provide pleasant areas to walk and watch wildlife, cycle or undertake water-based recreation. This can contribute to improved physical and mental health, with added benefits of reducing healthcare costs and bringing money into the area through recreational activities²⁰.</p>
	<p>Promotion of Health and Well-Being - Urban Blue Corridors can also contribute to aesthetic living and working environments, increasing a location’s attractiveness to employers and employees, and provide access to work through sustainable transport links, leading to social and economic benefits²¹ and potentially helping to reduce air pollution²². Increased opportunities for recreation and leisure can also facilitate improved health and feelings of well-being.</p>
	<p>Facilitated Social Inclusion & Education - Community involvement in the design and management of Green Infrastructure is believed to promote social inclusion and stewardship²²; this may be essential to achieving long term benefits of Urban Blue Corridors and provide linkage with the Localism Agenda. Through these initiatives, the public can be educated on the benefits and opportunities of Urban Blue Corridors, helping to contribute to the effective long term management of the assets. The River Anton Scheme in Andover encouraged children to help design motifs for the newly renovated river pathway through the town centre, thereby engaging and educating the public in the ongoing improvements to the River Anton²³.</p>



	<p>Preserved and Enhanced Landscape, Heritage and Culture - Many ‘blue’ assets, particularly canals, have strong heritage. Preserving and providing access to heritage sites can increase leisure and tourism opportunities, with associated commercial opportunities. For example, such opportunities have been identified on the Chesterfield Canal as part of the Staveley Works Area Action Plan (SWAAP)²⁴. The plan includes providing gateways to the site showcasing heritage and conservation areas, and using the canal as a transportation/recreational route.</p> <p>Urban Blue Corridors have a valuable role with respect to identity of place through history/heritage. Design targets may decide to compromise biophysical utility to maximise heritage-infrastructure (e.g. the preservation and function of an old mill weir) as evidenced by the National Trust for the River Wandle at Morden Hall Park. There are numerous European examples where urban multifunctional ‘waterscapes’ have been successful in enhancing social benefits such as heritage and place but do not necessarily maximise the ecological opportunities²⁵.</p> <p>Improved Reputation – Improved aesthetics can help to improve the reputation, and enjoyment of an area, making it more desirable to live and work, and potentially increasing tourism. It can also encourage a community spirit and ownership, through pride in the urban environment. An improved reputation, through good design and protection for existing and new communities.</p> <p><i>“Investments in green space have been shown to improve a region’s image; helping to attract and retain high value industries, new business start-ups, entrepreneurs and workers. This in turn increases the scope for leveraging in private sector investment, reducing unemployment and increasing ‘Gross Value Added’”²⁶</i></p>
Environmental	<p>Flood Risk Management - One of the main benefits of Urban Blue Corridors is in reducing flood risk. Urban Blue Corridors can provide low risk flow paths and areas for sustainable drainage and water storage. Sustainable drainage may also be used for water reuse to reduce pressure on water resources.</p> <p>Setting flood defences and development back from a watercourse can restore part or all of the natural floodplain, reducing risk elsewhere by creating extra storage for floodwaters. These storage areas can also be used for recreation, for example playing fields and golf courses, and provide ecological benefits²⁷. For example, research has shown a higher species richness within clusters of ponds than within single sites, demonstrating the importance of habitat connectivity and a holistic approach²⁸.</p> <p>Using Urban Blue Corridors for flood risk management may reduce risk, cost and aesthetic impact. Building defences further back from a watercourse would provide extra storage, reducing the height of defence needed. In addition to reduced cost and visual impact, the danger resulting from a breach would be lower due to the reduced water levels²⁹.</p> <p>Through careful management of water and planning for extreme weather events, for example by utilising overland flow paths and allowing water to flow through the urban area in a controlled manner, the long-term flood alleviation and management of the urban environment could be planned and the costs of such reduced from the traditional hard defences employed to stop water entering the urban environment.</p> <p>Climate Change Adaptation and Reduction in Carbon Emissions - Cities are more vulnerable to increased summer temperatures due to the urban heat island (UHI) effect, UHI being the difference between rural and urban temperatures²². The increased risk of heat waves and higher temperatures can be reduced at a strategic level through the implementation of parks and green spaces, ponds and fountains²², with vegetation providing shading and cooling and the evaporation of water bodies creating a cooling effect of a few degrees Celsius³⁰. However, maintaining vegetation communities under low flow and/or drought conditions may be problematic and therefore it may be important to consider the potential for invasive species in ‘new’ blue environments. Through the development of the Hackbridge area in the London Borough of Sutton (Case Study 1), amenity planting and use of drought and flood tolerant plant species has been considered.</p> <p>Applying the relevant reported benefits of Green Infrastructure, some of the features of Urban Blue Corridors, such as lakes, ponds, rivers and canals, can contribute to climate change mitigation and adaptation, creating areas of evaporation and cool recreational space in times of high temperatures. This is a</p>



function of the individual water bodies and does not require the connectivity of an Urban Blue Corridor, but connecting the features in an Urban Blue Corridor could increase access to cool recreational space.

Through managing the flow of water around urban areas via overland flow paths and ponding areas, reduced volumes of surface water may be treated at sewage treatment works, thereby reducing the use of fuel to unnecessarily treat surface water and reduce the operating and management costs to both LAs and water companies.

The recent publication by the Adaptation for Climate Change Sub-Committee³¹ identifies 'Managing Natural Resources Sustainably' as one of the five priority areas for early action in the UK. This includes, for example, using water more efficiently, improving and extending ecological networks so that species can adapt and move as the climate changes and making space for water along rivers and the coast. Urban Blue Corridors can contribute to these objectives.

Improved Resilience to Extreme Weather Events - Through effective planning, Urban Blue Corridors can be utilised to improve resilience to extreme weather events; therefore causing less short-term impact on the urban environment and, in turn, contributing to the improved perceived 'safety' of the local community, i.e. from flooding.

The Stern Review on the Economics of Climate Change assessed a wide range of evidence on the impacts of climate change and on the economic costs, and used a number of different techniques to assess costs and risks. From all of these perspectives, the evidence gathered by the Review led to the conclusion that the benefits of strong and early action outweigh the economic costs of not acting.³²

*"Adaptation to climate change – that is, taking steps to build resilience and minimise costs – is essential. It is no longer possible to prevent the climate change that will take place over the next two to three decades, but it is still possible to protect our societies and economies from its impacts to some extent – for example, by providing better information, improved planning and more climate-resilient crops and infrastructure."*³²

Preserved and Enhanced Biodiversity and Habitats - Urban areas can support many BAP habitats and species, contributing to national and local targets. Blue corridors can support and enhance this capacity; for example, maintaining and creating wetlands. Particularly important is their potential to provide connectivity and reduce/reverse fragmentation.

A range of obvious linkages can be made in terms of linking Urban Blue Corridors with existing Green Infrastructure, or by developing new Urban Blue Corridors to be 'dual' Green/Blue Corridors which could contribute to urban green space provision and BAP targets.

Development of Ecological Networks - Urban Blue Corridors offer the opportunity to link with existing ecological networks within the urban environment, potentially through emerging Green Infrastructure strategies, and thereby improve the existing natural environment. Rivers, canals, surface water ponds and overland flow path routes offer the opportunity to connect areas of 'green' and 'blue' spaces around the urban environment and add a dynamic element to the existing ecological networks.

Improved Water Environment and Reduction in Diffuse Pollution - Through controlling surface water runoff and the way it is discharged into watercourses (particularly during extreme weather events which can cause pollutants from roads and hard standing areas to be washed directly into watercourses and surface water sewers), the water environment, and in particular water quality within the receiving watercourse, has the potential to be improved. Long-term management of the watercourses, utilisation of SuDS and storage areas and run-off from urban areas (diffuse pollution) can help contribute to the WFD's³³ aim of 'good ecological quality'.

Retaining Natural Processes - Implementation of Urban Blue Corridors within the urban environment can help to facilitate the natural flow of water through the urban environment rather than using more costly engineering solutions to unnaturally divert and manage water within the urban area. By setting development back from watercourse, a more natural floodplain can be implemented thereby reducing the potential for upstream or downstream flooding.



Economic	<p>Increased Land/Property Values - Improvement in the aesthetics of an area can help increase land and property values in near-by areas. Greener and bluer areas have a better image and attract more visitors, bringing with them retail and leisure spending and providing job and rental opportunities²⁶. Forest Research report that having a well-managed green space nearby results in average property premiums from 2.6% to 11.3%.³⁴</p> <p><i>“GEN Consulting found that regeneration using green infrastructure of a run-down area (negative aesthetics and perception) caused house prices to increase by 111% in Glasgow. It was established that once the general property price rises and any other differing factors had been stripped out, the enhancement value of the existing housing stock was in the region of £15 million, and as a result of the scheme new development to the value of £75 million has been realised.”³⁵</i></p>
	<p>Economic Growth and Investment – An improvement in the river and water environment in an urban area can result in economic growth and investment in the area. Local economic regeneration can be indicated by changes in employment, new business start up, gross value added and land and property prices. There is good evidence that green space can make positive impacts on local economic regeneration, however, the quality and quantity of this evidence is comparatively poor and further case studies are needed to improve it³⁴.</p> <p><i>“Landscaping improvements at Riverside Park, Clydebank and Winsford yielded over 16% and 13% respectively of net growth in employment and levered over £1 million of private investment”³⁶</i></p> <p>Improving the amenity of an urban environment can help increase tourism (and provide increased income) to the area, particularly if recreational activities are provided.</p>
	<p>Long-term Economic Savings – There are a number of potential long-term economic savings that can be achieved through the implementation of Urban Blue Corridors, including:</p> <ul style="list-style-type: none"> • Surface water flood events can be very costly in terms of repairs, therefore having infrastructure in place that, for example, temporarily stores the flood water before it naturally disperses is a potential more economic approach for LAs; • Urban Blue Corridors can provide economic savings and value to water companies, which will often have to spend money managing surface water flows that ultimately end up in a combined sewerage system. This ultimately requires storage and treatment of surface water flows at a cost (to the company and customers). The sustainable management of surface water could alleviate the burden on water companies and reduce operating costs, through less treatment of surface water; • Reduced costs (e.g. insurance claims, infrastructure maintenance) from improved management, resilience and planning for flooding; • Reduced costs and carbon use from using the natural environment to adapt to climate change i.e. reduced heat island effect and adaptation to future flooding; • Savings to highways and public realm maintenance; and • Reduced health care costs.



Maximising Benefits

3.3.5 The linking of existing Blue Infrastructure in the urban environment through Urban Blue Corridors is one potential way of maximising benefits and creating an emerging network of Urban Blue Corridors. Individual actions such as setting a development back, implementing SuDS or deculverting a critical ordinary watercourse, for example, have a relatively small impact on water quality, amenity, biodiversity etc. in isolation, but the compounded benefits from Urban Blue Corridors, which can address several of these measures in combination, have a much greater potential impact. There is also the option to maximise benefits through the integration with existing or planned Green Infrastructure and corridors.

Integration with Green Infrastructure

3.3.6 Green Infrastructure and Urban Blue Corridors are inextricably linked and, when planned as a comprehensive and integrated network, they are able to provide greater benefits than if planned in isolation.

3.3.7 Blue Infrastructure plays an important role in maintaining biodiversity through the provision of food and habitat for countless species at various points of their lifecycles. It also plays a central role in the hydrological cycle which provides biodiversity with the resources required to survive. Blue Infrastructure, acting as connecting corridors between patches of habitat, is essential in maintaining a coherent and resilient ecological network which allows the movement and expansion of populations so as to remain healthy and viable. This aspect is considered to be important in the context of climate change, where ecological corridors will be required to allow for the movement of species and habitats to adjust to changing climatic conditions.

3.3.8 Likewise the wider Green Infrastructure network, away from the immediate Urban Blue Corridor, can play a valuable role in maintaining Blue Infrastructure through the attenuation of water, managing flow, purification of water, land stabilisation and climate stabilisation. At a catchment level, natural habitats play a valuable role in controlling surface water attenuation and infiltration; and in maintaining surface water run-off to rivers at a manageable level that helps to prevent flooding.

3.3.9 If planned in an integrated manner, Green and Blue Infrastructure, including Urban Blue Corridors, can maximise these benefits to:

- Reconnect and expand ecological networks;
- Improve landscapes;
- Establish improved catchment management of water to reduce flooding;
- Improve quality of life through access and recreation; and
- Make a more positive contribution to natural processes such as the water cycle.



3.4 Barriers to Developing Urban Blue Corridors

3.4.1 Being a relatively new concept, case studies and literature relating to the barriers to implementing Urban Blue Corridors is limited, and the issue tends to be discussed in very broad terms. However, a number of potential barriers can be identified; for example, from discussion of those identified in relation to Green Infrastructure and in managed coastline retreat. Table 4 summarises the main barriers identified as potential obstacles to be overcome in the development of Urban Blue Corridors. These have been identified through a review of existing literature, case studies and the consultation exercise and are grouped under the key stages in the development and planning of Urban Blue Corridors, namely:

- Concept and Perception;
- Policy Support;
- Planning;
- Cooperation;
- Implementation; and
- Management and Governance.

Perceived Barriers

3.4.2 The consultation exercise has identified that the perceived key barriers to the implementation of Urban Blue Corridors are related to the lack of understanding and knowledge of Urban Blue Corridors and their benefits and the long term costs and maintenance associated with the establishment of the scheme (Figure 7). Resistance and a lack of leverage in negotiating with developers are also recognised as barriers to the implementation.

3.4.3 It is therefore clear that there needs to be a wider promotion of the concept and benefits of Urban Blue Corridors amongst those involved in the planning for them, and further consideration given to the long term planning, costs and maintenance of Urban Blue Corridors.

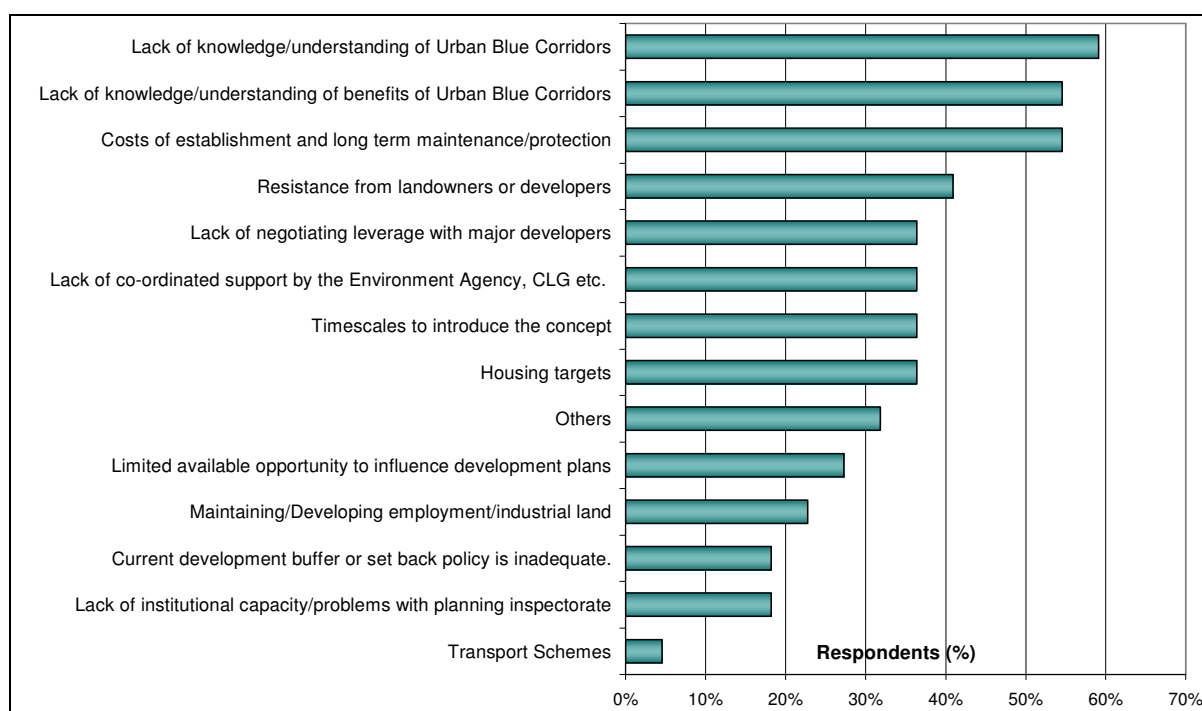


Figure 7: Perceived Barriers to Developing Urban Blue Corridors



Table 4: Potential Barriers to Developing Urban Blue Corridors (based on existing literature, case studies and consultation exercise)

Concept and Perception	<ul style="list-style-type: none"> • Lack of knowledge or understanding of Urban Blue Corridors and the benefits they can derive. • No shared understanding between organisations of the nature and functionality of Urban Blue Corridors (watercourses, overland flow paths, ponding areas, SuDS). • Not seen as a multifunctional land-use option, too focused on flood risk. • Seen as part of Green Infrastructure but not all aspects of Urban Blue Corridors considered within Green Infrastructure strategies. The consultation exercise found that over 60% of respondents currently consider Urban Blue Corridors as part of Green Infrastructure within their organisation, with just 15% considering them in their own right. • Perceived 'risk' from overland flow paths during extreme events. • No holistic consideration of Urban Blue Corridors. • The consultation exercise found that most developers had personal experience or an understanding of SuDS, but were less familiar with 'intentional ponding' and 'river corridors'. Overland flow paths and blue corridors were on the whole little or unknown topics³⁷.
Policy Support	<ul style="list-style-type: none"> • No specific legislative driver for Urban Blue Corridors. • Current lack of strength in planning policy to better encourage investment in Urban Blue Corridors. • Planning reforms by the new Coalition Government (through the abolition of proposed PPS and regional spatial strategies (RSS)) may impact on getting Urban Blue Corridors into national guidance and policy, and ultimately slow the progress in getting the concept embedded in the planning system. • Planning policy on Green and Blue Infrastructure is (or was) making good progress (e.g. SuDS / flood risk management / Blue Ribbon Network / green roof / Green Grid policies in the revised London Plan); but the planning reforms by the new Coalition Government may impact on this through the abolition of proposed PPS and RSS³⁸, for example: <ul style="list-style-type: none"> • Two key PPS, the draft PPS on Planning for a Natural and Healthy Environment; and the draft PPS on Planning for a Low Carbon Future in a Changing Climate, are now unlikely to be implemented, leaving a large gap in national guidance and policy on the delivery of Blue and Green Infrastructure in a changing climate; and • Gaps in essential strategic policy will arise with the abolition of RSS and regional development agencies such as the Northwest Development Agency who were progressing in creating policies for Blue and Green Infrastructure (particularly in terms of adaptation benefits) into their regional Climate Change Action Plan³⁹, and a Green Infrastructure Climate Change Action Plan⁴⁰. • No incentive to encourage development of Urban Blue Corridors for either developers or LAs. • PPS25 and its Practice Guide are focussed towards fluvial/tidal flooding and drainage attenuation, so there may be difficulties in using this to implement Urban Blue Corridors as a specific mitigation method. • No legislative driver for the Environment Agency to be able to object to development on the basis of Flood Map for Surface Water maps (previously called Areas Susceptible to Surface Water Flooding (ASSWF)). • Nationally the local need for new housing places development pressure on land in urban areas to be developed for high density housing • There are few existing policies that encourage the safeguarding of ponding areas and protection of overland flow paths, highlighting a gap in existing LA and National policies with regards to Urban Blue Corridors.



	<ul style="list-style-type: none"> • The Environment Agency currently has policies to protect some blue infrastructure assets such as balancing ponds and river corridors but no policies exist to protect overland flow paths. • No clear guidance for planners (both policy and development management) to help utilise the powers available to implement Urban Blue Corridors (i.e. through Section 106 agreement, Community Infrastructure Levy (CIL), policy hooks in Local Development Documents etc.) • There is a lack of clear process/procedure and responsible parties for deculverting of watercourses. • There is insufficient priority assigned to increased recreational access and public footpaths along river corridors. • Biodiversity enhancements tend to be through a piecemeal approach on the back of development when negotiated. There is a lack of sound strategy and local funding initiatives, and Local Biodiversity Action Plans (LBAPs) should better relate to planning.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Planning</p>	<ul style="list-style-type: none"> • Limited available windows of opportunity to influence development plans and introduce new policy concepts. New Government direction (and revocation of RSS (apart from SDS for London)) means that there will be limited 'top down' policy and guidance and there will thus be more reliance on local policies, strategies and community involvement. • 'Lag time' and timescales to introduce the concept to professional planners, developers/landowners and the public and gain their acceptance as a tool for managing development and contributing towards Green Infrastructure. • Surface Water Management Plans (SWMPs) have only been implemented in priority areas and do not reflect the Environment Agency's update to the Surface Water Flooding map. • Creating Urban Blue Corridors by moving flood defences back from a watercourse in urban areas and abandoning existing waterside properties is likely to be highly emotive and controversial, as demonstrated by opposition of affected communities to managed retreat of coastlines⁴¹. • Potential mechanisms for the delivery of Urban Blue Corridors are not well established. River setback/allowing space for water has been undertaken, for example, by defining no development within Flood Zone 3b¹⁴; but building in overland flow paths, and how to manage these in terms of health and safety. Functionality, design life, resilience measures are currently unknown, or not put into practice. • There is a perceived lack of available resources or technical awareness/knowledge amongst, for example, urban designers and development management/control officers, to scrutinise development applications and be soundly judged through planning applications/spatial plans. • In most cases overland flow paths are yet to be identified in urban environments. The main mechanism for doing this is through SWMPs which have only been encouraged in the last 18 months. Going forward, this barrier could be overcome. • Surface Water Flooding maps provided by the Environment Agency highlight areas at risk of surface water flooding but cannot be used as the sole basis for planning decisions due to their indicative nature. • Planning for use of corridors during periods of non-flood i.e. for highways and footpaths and ensuring they are still beneficial to urban environment. • Not all water bodies are aesthetically pleasing and overland flow pathways are not necessarily through appropriate locations for walking or cycling. • Achieving recreational benefits is reliant on the cooperation of landowners. Only a very small proportion of rivers are currently available to water-based recreation other than fishing; for example, canoeists currently have direct access to only two per cent of waterways in England and Wales⁴². Negotiation of access to water and bankside land for recreation would be required in developing Urban Blue Corridors if the recreation and associated health benefits are to be realised. • Provision of corridors to connect habitats also presents a potential threat in terms of the spread of invasive species. Few eradication programmes have been successful in the UK⁴³, and management is both technically difficult and costly⁴⁴. The estimated cost of tackling invasive species in Britain is £2 billion per year and the spread of invasive species is recognised as a serious economic threat⁴⁵.



	<ul style="list-style-type: none"> • Benefits of Blue Infrastructure are often not considered holistically, e.g. SWAAP includes plans for a heritage site with commercial and recreational opportunities, provision of wetlands and 'Blue Corridors', areas of water storage and sustainable drainage. However, these aspects do not appear to be considered holistically as management of existing water bodies and connectivity are highlighted as weaknesses in the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the plan⁴⁶. • Blue Infrastructure, such as Urban Blue Corridors, will play a vital role in creating climate resilient development, a role which is not currently sufficiently recognised and utilised and lacks integration in mainstream planning⁴⁷.
Cooperation	<ul style="list-style-type: none"> • Lack of coordinated support by the Environment Agency, Defra, DCLG etc. • Lack of coordination across LA areas of expertise to achieve sustainable solutions. • Logistics of coordinating all the relevant stakeholders to implement an Urban Blue Corridor⁴⁸. • Implementation will require cooperation from a wide group of stakeholders and communities. • Need for better co-ordination between the Council and other agencies. • Need for better co-ordination with voluntary sector/environmental groups in terms of managing Urban Blue Corridors. • Need for better internal cooperation between Council departments i.e. Parks, Spatial Planning, Emergency Planning, Structures and Drainage, Highways, Regeneration/assets and Facilities Management (including any Local Asset Backed Vehicle) and Education. • The level of understanding and cooperation between the Environment Agency and partner authorities is variable and dependant on policy support within Local Development Frameworks (LDFs) and Local Service Providers. It tends to be opportunistic, but is improving through strategic planning and development of regional initiatives such as the London Green Grid, and Southeast Green Infrastructure Partnership⁴⁹. However, under the Coalition Government's new planning approach, this will need to be delivered through local initiatives and cross-boundary collaborative projects.
Implementation	<ul style="list-style-type: none"> • Lack of negotiating leverage with major developers without hooks in the LDF or Infrastructure Delivery Plan (IDP). • Lack of powers, funding and resource within LAs to implement Urban Blue Corridors. • Lack of clear funding streams for multiple benefit projects. • Non-point pollution sources are one of the main reasons that urban watercourses fail to meet the water quality targets set for them⁵⁰. Urban water flows may include contamination from suspended sediments, metals, nutrients, oil and grease and as such it is important to maintain a good public health barrier⁵¹ especially where engagement with water and Urban Blue Corridors is promoted. • Costs of establishment and long term maintenance/protection; Urban Blue Corridors will need to be maintained, balancing the multiple interests; for example, maintaining SuDS systems, flow pathways for intermittent overland flows and public access routes while preserving habitats. Defining clear responsibilities, and ensuring long term funding, for maintenance will be critical in the long term success of Urban Blue Corridors. There is currently no statutory duty for LAs to fund parks and green space, and the provision of funding will need to be established²². As part of the Localism Agenda, local communities could be encouraged to manage or maintain Urban Blue Corridors, but as this is a new policy this has yet to be put into practice, so the practicality of this approach at this stage is unknown. • Possible resistance from landowners or developers seeking to promote alternative land uses which might generate greater financial receipts (i.e. loss of potential high value developable land next to the waterside⁵²). • Lack of developable land in urban areas, meaning that developers and/or landowners are less likely to want to give this up for Urban Blue Corridors. • Technological availability and knowledge.



	<ul style="list-style-type: none"> • Installation of Urban Blue Corridors may be problematic in existing built environments (retrofitting) where opportunities are largely governed by available space; in such cases, the requirement may be 'making best use of available space for water'. • Funding for cross-boundary/site schemes is not well established. Milton Keynes Council, however, has introduced a tariff system to which developers contribute to fund long-term town-wide infrastructure schemes⁵³. • Retrofitting existing developments to fit with Urban Blue Corridor proposals⁴⁸. • Overall, implementation remains slow (especially in relation to Green and Blue Infrastructure in mitigating and adapting to climate change), and its outcomes lag behind those delivered in North West Europe⁵⁴. The TCPA believe that this is partially due to a lack of clear policy messages, but other barriers include lack of professional and political leadership, skills, knowledge, and resources.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Management & Governance</p>	<ul style="list-style-type: none"> • Organisation and coordination during extreme events when overland flow paths may be used as 'Urban Blue Corridors'. • Long term management and maintenance of an integrated system. • Quality of the water potentially flowing through and being held in public amenity spaces⁴⁸. • Impact of Blue and Green corridors, other flood management features, and biodiversity/habitat activity on insect populations in terms of public health, via changes in prevalence of vector borne diseases, particularly with regard to predicted climatic changes.



Barriers in Green Infrastructure (Lessons Learnt)

- 3.4.4 The synergies between Urban Blue Corridors and Green Infrastructure mean that reviewing barriers encountered from the development of Green Infrastructure within the spatial planning system can also help to identify the potential barriers that may be encountered in developing Urban Blue Corridors.
- 3.4.5 As the Green Infrastructure practice has developed and progress has been made from developing high level strategies to implementation stages, recent research has aimed to identify the challenges and barriers to the implementation of Green Infrastructure strategies and projects.
- 3.4.6 The development and successful implementation of Green Infrastructure strategies face a number of recognised challenges. Integrating Green Infrastructure into new towns is always associated with challenges, but the challenges faced when attempting to incorporate Green Infrastructure in existing urban areas are even greater. Nonetheless, many of the challenges identified are also likely to apply in the delivery of multifunctional Urban Blue Corridors.
- 3.4.7 A review of key Green Infrastructure publications has been undertaken as part of this study to identify potential barriers to Green Infrastructure, and consideration has been given to how such barriers may also affect the development of Urban Blue Corridors (Table 5).



Table 5: Potential Barriers to Developing Urban Blue Corridors (based on identified barriers in the delivery of Green Infrastructure)

Potential Barriers ⁵⁹	Potential Relevance to Urban Blue Corridors
<ul style="list-style-type: none"> The benefits of multifunctionality are not currently being recognised in the planning system due to the classification of land by its primary function. 	<ul style="list-style-type: none"> There is a risk that in the development of Urban Blue Corridors initiatives focus on flood risk management and are therefore not designed to maximise other potential benefits for biodiversity, recreation, transport etc.
<ul style="list-style-type: none"> Retrofitting SuDs to existing development is restricted by the lack of available space, and the UK has not performed as well as other countries in this area. <i>“New developments provide lots of opportunities for incorporating Green Infrastructure into their design. However, much of the built environment is already there and is unlikely to change much, so more creative approaches are needed.”</i>⁵⁶ 	<ul style="list-style-type: none"> This is likely to be particularly relevant to Urban Blue Corridors where land values and local policies encourage a high density of development, which restricts space for the incorporation of natural features and SuDs. Large area based projects may involve direct land acquisition or working in partnership with other landowners. Where Urban Blue Corridors cannot be implemented within a settlement, it may be that opportunities exist upstream which can provide similar benefits, e.g. by making improvements to the floodplain at the edge of a town the flood risk within the urban area may be minimised (e.g. Milton Keynes⁵⁷)
<ul style="list-style-type: none"> Current green belt policy may result in increased building density in urban areas and may not allow for sustainable urban form. The potential for green belt to contribute to sustainable development may not be fully realised. Green belt policy is protectionist; an indirect result of this is that positive Green Infrastructure functions are not necessarily promoted in protected areas. 	<ul style="list-style-type: none"> Areas of green belt at the edges of urban settlements may provide useful space for the implementation of multifunctional Urban Blue Corridors which could contribute to minimising flood risk within the urban area. At the same time such areas could provide additional benefits for biodiversity, recreation and food provision. Land ownership may also be an issue.
<ul style="list-style-type: none"> Poorly designed and managed spaces within settlements are not fulfilling the potential contributions. 	<ul style="list-style-type: none"> Development which comprises large areas of hard landscaping may not allow for overland flow paths and ponding. These areas could be adapted to facilitate more sustainable drainage.
<ul style="list-style-type: none"> Overall funding of Green Infrastructure is a very small fraction of what is spent on other forms of infrastructure. 	<ul style="list-style-type: none"> Also likely to apply to Urban Blue Corridors. However justification for Urban Blue Corridors may resonate more with the public in certain areas which are at risk of flooding, and this may assist in obtaining funding.
<ul style="list-style-type: none"> There has been a trend of LAs disposing of open land to avoid the costs of management. 	<ul style="list-style-type: none"> Long term viability and management costs are likely to be a key concern for the authority that adopts SuDS. LAs are unlikely to have the funds to acquire land adjacent to existing Urban Blue Corridors, and land currently in their ownership will offer potential financial returns.
<ul style="list-style-type: none"> Focussing on land designated for high value (e.g. protected species and habitats) does not recognise the benefits of other green spaces to the wider ecological network. 	<ul style="list-style-type: none"> As well as large Green and Blue Infrastructure projects, planners also need to protect and implement small scale projects (e.g. protecting gardens and implementing small scale SuDS) which can make a significant cumulative benefit across the wider Green Infrastructure network.
<ul style="list-style-type: none"> A lack of professionals with the relevant skills to plan, design and manage Green Infrastructure projects, and to secure funding. 	<ul style="list-style-type: none"> Expertise in acquiring funding will be equally applicable to Urban Blue Corridors.



Potential Barriers ⁵⁹	Potential Relevance to Urban Blue Corridors
<ul style="list-style-type: none"> Green Infrastructure functions cross political boundaries and improvements in one authority may result in benefits across a much wider area⁵⁸. However, political support for sub-regional commitments may fail to materialise, meaning that the Strategy is delivered on a piecemeal scale with inconsistent standards of quality and coverage. 	<ul style="list-style-type: none"> As Urban Blue Corridors operate at a cross-boundary scale, joint working and sub-regional approach is essential to delivering significant improvements.
<ul style="list-style-type: none"> The economic value of green space, for example in flood prevention and climate change adaptation, is not fully accounted for in the decision making process. Current research is not comprehensive enough to provide a true cost-benefit analysis of Green Infrastructure to allow for an accurate comparison with grey infrastructure. There remains some doubt as to the commercial benefits of Green Infrastructure within the private sector. 	<ul style="list-style-type: none"> There is limited information available on the full economic benefits of Green Infrastructure and Urban Blue Corridors.
<ul style="list-style-type: none"> Conflicts between biodiversity and access for recreation. Where protected species are present, access may have to be restricted. 	<ul style="list-style-type: none"> Alternative arrangements or measures to minimise impacts on biodiversity will need to be considered where Urban Blue Corridor initiatives occur in ecologically sensitive areas. Zoning sites is an option for some Green Infrastructure but may not be so relevant for Urban Blue Corridor issues. Restrictions on recreational activity may be required.
<ul style="list-style-type: none"> Issues around maintenance of SuDS and how long-term management is funded. 	<ul style="list-style-type: none"> Formal adoption and maintenance of SuDs will be a key issue in the development of Urban Blue Corridors. It is not currently clear how this will be funded, and Green Infrastructure / Urban blue Corridors may lose out to other forms of infrastructure.
<ul style="list-style-type: none"> Green space is often underrepresented in decision making arenas and can easily slip down priority lists. 	<ul style="list-style-type: none"> The option of naturalised multifunctional Urban Blue Corridors may not appear to be the easiest or cheapest solution to flood risk management, and other less sustainable options may be favoured by decision makers.
<ul style="list-style-type: none"> Green Infrastructure strategies should aim to establish deficiencies in the provision of Green Infrastructure. Existing Green Infrastructure standards can result in a focus on the quantity of Green Infrastructure and not necessarily the quality. Standards may focus too heavily on one element, for example biodiversity or recreational access, and may not promote optimal multifunctional benefits. 	<ul style="list-style-type: none"> This is particularly relevant to Blue Infrastructure, where site specific analysis may be required to quantify flood alleviation benefits. Green Infrastructure strategies may require hydrological modelling to be able to identify opportunities, and this is not often integrated into strategic level Green Infrastructure strategies.
<ul style="list-style-type: none"> Timescales for implementing Green Infrastructure and realising benefits are often long term and do not easily align with political/plan period timescales; e.g. Green Infrastructure strategies are not effectively translated into LDFs due to timetable issues. 	<ul style="list-style-type: none"> Urban Blue Corridors will face the same barriers in terms of long-term delivery and management within the existing local planning system.
<ul style="list-style-type: none"> The mechanism for acquiring funding may limit the realisation of strategic benefits. For example, seeking developer contributions associated with particular developments may result in a piecemeal approach to Green Infrastructure which does not necessarily maximise strategic benefits. 	<ul style="list-style-type: none"> Will also apply to Urban Blue Corridors.



3.5 Discussion

3.5.1 Common themes have emerged from the consultation exercise and literature review:

- There appears to be a general acceptance that Urban Blue Corridors will bring value but they are aspirational at this stage and their implementation is limited by guidance and available resources;
- To date, management decisions/cooperation have tended to be reactive (e.g. to past events) rather than pro-active;
- There is limited awareness, particularly among planners and developers, of the Urban Blue Corridors concept and its benefits;
- Delivery through the spatial planning system, where it has taken place, has tended to focus on a single aspect of the scheme, namely, flood risk, with little consideration to the multi-benefits that can be derived;
- There is no legislative driver or guidance to encourage spatial planners within LAs to consider Urban Blue Corridors, and no identified mechanism for implementation, particularly with regards to overland flow paths; and
- There is no mechanism in place for the establishment of long-term maintenance and responsibility of the Urban Blue Corridor;
- LFRM strategies will set out how flood risk will be managed and encourage partnership working between key stakeholders concerned with the management of surface water in the local area. This in turn should open up opportunities to manage/develop components of Urban Blue Corridors. Building on the findings and recommendations of PFRAs, CFMPs, SFRAs and SWMPs, the development of LFRM strategies can provide an excellent opportunity to explore whether Urban Blue Corridors are a suitable management tool for local flood risk.

Identifying Drivers

3.5.2 In terms of policy support, there are no existing policy drivers, beyond those of ‘making space for water’, which actively encourage or force the implementation of Urban Blue Corridors. There is a multitude of relevant guidance but none that links all the aspects together. The main drivers behind considering such an approach come from a flood risk perspective. PPS25 policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk elsewhere. The designation of functional floodplains next to watercourses can force LAs and developers to set development back out of the flood zone. However, little consideration is given at present to overland flow paths and natural ponding areas and, in-terms of the multifunctional benefits arising from the implementation of new development, these are often overlooked or considered only within or as part of Green Infrastructure i.e. creating green corridors along river banks. Moreover, relatively little information is available regarding the floodplains of Ordinary Watercourses; thus they are often overlooked by LAs in the development of local spatial plans or Flood Risk Management Strategies. It is clear that there are opportunities to consolidate and join-up these concepts.

Delivering Benefits

3.5.3 The consultation exercise and literature review has identified that there are a number of social, environmental and economic benefits that can be delivered through the implementation of Urban Blue Corridors. Many of these arise from the multifunctional use of areas designated as Urban Blue Corridors. Through linking with existing Green Infrastructure benefits can be



maximised and potential ‘quick-wins’ achieved in terms of delivering benefits from schemes. Compounded benefits from Urban Blue Corridors e.g. ecological functionality, have a much greater potential impact than measures taken individually (e.g. setting a development back or implementing a SuDS or deculverting a critical ordinary watercourse) which may have a relatively small impact on water quality, amenity, biodiversity etc. However, this does not mean that individual schemes, such as a designated overland flow path, will not deliver significant benefits at a local or site-specific level.

- 3.5.4 One of the key roles that Blue Infrastructure, such as Urban Blue Corridors, can fulfil is in creating climate resilient development. However, this is not currently sufficiently recognised or utilised and lacks integration in mainstream planning. Regional planning has had a major role in identifying areas under threat from climate change impacts (e.g. flooding) and creating strategic guidance, technical advice and policy in preparing for, adapting to, and mitigating these impacts (particularly at the catchment-scale which crosses LA boundaries). However, the revocation of regional planning and ‘top-down’ approaches means that the delivery of Urban Blue Corridors could potentially be slowed unless a delivery and support mechanism is identified for the local delivery of these schemes. Without clear directions from regional plans (including policies and technical advice within the evidence base), local decision-making on Blue and Green Infrastructure will have to inform delivery, and collaboration between LAs will become more important.

Overcoming Barriers

- 3.5.5 The TCPA project on Inland Waterways⁵⁹ sets out policy advice and key planning policy challenges to unlocking the potential and benefits of inland waterways. This provides a good summary of the likely challenges to be faced by Urban Blue Corridors. A key conclusion was that:

“Planning policy gaps and imbalances do exist at all the different spatial levels (local, sub-regional, regional and national). This is partly attributable to a lack of awareness in the planning arena of:

- *The different roles that waterways perform; the types of economic, social and environmental benefits that can be generated by waterways for communities;*
- *How waterways can contribute to the delivery of regional targets and local ambitions; and*
- *How the planning system can remove obstacles to the delivery of public benefits offered by waterways.*

Waterways need to be recognised as a form of strategic and local infrastructure performing multiple functions and supporting the visitor economy, as well as regeneration, renewal and growth agendas.”

- 3.5.6 Several barriers to the planning and delivery of Urban Blue Corridors have been identified through this Scoping Report. It is recognised that some of these may be the perception of Urban Blue Corridors as a new process/concept, rather than an over-arching framework for the linking of existing Blue Infrastructure. As such, through the promotion of Urban Blue Corridors and provision of identified case studies where schemes have been successfully implemented a better understanding of the concept, drivers, benefits and actual ‘on-the-ground’ barriers may be achieved amongst LAs, local communities and stakeholders. Similarly, surface water flooding maps have only recently been developed, and as further work is undertaken on existing surface water flooding risk in an area (i.e. through LFRM strategies, PFRAs and



- SWMPs), and LAs respond to the requirements under the FWMA, this type of flood risk will become better understood, and allow for better strategic planning.
- 3.5.7 Planning policy on Blue (and Green) Infrastructure has been making good progress (e.g. SuDS / flood risk management / Blue Ribbon Network / green roof / Green Grid policies in the revised London Plan); but the proposed planning reforms by the new Coalition Government are likely to impact on this through the proposed abolition of PPS, PPG and RSS. This may impact on the delivery timescales for Urban Blue Corridors. In particular, there is currently a lack of knowledge, skills and resources regarding flood risk and its mitigation through planning within LAs and local communities. The FWMA addresses this in part through encouragement of cooperation and coordination within and between LAs and stakeholders, and the establishment of local partnerships to plan and deliver schemes. However, awareness will need to be raised amongst all LA departments with a potential role in the planning for Urban Blue Corridors and for Councillors through workshops or training on planning for flood risk (and mitigation) and climate change.
- 3.5.8 One of the largest hurdles perceived by both LAs and developers is the cost of implementation of Urban Blue Corridors. Given Government Spending Reviews, and increasingly restrictive budgets within LAs, there will need to be consideration of spreading the cost of schemes across departments within LAs (as schemes can include, and benefit, multiple departments), across LAs (where cross-boundary schemes/benefits arise) and amongst developers within a locality. It is important to recognise that a balance must be struck between environmental issues and commercial interest, as both can affect a community.
- 3.5.9 The costs of incorporating the additional requirements and potential loss of land to developers must be given careful consideration, and where appropriate incentives provided to encourage developers to consider drainage infrastructure within (and outside of) their developments. Developers, in general, recognise the benefits of incorporating flood management measures in terms of increased development value, but with SuDS becoming a reality this could potentially change the whole approach to drainage in new developments. Developers want certainty and if studies can identify and solve drainage issues then this should help developers produce 'fit for purpose' schemes – especially if drainage is not viewed in isolation.



4 Development and Delivery of Urban Blue Corridors

4.1 Introduction

4.1.1 The previous sections highlighted the need for a more coordinated long term approach to developing Urban Blue Corridors, especially in the broader context of the need to adapt to likely future climate change impacts, managing associated flood risks and the need to maximise social, economic and environmental benefits from major regeneration initiatives. This section details the high level approach to the development and delivery of Urban Blue Corridors.

4.1.2 Successful development and delivery of Urban Blue Corridors requires understanding of the opportunities and benefits of floodplain restoration, deculverting and river and surface water flow paths at both a strategic and local level, using best available evidence. Opportunities need to be embedded within the spatial planning framework which will enable the regeneration process to contribute to improvements and ensure benefits are maximised across LAs. However, Urban Blue Corridors may cross LA boundaries and, as such, there is a requirement for improved integration both within and between organisations.

4.2 High Level Approach to Developing and Delivering Urban Blue Corridors

Planning Context

4.2.1 Planning for Urban Blue Corridors has traditionally been an ad-hoc process, either through individual isolated developments or through a local partnership often involving the Environment Agency, LA and/or local action groups or included within spatial plans and, as such, there is no holistic delivery of Urban Blue Corridors within urban areas. This is partly due to a lack of information and assessment of risk of all types of flood risk.

4.2.2 Existing strategic approaches to planning are undertaken through PPS25 and SFRAs but they deal with the planning aspects (new and redevelopment) and tend to focus on fluvial and tidal flood risk. However, the development of LFRM strategies should make use of existing risk assessments, including SWMPs, CFMPs, SFRAs and PFRA, and enable a more holistic approach to flood risk management for all sources of flooding, requiring LLFAs to work in partnership with other organisations (Figure 8).

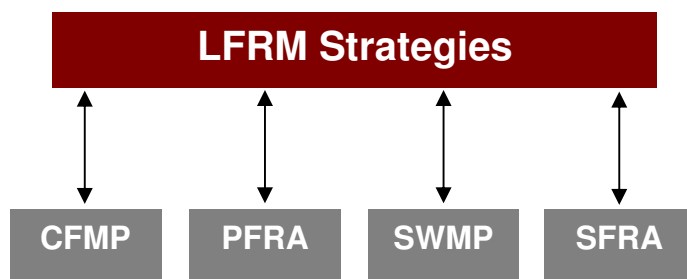


Figure 8: Holistic Approach to Flood Risk Management

4.2.3 Future development and delivery of Urban Blue Corridors will be needs driven; in part, these needs will be identified by local communities and/or local partnerships. As the future planning system emerges, careful consideration will need to be given as to how to deliver Urban Blue Corridors within the 'Big Society' and under the Localism Agenda. The emerging agendas offer



the opportunity to embed the principles of Urban Blue Corridors (including Green Infrastructure) into guidance for SuDS, Flood Risk Management Plans (FRMPs) and LFRM strategies. Localised community planning and local public and private partnership-working will be essential in realising Urban Blue Corridors. Partnerships should, in part at least, be driven by the requirements of the FWMA and the development of LFRM strategies making use of existing flood risk assessments (covering surface water runoff, groundwater and ordinary watercourses) and enable a more holistic approach to flood risk management, through LLFAs working in partnership with other organisations, including water companies. The development of LFRM strategies can provide an excellent opportunity to explore whether Urban Blue Corridors are a suitable management tool for local flood risk.

- 4.2.4 Delivery of Urban Blue Corridors requires a change in the way people perceive and live with water, moving away from the traditional acceptance of 'piped' solutions towards urban water management. Piped solutions will no longer always have the capacity to contain flood flows in urban areas under increasing climatic uncertainty⁶⁰. River restoration projects have demonstrated that careful multifunctional river design in the urban zone can encourage changes in the attitudes and acceptance of Urban Blue Corridors.
- 4.2.5 Urban Blue Corridors have the greatest opportunity for success when their design can allow for 'adaptive' management, with acceptance that there may be a 'moving target' or a non-fixed end-point, and where there is provision for flexibility in the design to account for uncertainties.
- 4.2.6 Linked surface water ponding areas, overland flow paths and sacrificial flood storage areas need to become established within the spatial planning system (potentially via LFRM strategies and SWMPs) and emergency planning; and people need to understand their concept and use during extreme rainfall events. Establishment of Urban Blue Corridors will require new approaches to design and delivery, new ways of working and total collaboration between all parties involved. This will include working across administrative boundaries and forming working partnerships between public and private sectors where traditionally relationships may not have been formed.

Proposed Planning Route

- 4.2.7 The dynamic and integrated nature of Urban Blue Corridors means there is a requirement for strategic planning and delivery through existing national and new local planning policies and initiatives. However, it is recognised that whilst the general development approaches and policies, such as 'making space for water', should initially be defined at a strategic scale, the varied nature of the urban environment requires the need for area and/or site-specific policies and plans (such as Area Action Plans (AAPs)), through, for example an area Masterplan. A Masterplan is a comprehensive plan that describes and maps the overall development concept for an area, including the present and future land use, detailed urban design and landscaping, built form, infrastructure, drainage, transport and service provision. This Masterplanning level is key because it outlines the detailed priorities for an Urban Blue Corridor and sets standards that need to be applied at the project level.



4.2.8 An example of how a 3-tier approach can be implemented is provided in Case Study 2 – IBA Emscher Park in Germany. The IBA Emscher Park project was initiated in 1989, and planned to encourage the ecological, economic, and urban revitalisation of the former steel and coal mining district of the Ruhr Valley and the Emscher River through several collaborative partnerships with various agencies and, notably, 17 LAs of the Ruhr District. This was achieved through a 3-tier approach:

- Level 1 - A connected exhibition park covering the entire Emscher area (460km², 70km east-west distance) connecting the remaining open spaces between the industrial cities. Development goals have been set for the Emscher area as a whole, and a regional development strategy has been developed;
- Level 2 - A regional open-space system – a park project organised in 7 regional greenways. 3-5 cities belong to one greenway with common planning, projects and measures;
- Level 3 – Individual projects – landscape design, biotope management, forest planting, housing construction projects, arts projects, stormwater management, including a system of new bikeways and footpaths.

4.2.9 Figure 9 illustrates the potential route for the development and delivery of Urban Blue Corridors. These stages are further discussed in 4.3.

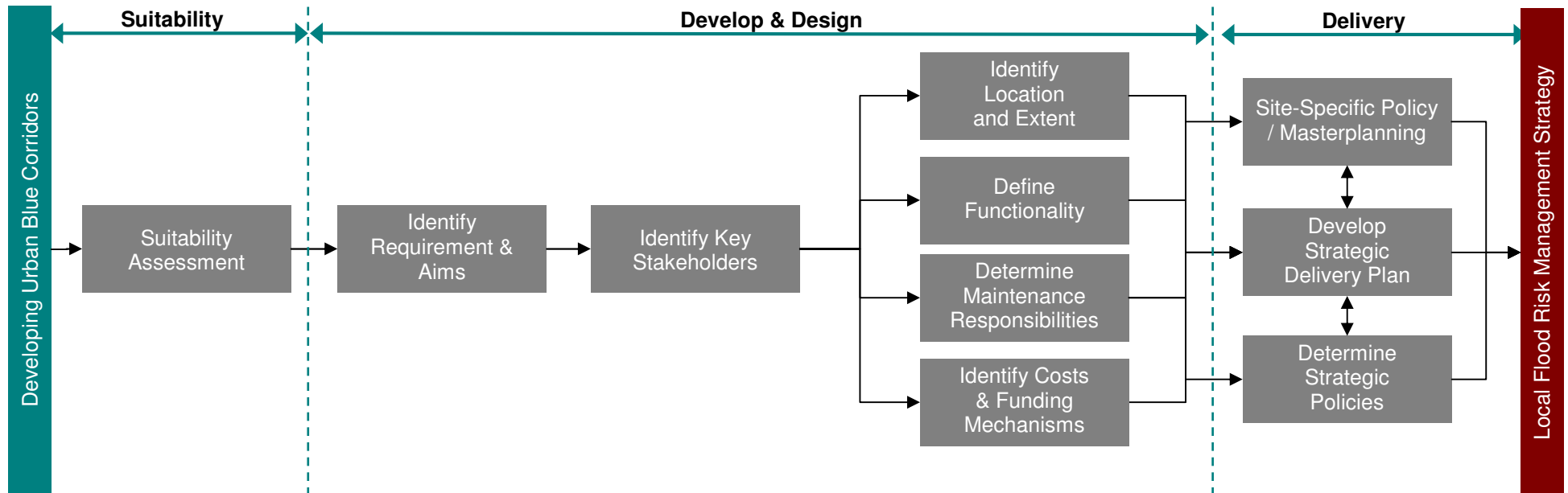


Figure 9: Potential Delivery Route for Urban Blue Corridors



4.3 Key Considerations for Developing and Delivering Urban Blue Corridors

- 4.3.1 This section provides key considerations for developing and delivering Urban Blue Corridors at the Strategic, Community and Site-Specific Level, based on the findings of the consultation and literature review, and consideration of the planning requirements for LAs.
- 4.3.2 Delivery of Urban Blue Corridors will need to identify and determine the spatial extent, general design principles, governance, and implementation routes for the establishment of the corridors at a strategic scale. These general principles, identified through, for example, Development Plan Documents (DPDs) and/or Supplementary Planning Documents (SPDs), will guide the community and site-specific delivery of Urban Blue Corridors and ensure there is a holistic consideration to the design and functionality throughout the urban environment.

Suitability of Urban Blue Corridors

- 4.3.3 Urban Blue Corridors will not be suitable in all locations, and it is important that their suitability in a specific place should be considered; other solutions may sometimes be more appropriate. It is also essential to consider the scale of Urban Blue Corridors which could range from a single overland flowpath to a large-scale network across the urban environment.

Existing Evidence

- 4.3.4 Evidence may already exist in a number of forms (for example, SFRAs, CFMPs, SWMPs, Water Cycle Studies (WCS) and PFRAs) which will help the strategic development of Urban Blue Corridors. LFRM strategies will also play an important part in the development of Urban Blue Corridors and informing spatial planning within LAs.
- 4.3.5 SWMPs and SFRAs are the main ways in which surface water flow paths and ponding areas are recorded and mapped within LA boundaries at presentⁱ. PFRAs will make an initial assessment of flood risk and help to develop understanding of what is required in LFRM strategies. It is important to note that SWMPs are generally under development and they have not yet developed sufficiently to influence planning policies and strategic approaches to flood risk. Thus there needs to be a new way of thinking about the opportunities to manage flood risk.
- 4.3.6 Spatial planning at a strategic (or sub-regional) scale enables a holistic approach to flood risk, water quality and biodiversity; and alignment with other key strategies/plans such as the WFD, RBMPs and economic strategies (Figure 10). It also provides opportunities to maximise efficiencies and benefits by pooling resources, skills, expertise and funding⁶¹.

ⁱⁱ Based on consultation responses

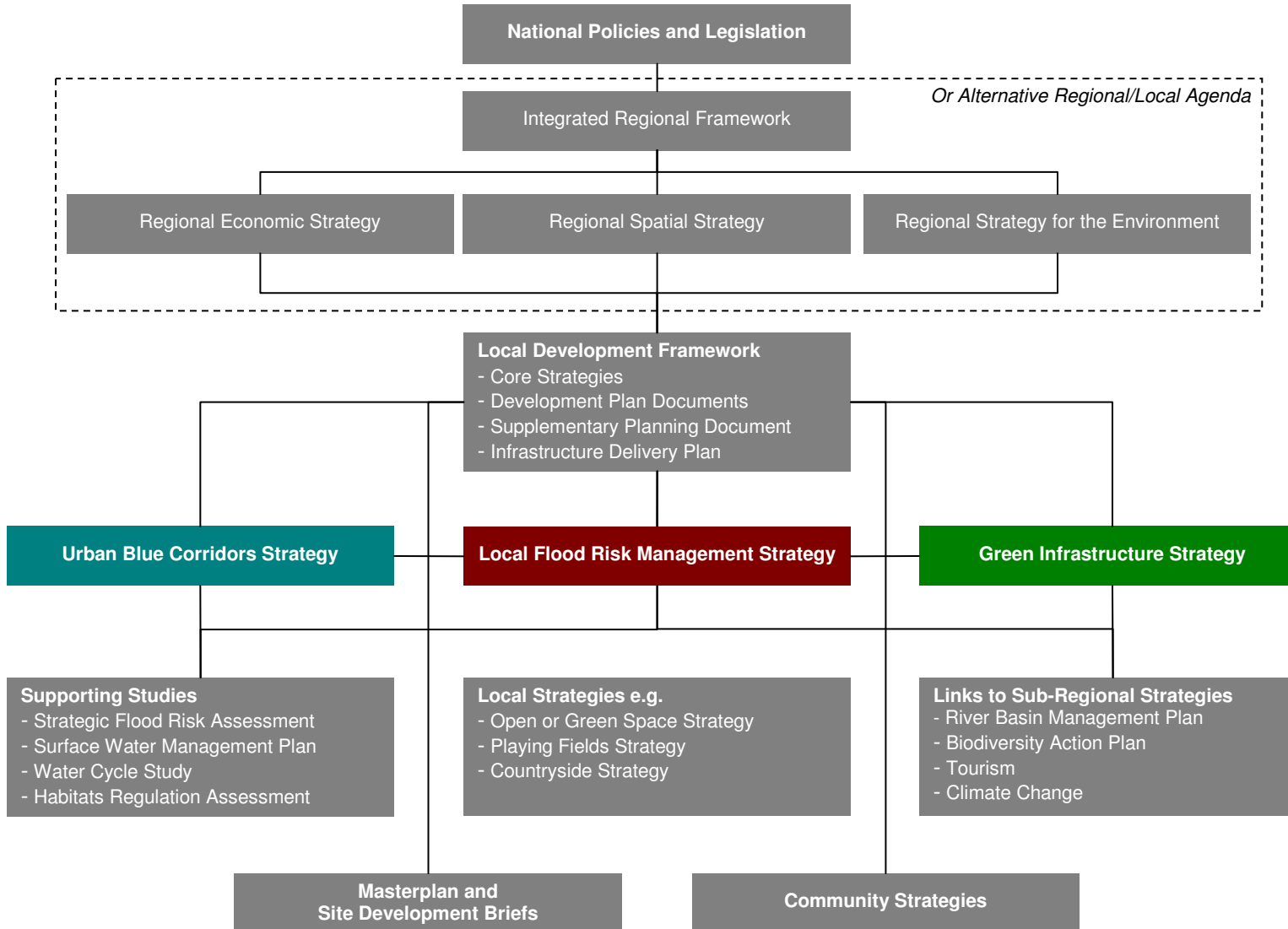


Figure 10: Urban Blue Corridors – Strategic Framework



Identification of Requirement and Aims

4.3.7 The first stage in developing Urban Blue Corridors is identifying the requirement and aims for Urban Blue Corridors within or across the LA administrative area (Figure 11). These will guide the strategic design process.

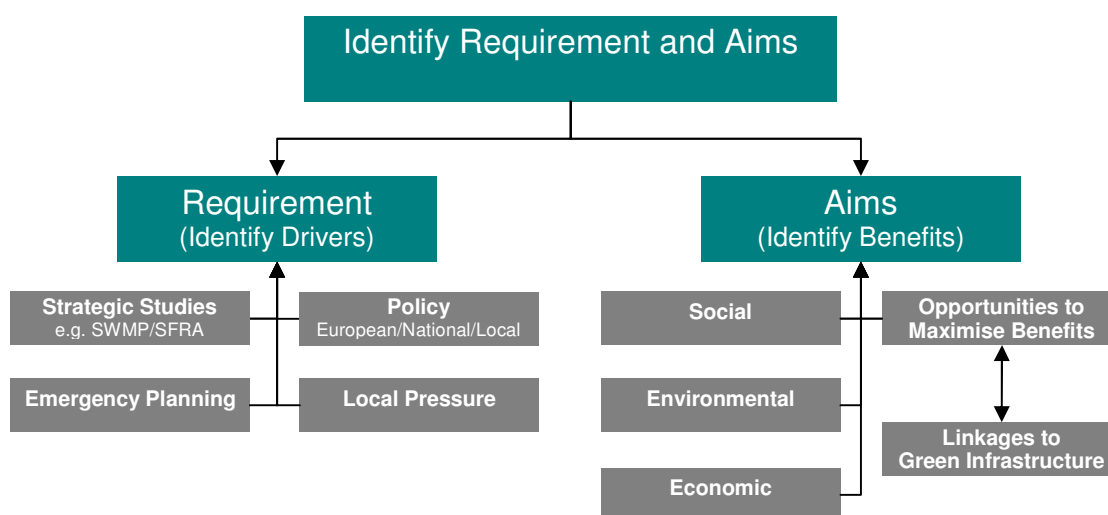


Figure 11: Identification of Requirement and Aims for Urban Blue Corridors

4.3.8 The requirement and aims for Urban Blue Corridors need to be identified at the outset to ensure that careful design consideration is given to achieving the aims (in most cases the benefits) and that the requirements are met through the specified drivers. Without the specified drivers, there is little incentive for LAs to consider Urban Blue Corridors in a strategic manner.

4.3.9 Drivers for the establishment of Urban Blue Corridors may come from European, National, sub-regional (i.e. CFMPS) and local policies, strategic studies undertaken by the LA (such as SFRA, SWMP, climate change adaptation strategies and Green Infrastructure strategies), emergency planning requirements and/or local pressure, for example from residents in areas that encounter frequent flooding.

4.3.10 A key requirement would be to ensure that new or existing development does not impede the flow of water, and could be actively encouraged to be designed to contribute to the corridor in containing water or directing it along certain routes to desired points or areas. However, with targets for investment, recreation, housing and so on all competing for the same space the challenge is to get surface water flood risk management held in the same regard.

4.3.11 A fundamental aim for planning Urban Blue Corridors should be to maximise the benefits of the scheme and aim to realise environmental, social and economic benefits. This could be achieved through:

- Linking Urban Blue Corridors together or with existing flood storage areas;
- Integration with urban Green Infrastructure networks;
- Delivery of open space, recreation and biodiversity objectives etc;
- Delivery of multifunctional space; and/or
- Climate change adaptation.



Green/Blue Infrastructure Linkage Opportunities

- 4.3.12 Green space offers the opportunity to facilitate the adoption of Urban Blue Corridors and manage surface water within towns and cities. Green space becomes even more important where towns and cities are heavily urbanised with upstream inputs from upstream sources of surface water, pluvial, fluvial and tidal flood risk. Utilisation of existing green spaces and green infrastructure within the urban environment offers the opportunity to ease some of this burden. In addition, redevelopment opportunities should be utilised to maximise the potential for green and blue infrastructure linkages.
- 4.3.13 Corridors feature prominently within Green Infrastructure networks and are recognised as linear features which connect Green Infrastructure assets. The benefits of such corridors include increasing public access to Green Infrastructure for recreational purposes, allowing for the migration of habitats and species, and encouraging sustainable forms of transport.
- 4.3.14 A key component of Green Infrastructure is the consideration and integration of water bodies within a wider Green Infrastructure network, and Blue Infrastructure may be seen as forming a key component of Green Infrastructure within cities⁶². Blue Infrastructure elements may be considered to include:
- Ponds and streams
 - Swales, ditches and SuDS
 - Urban Canals
 - Lakes
 - Reservoirs
 - Rivers
 - Floodplains
- 4.3.15 Most Green Infrastructure strategies aim to integrate Blue and Green Infrastructure, and a number specifically recognise Blue Corridors as forming a component of the wider Green Infrastructure network⁵⁸. The Natural England Green Infrastructure guidance specifically recognises the “*de-canalisation of river corridors [as] a significant opportunity to enhance landscape character and biodiversity*”.
- 4.3.16 Current guidance on Green Infrastructure goes some way towards defining and incorporating Urban Blue Corridors, although currently it may not fully recognise the full range of services provided by Urban Blue Corridors or their potential for integration with Green Infrastructure networks. Current guidance and Green Infrastructure literature fail to quantify the extent to which Green Infrastructure and Urban Blue Corridors can deliver services as this often requires more detailed site specific analysis, e.g. how much does 1 hectare of land contribute to flood alleviation?
- 4.3.17 The importance of Green Infrastructure in creating sustainable communities alongside more traditionally urban considerations is becoming more widely recognised. It is featuring more prominently in spatial planning, and is recognised as being of particular importance in the planning of growth areas and new settlements.
- 4.3.18 The recent draft PPS: Planning for a Healthy and Natural Environment⁶³ identifies that LAs should undertake assessments of existing and future needs for Green Infrastructure. Green Infrastructure strategies therefore present opportunities for the promotion of Urban Blue Corridors and the development of Urban Blue Corridor policies for integration in LDFs.

Identification of Key Stakeholders and Set-Up Steering Group

- 4.3.19 To achieve the vision of Urban Blue Corridors there needs to be a better understanding amongst all partners of the benefits and possible risks to ensure an integrated approach can be



achieved. A key stage in the development of Urban Blue Corridors should be the establishment of a Steering Group to aid in the delivery and maintenance of Blue Infrastructure throughout the urban environment. In the first instance, it is recommended that this should be led by the LLFA, as they will have the knowledge from existing studies and contacts with key stakeholders through existing flood management partnerships. However, following the set-up, it may be decided that the spatial planning team are best placed to lead on the development and delivery of Urban Blue Corridors within their LA administrative boundary; this will be based on local organisational structures and capacity.

Cooperation

- 4.3.20 Working in partnership is essential to maximise the benefits of Urban Blue Corridors. This encourages a shared vision, encompassing a wide range of interests and thus reducing the risk of future conflict. It also provides greater opportunities for obtaining funding and gaining momentum in progressing the scheme. For example, the Bedford and Milton Keynes Waterway Partnership includes a total of 26 organisations to maximise the delivery potential of a new waterway scheme⁶⁴. Partnerships which are formed for LFRM strategies could potentially be the ideal forum to develop thinking on Urban Blue Corridors.
- 4.3.21 As the Government's Big Society is developed, there will be a need for environmental campaign groups to engage at a more local level to assist communities in prioritising issues and projects for environmental improvements (including Urban Blue Corridors).
- 4.3.22 It is also important to work in partnership at a local level, to align with local plans and strategies such as CFMPs, LBAPs, LDFs and Sustainable Community Strategies, and utilise existing evidence in supporting documents such as PFRA, SWMPs and LFRM strategies. The latter should be developed in partnership and provide an ideal opportunity to develop Urban Blue Corridors. Urban Blue Corridors will also, in some cases, require cross-boundary working between LAs. There are multiple benefits to be gained from pooling resources, skills, expertise and funding⁶¹.
- 4.3.23 A number of different partners and stakeholders potentially have an interest in the development and delivery of Urban Blue Corridors within urban environments at a local scale including:
- Local Authorities;
 - Statutory bodies such as the Environment Agency and Natural England;
 - Regional organisations or action groups;
 - Water Companies;
 - Internal Drainage Boards;
 - Tourist boards;
 - Sustainable transport groups such as Sustrans;
 - National bodies such as Sport England;
 - Academic institutions;
 - Non-Governmental Organisations/Voluntary Groups;
 - Local/Community Action Groups/ Associations; and
 - Developers.

Coordination

- 4.3.24 In some cases there is a disconnect between water management practitioners and planners which means that water management considerations are not necessarily fully integrated into development plans. As such, it will be essential that inputs from all stakeholders are coordinated to ensure water management is fully integrated into development plans.
- 4.3.25 Within LAs, the development and delivery of Urban Blue Corridors requires input from a number of different teams as illustrated in Figure 12. To ensure the most efficient and effective route for development and delivery there will need to be a dedicated lead for surface water management planning (and Urban Blue Corridors). The management and governance structure within each LA will vary but the Spatial/Strategic Planning team or LLFA (who have the overall responsibility for LFRM) may be best placed to coordinate the required surface water management planning activities, in conjunction with the development of the LDF and AAPs.

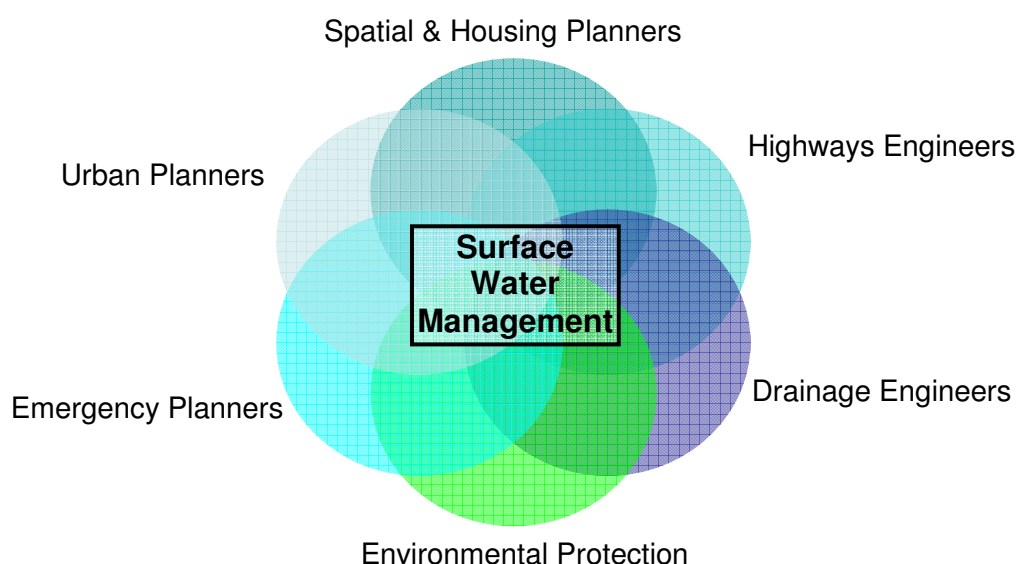


Figure 12: Local Authority Surface Water Management Planning Structure

- 4.3.26 There are few examples of cross-authority Urban Blue Corridors; however, this is likely to require consideration and cooperation by partner organisations including LAs and the Environment Agency. Case Study 1 provides an example cross-boundary working, where the London Boroughs of Croydon, Sutton, Merton and Wandsworth are working together to deliver the objectives for the Wandle Valley Regional Park. Local partnerships (through FWMA) will be a major driver to cooperate strategically in the future.
- 4.3.27 Examples of good practice within LAs and between partner organisations are provided in Box 1 and Box 2. The Milton Keynes structure, discussed in Box 2, could be adapted to manage local flood risk across partners and stakeholders.
- 4.3.28 Several collaborative initiatives have been undertaken which aim to put cities, urban areas and river corridors at the centre of the spatial planning process. Some examples are provided in Box 3.



Box 1: Example of Good Practice in Co-ordination in Local Authorities

London Borough of Sutton

"LB Sutton established a multi-department flood group following the severe flooding events of July 2007, involving representation from emergency planning, highways, strategic planning, environmental sustainability and parks. Arising from the Pitt Review and the new leadership responsibilities conferred upon the Council as a consequence of the Flood and Water Management Act, the Flood Group has overseen the preparation of Phases I and II of the Surface Water Management Plan (SWMP) which was produced in the form of a draft study in April 2010. This document included a proposed governance structure for the Flood Group which identified strategic and operational roles and responsibilities for key Council officers in terms of managing the surface water management process and overseeing other key workstreams e.g. strategic planning/SFRA, GRaBS project, community engagement, emergency planning, data and information etc."

Source: Questionnaire Response, London Borough of Sutton

Box 2: Example of Good Practice in Cooperation between Organisations

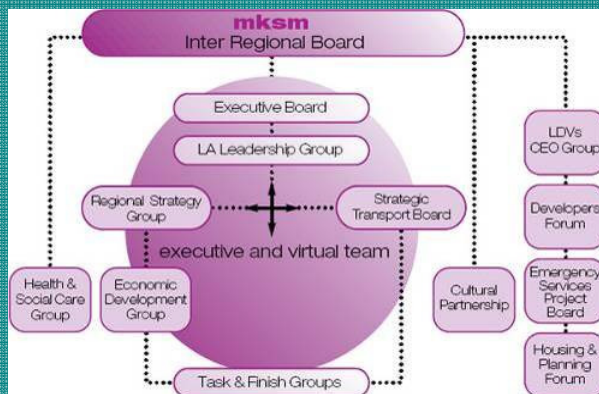
Milton Keynes South Midlands Inter Regional Board

Milton Keynes South Midlands (MKSM) Inter Regional Board (IRB) is a partnership of high level representatives from all tiers of Government and infrastructure and service providers brought together to plan for the growth across regional and local boundaries. Membership is drawn from Local Authority elected members, Chairs of local Delivery Vehicles and Board members / senior officials from key regional and local bodies and Government agencies including the Environment Agency.

The IRB was established in 2004 as a response to the Government proposals set out in the Sustainable Communities Plan, and to deliver the plans set out in the MKSM Sub Regional Strategy. The Board meets three times every year and focuses on key strategic issues, including addressing the barriers to sustainable growth.

The role of the group is:





- Overall strategic management of MKSM programme;
- Broker partnership and cross-boundary working;
- Provide high level Government steer to partners;
- Management of strategic barriers and risks; and
- Provide accountability of delivery across partners, including Central Government.



Source: <http://www.mksm.org.uk/partnership/inter-regional-board.asp>



Box 3: Existing Urban Blue Infrastructure Delivery Initiatives

 <p>Future Cities www.future-cities.eu (2008 – 2012)</p> <p>The Future Cities project aims at making city regions in Northwest Europe fit to cope with predicted climate change impacts. The Future Cities strategy combines selected strategic urban key components - green structures, water systems and energy efficiency - for a proactive transformation of urban structures. The project is funded by the European Regional Development Fund (ERDF). The Future Cities Partnership seeks strategies that:</p> <ul style="list-style-type: none"> • Are innovative – not yet implemented on the practical level; • Prevent greater financial loss – by taking action; and • Increase synergy and cost effectiveness – by applying combined measures. <p>The project approach follows four objectives:</p> <ol style="list-style-type: none"> 1. Development of common evaluation methods for climate-adapted towns and cities – leading to an assessment check for climate-proof cities; 2. Establish action plans for current structures so that the participating regions can adapt their strategies in a concrete manner; 3. Implementation of combined measures: Selected construction solutions in eight pilot projects; and 4. Raising awareness among decision-makers and influencers about pro-active ways of tackling adaptation to climate change impacts 	 <p>Green and Blue Spaces (GRaBS) http://www.grabs-eu.org (2008 – 2011)</p> <p>The GRaBS project is a network of leading pan-European organisations (14 partners, from eight member states) involved in integrating climate change adaptation into regional planning and development. The project has been co-financed by the European Union's Regional Development Fund (ERDF) and made possible by the INTERREG IVC Programme. The main objectives of the project are:</p> <ul style="list-style-type: none"> • To raise awareness and increase the expertise of key bodies responsible for spatial planning and development as to how Green and Blue Infrastructure can help new and existing mixed use urban development adapt to projected climate scenarios; • To assess the delivery mechanisms that exist for new urban mixed use development and urban regeneration in each partner country and to develop good practice adaptation action plans to coordinate the delivery of urban greening and adaptation strategies, as well as cooperation amongst planners, policy-makers, stakeholders and local communities; • To develop an innovative, cost effective and user friendly risk and vulnerability assessment tool, to aid strategic planning of climate change adaptation responses; and • To improve stakeholder and community understanding and involvement in planning, delivering and managing Green Infrastructure in new and existing urban mixed use development, based on positive community involvement techniques.
 <p>Strategic Partnerships in River Corridors (SPARC) (2005 – 2008)</p> <p>The SPARC project ran from May 2005 until June 2008, and was led by the Environment Agency of England and Wales, SPARC had six partners across Denmark, The Netherlands, Germany and Sweden. The total budget was 3 million euros, co-funded by the European Union's Interreg IIIB North Sea Programme. The aim of SPARC was to promote the integrated management of river corridors in northern Europe by providing advice and understanding for regenerating river basins, and enhancing their natural, cultural, and historic environments. During the course of the project three fundamental principles were identified:</p> <ul style="list-style-type: none"> • The need to be strategic, in order to link to other plans and strategies; • The need to work in partnership with others to achieve wide ranging results; and • The need to demonstrate all that through practical applications. 	 <p>Urban River Corridors and Sustainable Living Agendas (URSULA) http://www.ursula.ac.uk/ (2008 – 2012)</p> <p>URSULA is an interdisciplinary collaboration between seven Departments at the University of Sheffield, Bradford University and Durham University and a wide range of partner organisations. The project is funded by EPSRC to the value of £2.5M over 4 years. The project aims to tackle river corridor issues holistically by treating the river and its urban setting as a system. The project is producing innovations, tools and knowledge to help guide the regeneration of urban river corridors worldwide. The hypothesis that <i>"there are significant social, economic and environmental gains to be made by integrated and innovative interventions in urban river corridors"</i> is addressed by:</p> <ul style="list-style-type: none"> • Understanding the current values and potential future values of the benefits of urban development, i.e. to gather the evidence; • Proposing how we can move from current to future values by innovation in design; and • Identifying how stakeholder interactions (associated with market, governance or research processes) impact on river redevelopment.



Identification of the Location and Extent

4.3.29 Urban Blue Corridors need to be identified carefully but broadly at the strategic level as they could include not only river corridors and wetlands, but also historic river channels (agricultural land or greenspace), roads and pavements (movement corridors) and curtilages of residential and commercial properties. Figure 13 illustrates the key considerations in locating and defining the spatial extent for Urban Blue Corridors at a strategic scale.

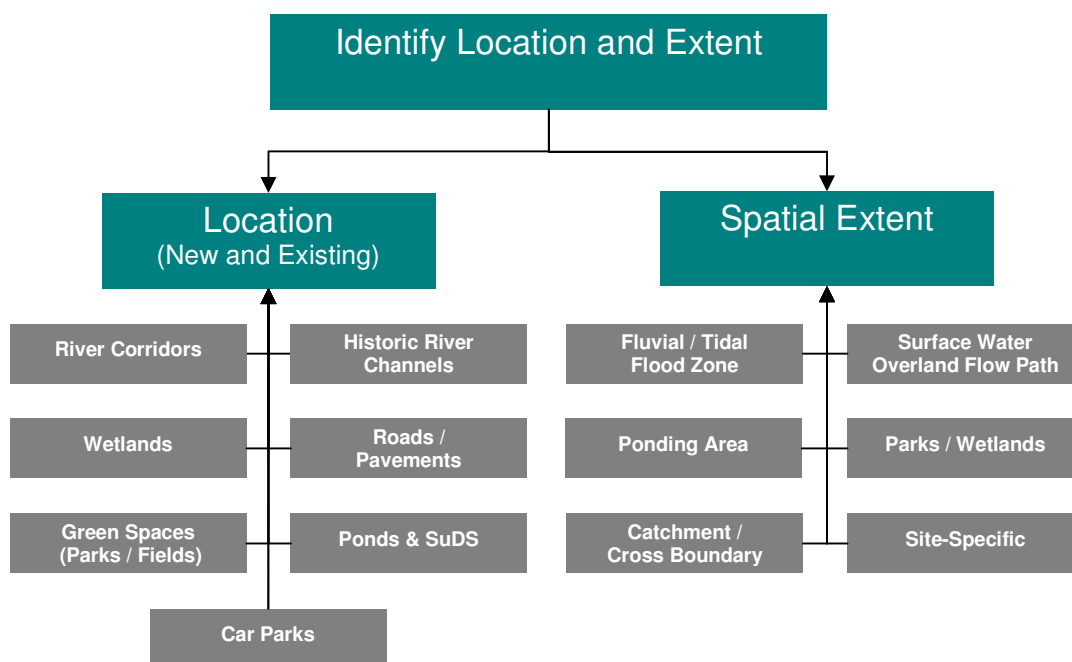


Figure 13: Identification of Location and Extent of Urban Blue Corridors

4.3.30 Successful development of Urban Blue Corridors requires the identification of flow paths and ponding areas using best available evidence. Identification of Urban Blue Corridors should build on existing modelling and strategic studies (i.e. SFRA, SWMP and other modelling outputs) and link with other strategies such as Green Infrastructure strategies to identify opportunities and potential benefits.

4.3.31 A mapping approach has been shown to be very effective, for example in the 50 year Wetland Vision for England⁶⁵. However, the initial costs of data collection/collation can be high. Once identified, Urban Blue Corridors could be identified on Proposals Maps, in much the same way as urban wildlife corridors or flood zones. Figure 14 illustrates the strategic mapping process which could be utilised to identify the location and extent of Urban Blue Corridors by LAs⁶⁶.

4.3.32 A starting point for identifying the location and extent of Urban Blue Corridors could be through consideration of the Environment Agency's Flood Map for Surface Water (formerly Areas ASSWF maps) depending on which map has been deemed to be most representative of the area in question. However, in light of the fact that these maps are national scale datasets indicating in approximate terms only what areas are likely to be affected from surface water flooding, further investigations are essential prior to being used for any blue corridor designation. Where available, more detailed SWMP pluvial flooding model outputs should be used in preference. Where a SWMP has not been undertaken, either pluvial modelling/mapping will be required for the development site and surrounding area (e.g. Colindale AAP SWMP⁶⁷ for the regeneration area in the London Borough of Barnet) or a Borough/District wide SWMP will need to be undertaken. It should be noted that a large number of urban areas are in the



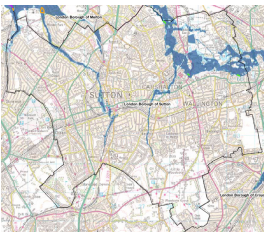
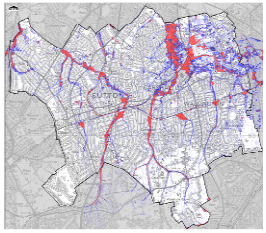
process of commissioning and producing SWMPs so these outputs will be more readily available for use by spatial planners in LAs. LFRM strategies provide the opportunity to explore and determine the level of detail and information required to assess the feasibility of Urban Blue Corridors.

- 4.3.33 The outputs from a SWMP study are likely to be of considerable value to the spatial planning and development process and, in return, planners and developers may assist in the achievement of aspects of the action plan. Through the SWMP, LA planners could be informed of the opportunities to make space for sustainable surface water risk management, groundwater recharge, Green and Blue Infrastructure and water quality improvements; potentially providing evidence to inform a surface water SPD or AAP.
- 4.3.34 In the short term, where no SWMP or modelling information is available to support the identification of the extent of an Urban Blue Corridor, use of the LAs designation for Flood Zone 3b may be the current Environment Agency Flood Zone 3b mapping could be used as a useful basis for a Urban Blue Corridor policy (for watercourses) and initial negotiations with developers. In doing so, the extent to which Blue Corridor designation would add value to the existing policy control within Flood Zone 3b would need to be carefully considered.



Main Information Sources

Flood Risk Maps
(Fluvial and Surface Water)



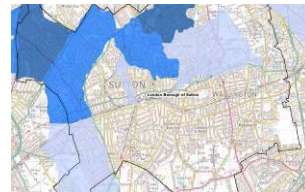
Flood Risk Maps are readily available through SFRA and/or SWMP

Overland Flow Paths

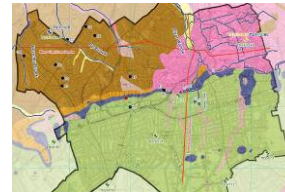


Identify areas at risk of flooding as a result of inadequate drainage and the overland flow paths which may form part of an Urban Blue Corridor

Sewer Capacity



Soil Type / Geology



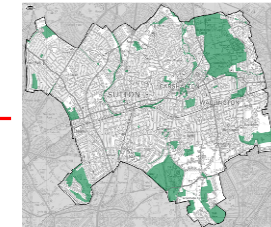
There is a significant difference in the infiltration capacity of different soils, and run-off on clay soils can be comparable to a built up area

Critical Infrastructure



To identify areas at most need of protection and areas that may be unsuitable for Urban Blue Corridors

Priority BAP Areas / Parks / Open Spaces



To identify ecological areas needing protection and opportunities for enhancement

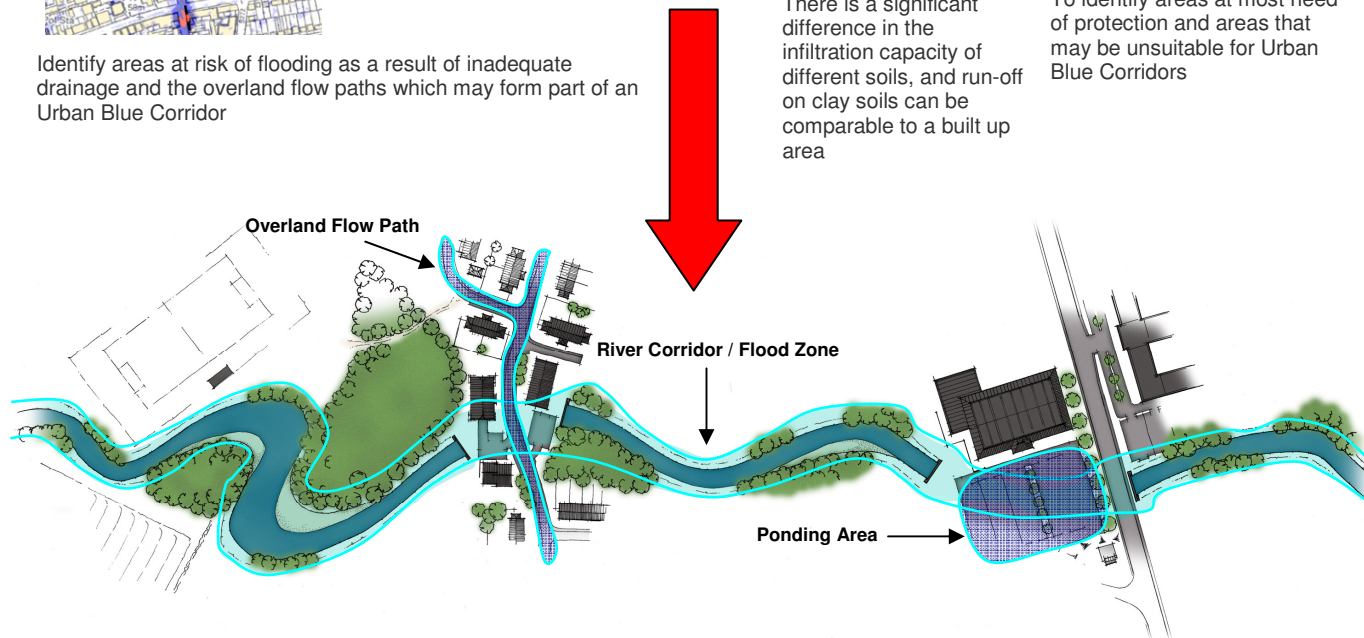


Figure 14 Identification of the Location and Extent of Urban Blue Corridors through Strategic Mapping



4.3.35 Figure 15 provides an example of how Urban Blue Corridors could be included within LA-wide spatial plans. In the example provided, 'Areas for Flood Mitigation' have been provided (focussed on rivers and flood storage areas), but this could be increased to include key overland flow paths and routes and other Blue Infrastructure.

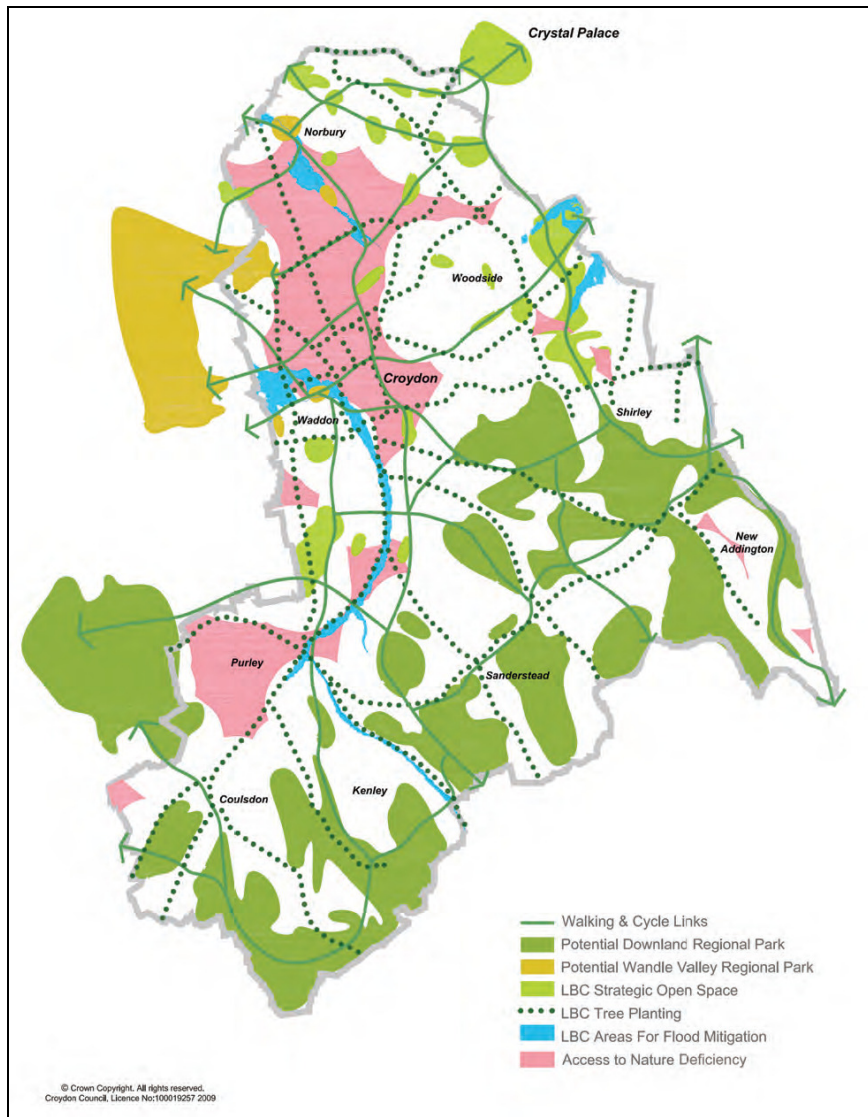


Figure 15: Identification of Areas for Flood Mitigation (Taken from Croydon Infrastructure Development Plan Consultation Document⁶⁸) (River Wandle shown in blue running from south to north)



Define Functionality

4.3.36 There are several factors to consider in defining the functionality of Urban Blue Corridors and different areas of the urban environment will have different functions/land use based on flood conditions at the time (Figure 16).

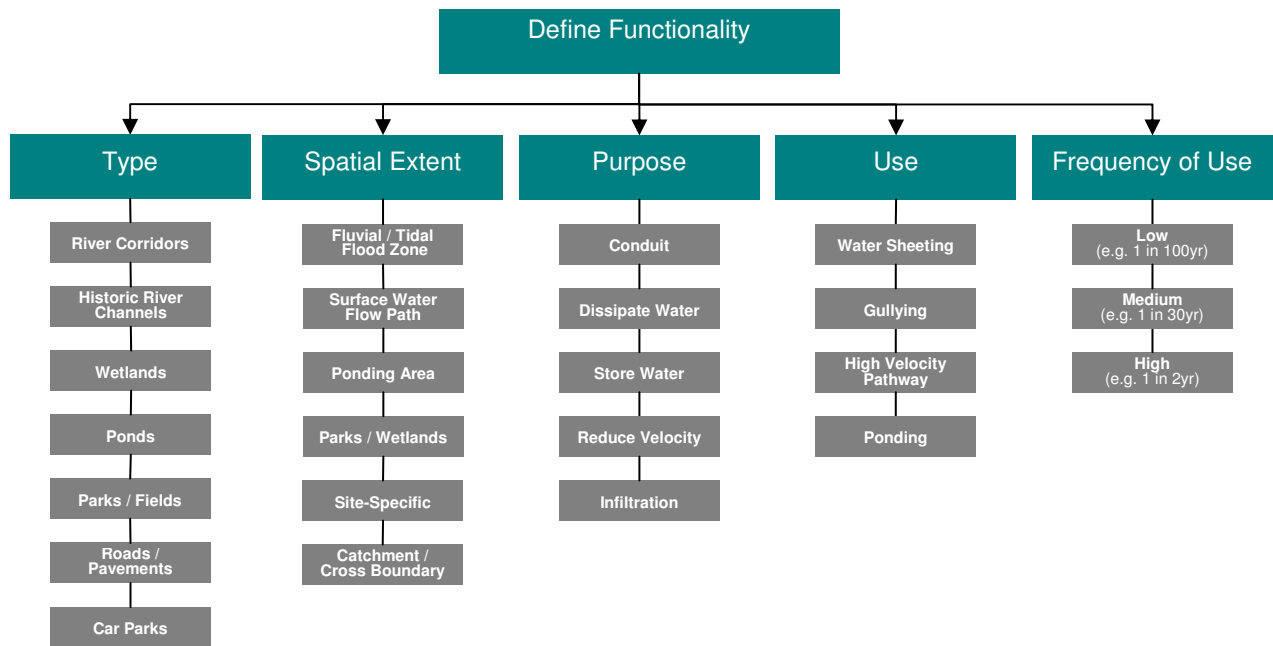


Figure 16: Defining the Functionality of Urban Blue Corridors

4.3.37 Figure 17 shows the functionality of different parts of the urban environment under different ‘flood’ scenarios. The normal (non-flood) situation sees water maintained within designed and/or natural infrastructure i.e. a river or pond, whereas under a minor flood situation, there is space for the river to exceed its banks without impacting on the urban environment. Equally, there is space for the creation of Urban Blue Corridors through existing Green Infrastructure areas or highways, and to connect with existing Blue Infrastructure such as ponding areas. Under more extreme flooding scenarios, there is adequate space for flood water to be diverted and stored within the urban environment through the use of parks, storage areas, highways and set-back watercourse/flood plains.

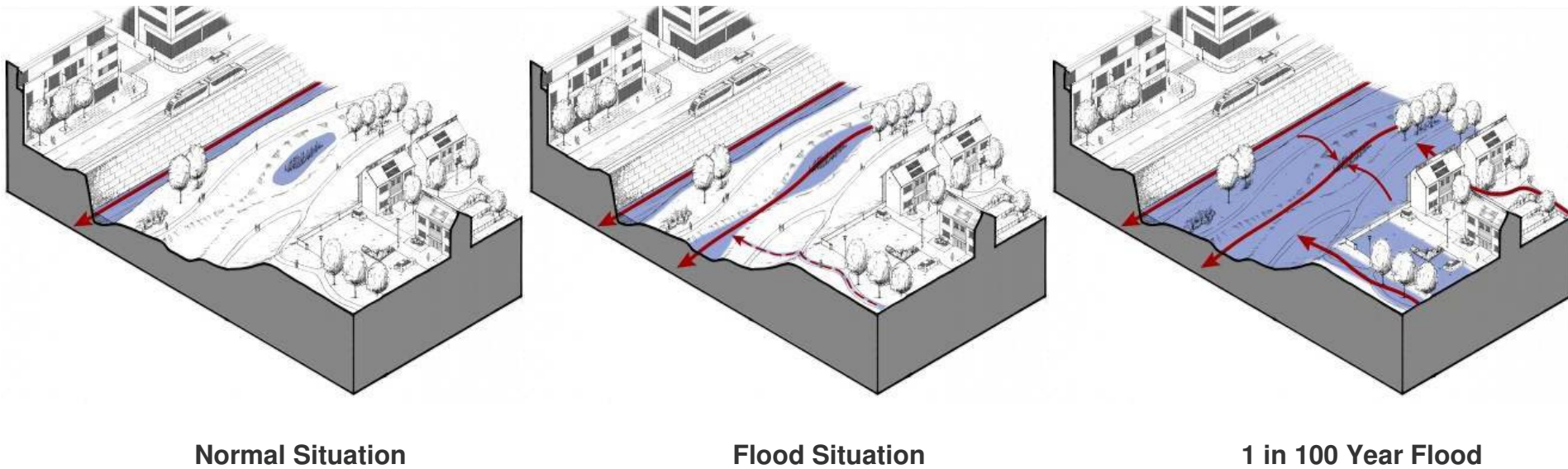


Figure 17: Functionality of Urban Blue Corridors under Different Flood Conditions



Multifunctionality

- 4.3.38 A key component in defining the functionality of Urban Blue Corridors will be to identify multifunctional uses (i.e. recreation, open space, flood management) of the space under different scenarios (i.e. flood and non-flood). For example, parks that are designed for recreation during normal conditions but flood during extreme flood events will need to be defined as such, and management actions, such as closure during times of flood will need to be agreed. Box 4 provides an example of multifunctional use of green/blue defined space provided as part of the River Quaggy flood management scheme.

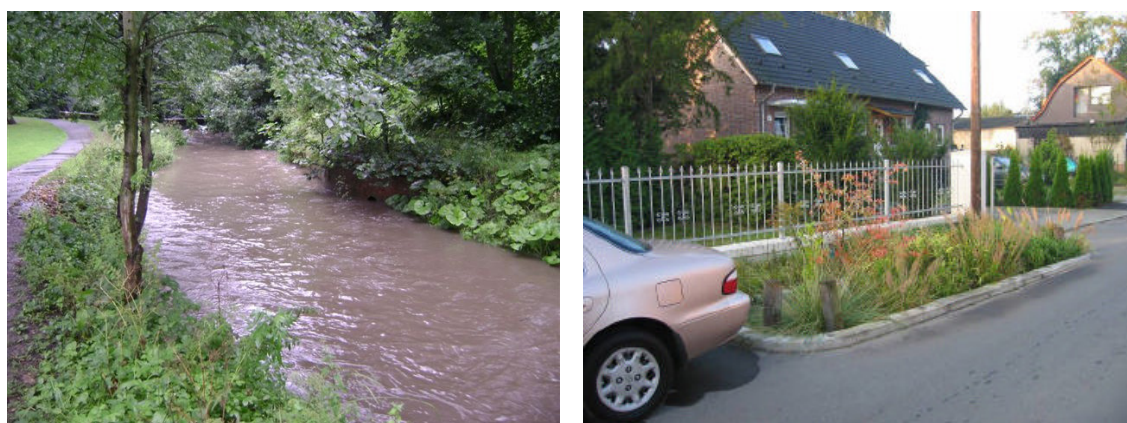


Figure 18: Example of Multifunctional Uses for Urban Blue Corridors. Left – footpath / cyclepath and green area beside watercourse. Right “Pocket Wetlands” beside roads to manage surface water runoff (Case Study 2)⁶⁹

Box 4: Example of Creating Multifunctional Space and Strategic Coordination

River Quaggy, London

The River Quaggy was deculverted in 2000 as part of the River Quaggy flood management scheme. The Quaggy was previously channelled along man-made drains and through culverts through the London Boroughs of Bromley, Greenwich and Lewisham and a section of the river was lost in a tunnel under Sutcliffe Park, Greenwich. A review of flood defences, in conjunction with increasing development in Lewisham and Greenwich, led to the Environment Agency choosing to bring the river back above ground, cutting a new channel for it through the park, thus creating a multifunctional open space that would improve flood management and the quality of the park while also restoring the river through Sutcliffe Park. This has created a natural, meandering, wildlife rich feature in the landscape, and the design allows the park to flood when there is an excess of water in the river. During such periods the park is closed to the public. This reduces the flood risk to downstream Lewisham town centre. Mechanical flood defences are not utilised, except for the remaining culvert below ground to take excess water in times of flood.

This development demonstrates that a flood alleviation scheme can be combined actively with the multifunctional dimensions of environmental enhancement, habitat creation, improved recreational capacity and aesthetic improvement of an inner-city green space; since restoration, visits to the park have increased by 73%. In the more urban area downstream the river banks have also been re-naturalised as part of the flood defences at Chinbrook Meadows to protect a new housing development.

This scheme is part of the London Plan's Blue Ribbon Network, and demonstrates how a local project can contribute to a strategic network of blue and green spaces to deal effectively with the impacts of climate change. The project demonstrates the value of working strategically, and what can be gained by co-ordinating action between LAs in terms of managing rivers and floodwater that do not respect LA boundaries.

Source: www.cabe.org.uk/case-studies/quaggy-river
www.environment-agency.gov.uk/static/documents/Business/casestudyrecreation_1514776.pdf



Determine Maintenance and Preservation Responsibilities

- 4.3.39 Ideally an Urban Blue Corridor should be self-sustaining and minimise the maintenance requirement while meeting required design targets. The Urban Blue Corridor is likely to be ephemeral and, as such, its design capacity must be able to convey desired peak flows yet not become 'choked' with sediment and vegetation at times of low/no flows. For example, maintenance may be required to clear vegetation that may impede peak flows and sediment sinks may require dredging to remove potentially contaminated sediments. Adaptive management and maintenance will be required, with best practices only achievable in the light of experience. Post project evaluation to assess the performance of the Urban Blue Corridor against a clear set of sustainability criteria should be considered at the design phase.
- 4.3.40 The preservation and maintenance regime of Urban Blue Corridors will depend on the functionality of the defined corridors (as discussed in the previous section). The regime will vary according to:
- 'Type' - river corridor, greenspace, footpath, road;
 - Lateral extent – a flexible approach would need to be applied to defining the lateral extent of Urban Blue Corridors;
 - Location - near to the point source or at the end of the 'corridor'? The volume and strength of flow would influence the maintenance regime and the amount and type of development that could be entertained in the corridor;
 - Purpose - is it simply to act as a conduit, or to dissipate water quickly, or to reduce its velocity and thus potential damage to infrastructure and property?
 - Development restrictions - development would not necessarily need to be prohibited in certain parts of Urban Blue Corridors (e.g. extensions to properties) but could be designed to be compatible with the purpose of including land in an Urban Blue Corridor;
 - Use - certain types of corridor may be more suited to different parts of the corridor e.g. water sheeting across highways and potential eroding/gullying and associated maintenance/cost/disruption. Less financial damage might be incurred if high velocity water is directed towards 'soft' infrastructure such as streams, ditches, pooling areas, swales etc;
 - Frequency of use – high frequency, low impact areas may require less regular or costly maintenance than parts of corridors which accommodate low frequency high impact contributions of water; and
 - Impact of use – for example, geomorphological impacts, including the propensity for flows to erode and deposit sediment under a range of flow conditions and thereby changing the underlying geomorphology of the urban environment.
- 4.3.41 Designated Urban Blue Corridors will need to be preserved through future spatial plans. Spatial plans typically plan for the next 15 years whereas Urban Blue Corridors may be designed for a 100-year period. Designated corridors will need to be preserved in the next round of plans and beyond. Additionally, Section 30 (Designation of features) and Schedule 1 (Risk Management: Designation of Features) of the FWMA (2010) could help to protect and manage features in Urban Blue Corridors that serve to reduce/manage local flood risk.



- 4.3.42 In Derby (Case Study 3), the Environment Agency are working closely with Derby City Council to enable the proposed Urban Blue Corridor to be protected. The Blue Corridor through Derby is not yet in place but once established it is expected that main river flood risk management and maintenance will be carried out by the Environment Agency's Operational team in accordance with their normal flood risk management duties. Through future agreements there will be expected to be complimentary maintenance agreements with Derby City Council to pick up those issues not covered by the Environment Agency, which relate to the main river only.
- 4.3.43 A key component in the preservation and maintenance of Urban Blue Corridors will be community engagement and education. If the local community are engaged with the design and delivery they are more likely to encourage and participate in maintenance operations in the future. In Sutcliffe Park, a local community group, 'Friends of Sutcliffe Park' was set-up by Greenwich Parks to encourage the community to get involved in the restoration and improvement works to the River Quaggy (Box 4). The group took an active role in transforming the park and local schools are using it for lessons as part of their curriculum⁷⁰.

Identify Costs and Funding Mechanisms

Cost Benefit Considerations

- 4.3.44 A cost/benefit assessment will be required to identify the design, implementation and maintenance costs for establishing Urban Blue Corridors within the LA area, and the benefits that can be derived from this. The widely used cost benefit analysis (CBA) methods will need to be combined with the cost benefit ratios of savings made through better planning in the Urban Blue Corridor. Defra and the Environment Agency are currently drafting methodology for how cost/benefit ratios of savings could be derived.
- 4.3.45 As part of any CBA, it will be important to carefully consider how environmental benefits and long-term cost savings can be incorporated into traditional CBA methods. The Urban Blue Corridors concept does not lend itself to traditional models of CBA, but that does not mean this approach should not be considered; it presents an opportunity to introduce a long-term framework into the equation to consider not just the benefits across all elements of urban development but also the cost of not undertaking the approach. For example, the CBA will need to consider the long term deliverables of Urban Blue Corridor projects within a wider understanding of the benefits that can be achieved through these schemes; however, these benefits may not be easily quantifiable. There will also need to be consideration of the long-term management of the corridor and potential savings in the future compared to the present costs, for example, more semi-natural Green Infrastructure may reduce management costs.

Government Investment

- 4.3.46 The Government, through their investment in mitigating flood and coastal erosion, aim to:
- Reduce the threat to people and their property; and
 - Deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.

This will be pursued through a variety of different approaches, taking into account local and national priorities⁷¹.



4.3.47 Five outcome targets have been set for operating authorities to achieve over the 2007 Comprehensive Spending Review (CSR07 – April 2008 - March 2011) period (Table 6)⁷¹. These funding targets are likely to change in the future as a result of the new Government and the recent spending review, but are provided here as an example of how outcomes from surface water schemes, including Urban Blue Corridors, could be measured against proposed costs.

Table 6: Defra Investment Targets (April 2008 – March 2011)

Outcome Measure	Definition	Minimum Target
OM1 - Economic Benefits	Average benefit cost ratio across the capital programme based upon the present value whole life costs and benefits of projects delivering in the CSR07 period.	5 to1 average with all projects having a benefit cost ratio robustly greater than 1.
OM2 - Households protected	Number of households with improved standard of protection against flooding or coastal erosion risk.	145,000 households of which 45,000 are at significant or greater probability.
OM3 - Deprived households at risk	Number of households for which the probability of flooding is reduced from significant or greater through projects benefiting the most deprived 20% of areas.	9,000 of the 45,000 households above.
OM4 - Nationally important wildlife sites	Hectares of SSSI land where there is a programme of measures (PoMs) in place (agreed with Natural England) to reach target condition by 2010.	24,000 hectares.
OM5 - UK Biodiversity Action Plan habitats	Hectares of priority Biodiversity Action Plan habitat including intertidal created by March 2011.	800 hectares of which at least 300 hectares should be intertidal.

Funding Mechanisms

- 4.3.48 Identification of the funding mechanisms and potential routes for obtaining funds will also need to be considered. There is no obvious single funding scheme or mechanism to support the delivery of Urban Blue Corridors. Presently, funding tends to be driven by single issues which tend to work against multiple benefit projects. One of the key requirements in developing Urban Blue Corridors is the need to identify and implement clearer funding strategies for delivery of schemes.
- 4.3.49 Potential funding for Urban Blue Corridors may be through a combination of flood risk budgets and funding streams. Examples of potential Green Infrastructure funding streams^{72,73} that may also be appropriate for Urban Blue Corridors are provided in Table 7.
- 4.3.50 The Commission for Architecture and the Built Environment (CABE) report on Funding Green Spaces highlights that *“Successful urban green space funding is often underpinned by a strategic approach to funding and management that incorporates a portfolio of different funding sources, mechanisms and partnerships.”*⁷³ Evidence provided through Green Infrastructure planning and provision highlights that the success of funding models is inextricably linked to the physical, political and social context within which the green space is located, and the assets and resources available. Therefore it is essential that, in developing any funding strategy for Urban Blue Corridors, these factors are taken into account to ensure that the schemes are delivered effectively.



Table 7: Potential Funding Streams for Urban Blue Corridors

Funding Stream	Description
Key Funding Mechanisms	
Community Infrastructure Levy*	The Community Infrastructure Levy (CIL) regulations came into force on 6 April 2010 and give local councils the power to apply a levy on new developments to support infrastructure delivery within their authority. Authorities that wish to charge a CIL need to develop and adopt a CIL charging schedule. The levy is suitable for sub-regional infrastructure. ⁷²
Developer Contributions*	Seeking developer contributions associated with a particular development to fund the provision of new Green or Blue Infrastructure.
Local Authority Funding*	In England, green (and blue) space managed by LAs is usually funded from the authority's general revenue budget, which is financed from local taxation and/or Government transfers. Green space is one of many services funded from this budget and parks departments have to compete for the money. The decision about how the general revenue budget is distributed among competing services is made by councillors ⁷³ .
Planning Conditions	LAs can impose planning conditions to mitigate the environmental impact of a development as part of the planning consent. In some cases, this may be an appropriate method of making progress towards Urban Blue Corridors.
Private Sector Funding	Private businesses could provide funding for Urban Blue Corridors where they consider it beneficial to their company or employees, particularly with regard to development of business parks, where they may wish to provide a more aesthetically pleasing work environment and surroundings.
Section 106 Agreements*	Where green or blue space is required by a specific development, the developer agrees to provide funding. The agreements are negotiated for individual or groups of developments. In some cases, it may be feasible for Section 106 agreements to contribute to Urban Blue Corridors.
Additional Funding Mechanisms	
Aggregates Levy Scheme*	The Aggregates Levy is an environmental tax on the commercial exploitation of aggregates. The intention is to make the use of recycled materials a financially more viable alternative to new extraction. The Aggregates Levy Sustainability Fund was set up to provide grants for environmental improvements, mitigating the impact of aggregate extraction, and the extraction often takes place in river valleys.
Big Lottery Fund*	It may be possible to access BLF programmes such as Access to Nature for Urban Blue Corridors.
Bonds and Commercial Finance	In some countries, local businesses and residents can vote to allow the LA to receive loan funding from bonds that can be repaid, including interest, over a period of up to 30 years, to fund urban green space ⁷³ .
Business Improvement Districts*	English LAs have some powers to impose additional taxes across whole districts to improve the local trading environment. So far, these have focused on public safety, promotion and street cleaning ² . However, there is potential to use this approach where implementation of an Urban Blue Corridor will improve trade ⁷² .
Growth Point funding	In named Growth Points, the Housing Growth Fund may be a potential funding stream. Block funding is allocated to LAs which have produced 'Programmes of Development' for infrastructure spending, including Green Infrastructure.
Endowments	Endowments can provide long-term funding for urban green or blue spaces from the interest gained on investments in assets such as property or the stock market ⁷³ .
Heritage Lottery Fund Parks for People Grant Scheme	This scheme is available to support projects to improve public parks and designed landscapes, and to create opportunities for communities to learn about the natural environment. Incorporating community involvement and education into development of Urban Blue Corridors may enable this fund to be accessed.
Income-Generating Opportunities	Opportunities for generating revenue income, such as licensing and franchising, sponsorship, entry fees and fines, are ways in which funding from the private sector and users of urban green space can be sourced ⁷³ .
Landfill	This fund can be used for provision or enhancement of a public park or other public amenity within



Funding Stream	Description
Communities Fund*	10 miles of a landfill site, remediation or restoration of polluted land, and biodiversity conservation.
Local Area Agreement or Multi-Area Agreement *	Local authorities may be able to secure funding through Local Area Agreements which are part of the Government's commitment to devolving more power to local communities. They are three year agreements with priorities agreed between all the main public sector agencies working in the local area and with Central Government. The Multi-Area Agreement is a cross boundary version of a local agreement.
Multi-Agency Public Sector Funding Grant Funding*	In England, funding can be accessed from a range of Government departments and agencies for the delivery of projects that meet cross-cutting targets, for instance targets for public health, young people, crime or sustainable development. This money could be used to fund Urban Blue Corridors ⁷³ .
Private management charges	Private management charges may be applicable to some aspects of Urban Blue Corridors; for example as maintenance/management charges for leaseholders of commercial developments. This may be particularly appropriate where the businesses derive benefits from the Blue Corridor; for example, increased trade through tourism.
Private Trusts*	A private Trust can be set-up to fund Urban Blue Corridors and be managed by a specified individual or organisation for the benefit long-term maintenance or Urban Blue Corridors and/or improved environment/flood management.
Regional Infrastructure Fund	Funding aimed at ensuring essential regional infrastructure is delivered to support growth, with the intention of recovering investment through development. Funding priorities are large developments within regional hubs and growth areas/points.
Ring-Fencing of Local Taxes*	In many countries levies on property, or tax credits, can be ring-fenced to fund the management and provision of urban green space, which could include Urban Blue Corridors ⁷³ .
Roof Taxes*	A tax that developers must pay for each new house (or hectare of employment land) developed. This can be put into a central fund to pay for community facilities and/or infrastructure throughout the development or at a strategic scale. It may be that green roofs could be exempt from this.
Safer and Stronger Communities Fund	This fund is aimed at addressing crime and anti-social behaviour, improving public spaces, and engaging communities, particularly in disadvantaged neighbourhoods. However, the fund is currently scheduled to run to 2010, and is under review.
Voluntary Sector Involvement	Not-for-profit organisations and voluntary and community groups can contribute time and labour, raise funds and encourage community development and local ownership of urban green space ⁷³

Note: * Identified in current delivery plans for Green Infrastructure projects

4.3.51 Community Infrastructure Levy (CIL) is likely to be the most appropriate funding stream for the delivery of Urban Blue Corridors at a sub-regional scale. In implementing a CIL, LAs will need to ensure that the processes for infrastructure planning (e.g. through the Infrastructure Delivery Plan (IDP)) and development of the CIL charging schedule are fully integrated, involving the full range of partners, including the local strategic partnership, and with clear governance arrangements⁷⁴. The output should be a rolling delivery programme which will provide the basis for the CIL schedule and for review and monitoring of infrastructure delivery. In developing the IDP and CIL charging schedule it will be important to ensure that Urban Blue Corridors are given adequate consideration and there is strong evidence to support the need for provision and infrastructure requirements.

4.3.52 Box 5 presents an example of the CIL funding mechanisms in practice. The aim was to ensure the strategic availability of funds for Blue Infrastructure through an administrative area wide tariff. This approach advocates a joined-up approach to the delivery of infrastructure through developer contributions, encouraging LAs to consider how a range of developments can contribute to the delivery of necessary infrastructure.

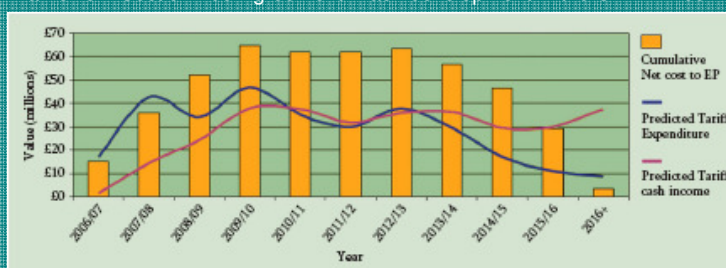


Box 5: Example of CIL Funding Mechanisms for Blue Infrastructure (through new development)

Milton Keynes Infrastructure Tariff

The Milton Keynes Infrastructure Tariff Scheme means that for every property built within the defined Urban Development Area (UDA), the developer will pay £18,500 to Milton Keynes Partnership for each new house or around £260,000 per hectare of employment space. All told, developers will provide over £310 million which will be used to help fund community facilities and infrastructure. By topping up this funding with money from Central Government, Milton Keynes Partnership and its delivery partners can ensure that new communities will have the infrastructure they need.

The overarching legal agreement which sets out the facilities required and how they will be provided is the Framework Section 106 Agreement. Each development in the UDA will be linked to this agreement.



Source: Milton Keynes Partnership, <http://www.miltonkeynespartnership.info/DocLibrary/MKPTariffBrochure.pdf>

4.4 Delivery of Urban Blue Corridors

Proportionality

4.4.1 Urban Blue Corridors can be applied at a number of different scales from individual sites to linear 'corridors' of natural, semi-natural and artificial overland flow paths. This could be a single flow route down a street or a network of corridors linking together existing Blue Infrastructure across an urban area. 'Urban Blue Corridors' is the collective name (and linking mechanism) for a number of interconnecting features, which could include, but are not limited to, the following:

- Overland Flow Paths
- Rivers and Canals
- Flood Storage Areas
- Floodplains
- Ponding Areas
- Wetlands
- Historic River Channels
- Multiuse Parks

4.4.2 The examples provided throughout this study include a matrix of the above elements to provide a comprehensive range of examples of Urban Blue Corridors 'in action'. However, it is important to note that Urban Blue Corridors do not have to be made up of a complex matrix of these elements, and where there is a local issue, an Urban Blue Corridor could be the simple identification of a flow path with some minor adjustments.

Strategic Delivery Plan

4.4.3 A Strategic Delivery Plan may be the most effective route through which Urban Blue Corridors can be delivered within and across LAs. The Delivery Plan should involve defining the governance, spatial location and extent, functionality and use, implementation and policy recommendations for delivering Urban Blue Corridors at a strategic scale (Figure 19).

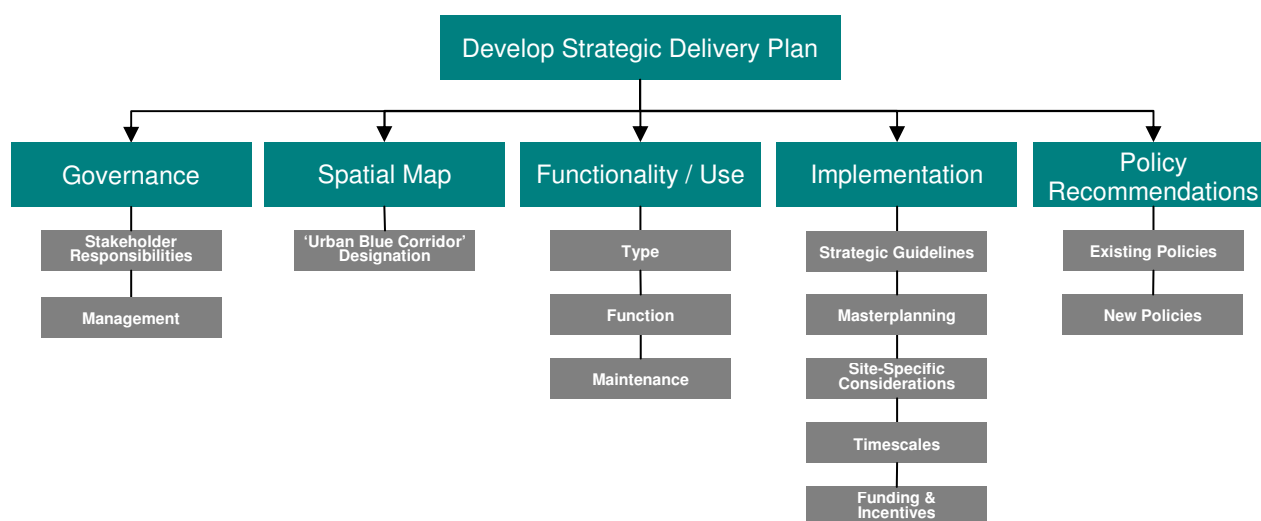


Figure 19: Development of Strategic Delivery Plan for Urban Blue Corridors

4.4.4 Several of the proposed components for the Strategic Delivery Plan have been discussed in previous sections so are not repeated here. Instead, the considerations for delivery are discussed below in more detail, followed by policy recommendations.

Strategic Guidelines for Implementation

4.4.5 Once strategically defined and designated, Urban Blue Corridors that pass through proposed new development sites and/or areas for regeneration should be considered in more detail through site-specific assessment. Recommendations for these studies and their scope should be defined within the Strategic Delivery Plan.

4.4.6 There should also be a recommendation for all new developments to consider how their proposed development links into the Urban Blue Corridor network throughout the LA area, and potential impacts and/or opportunities for improvement and linkage to the network should be considered where appropriate. Policy recommendations should ensure the protection of the designated corridors through the development sites, but be flexible enough to allow site-specific considerations and alterations (with agreement from the LA, Environment Agency and other stakeholders).

4.4.7 New development provides the greatest potential for delivering Urban Blue Corridors through the current planning system, and as such, new development proposals (for example, Opportunity Areas or Growth Areas identified through the LDF Core Strategy and AAPs) will need to be focussed on the short to medium term delivery of Urban Blue Corridors.

4.4.8 Where Urban Blue Corridors have been identified through existing neighbourhoods, a longer-term development strategy will be required, recognising that delivery and retrospective establishment of Urban Blue Corridors will be more difficult and potentially face opposition from the existing population. A staged approach may be required and community engagement will be the key focus in the short-term to introduce the concept and proposed delivery.

4.4.9 The Strategic Delivery Plan should prioritise those areas where the retrospective establishment of Urban Blue Corridors will deliver the greatest benefits (through a SWOT analysis) and focus on these areas for establishment in the short to medium term.



Timescales for Implementation

- 4.4.10 Urban Blue Corridors could be established and implemented outside the spatial planning framework, but incorporation into planning policy would give the concept a legal basis and would provide encouragement and opportunity for development and integration of an Urban Blue Corridor network. It would also provide leverage when engaging with developers in that understanding of the aims and objectives of Urban Blue Corridors would help to provide more flood resilient, flexible and ‘future proof’ developments. In addition, there would likely be ancillary benefits such as improved water quality and increased recreation and pedestrian access to the watercourse.
- 4.4.11 To bring Urban Blue Corridors into adopted planning policy could take between 5 and 15 years, depending on the spatial scale, the level of adoption (e.g. part of Core Strategy policies, or SPDs), and the current stage of LAs in the development plan adoption process cycle. For example, if a Core Strategy has just been adopted then it is unlikely to be revisited for some years. LFRM strategies will enable better collection of information, understanding of risk and potential solutions; with stronger evidence it is potentially easier to build into planning policies.
- 4.4.12 Many LDFs cover the period to 2025 and are likely to be completely reviewed around 2020; however, selective reviews may take place earlier and there would be opportunities for policies relating to Urban Blue Corridors and the water environment to be introduced as part of this process. A premise for this would be the level of information dissemination and ‘education’ about Urban Blue Corridors that can be undertaken by stakeholders and key decision makers (e.g. planning policy makers). A forerunner might be Green Infrastructure, a phrase and concept that was not well-known until a few years ago, but is now being adopted in LDF Core Strategies through both specific and thematic cross-cutting policies.
- 4.4.13 Adoption of Urban Blue Corridor-specific policy would allow LAs to direct applicants to take Urban Blue Corridors into account when developing schemes, and could also allow developer contributions to be sought through planning obligations.
- 4.4.14 Local authorities require a better understanding of both the spatial and temporal aspects of the development of the Urban Blue Corridor. The Derby example (Case Study 3) is looking at a 1:100 year flood defence, and decision plans are being developed based on that, with staged implementation phases. Thus consideration needs to be given to how the urban Blue Corridor can be progressed in a way that supports a longer-term implementation.

Incentives and Opportunities for Implementation

- 4.4.15 Ever-increasing requirements are being placed on developers when building new homes. Without statutory legislation or evidence in place to justify their creation, Urban Blue Corridors will be difficult to achieve on the ground, as developers will be reluctant to give up developable land or fund non-statutory schemes. Thus, there need to be clear incentives for including, defining and ensuring the maintenance of Urban Blue Corridors within a development, beyond flood risk benefits. These might include changes to the blight compensation rules when an area is identified as an Urban Blue Corridor. For example, developers could be encouraged to fund Urban Blue Corridors, helping to both make space for water and ensure the development is water compatible and sustainable (Table 8). This would also enable them to become further aligned to other key drivers such as Defra’s ‘Making Space for Water’ and DCLG’s PPS25.
- 4.4.16 The consultation exercise with developers and architects found that the main concerns regarding surface water flood routing through development sites were related to impacts on building location and orientation, letting rates, legacy issues regarding maintenance, and the



density and character of the development (including associated planting, site fencing etc.). It will therefore be essential to define, within the Strategic Delivery Plan, the requirements and considerations for Urban Blue Corridors at a site-specific level and the incentives and opportunities to provide site improvement through consideration of these schemes. However, there will be a requirement for flexibility in considering the development of individual sites. The consultation exercise with developers reported that it was felt that Government legislation or subsidy would be needed to stimulate developer 'buy in' to Urban Blue Corridors.

- 4.4.17 Table 8 provides potential opportunities and incentives for developers in incorporating Urban Blue Corridors within their development. This list is not exhaustive and will need further consideration as part of promotional activities for Urban Blue Corridors, LA delivery plans and/or site development briefs.

Table 8: Potential Opportunities and Incentives for Developers

Promotion	In order to increase awareness, and to encourage developer buy in, it might be beneficial for a representative body to attend developer conferences etc and promote/ enlighten the construction industry on the subject and importance of Urban Blue Corridors and their impact on individual sites and the wider context. Sir John Egan, former chairman of Willmott Dixon, embraced the principles of <i>Rethinking Construction</i> ⁷⁵ , which reported on the scope for improving quality and efficiency in UK construction, and pioneered the use of partnering contracts. Despite the nature of partnering requiring the contractor/developer to be more accountable, operate an open book principle and to be involved initially with greater (albeit joint) risk, Willmott Dixon saw greater benefits with regard to Client trust, which in turn increased their portfolio. Other contractors quickly followed suit. The same principle could be applied to Urban Blue Corridors, and it could be marketed to developers as added value to their projects
Funding Mechanism	As understanding of local flood risk increases and becomes incorporated into planning policy, documents and action plans, developers will be able to readily quantify the degree of contribution. This contribution may be a physical feature of the development as financially inconsequential as strategically placed kerbing, or it may be a contribution to streetscape improvements in the vicinity. The mechanism for incorporating the former would most likely be via conditions written into the planning consent. The latter would be achieved through a section 106 agreement. This is a legally binding contract between the developer and the LA, with monies ring-fenced for the purpose of the intended works only. Alternatively the developer may contribute to a CIL or undertake the works himself, after agreeing the specifications and sequencing with the LA beforehand.
Incentives	The LA may, in some circumstances, need to consider some form of dispensation (on a site specific basis) in order to encourage development of a site. For example, density and/or height restrictions may need to be relaxed in order to make a project viable. Other avenues should also be investigated, including perhaps (in the case of domestic projects) the finished development benefiting from a small council tax discount in recognition of its green credentials, thereby making the development more desirable. Careful consideration needs to be given to the chosen mechanism of increasing viability. The former suggestions will increase building mass whilst the latter will increase property prices

Determine Strategic Policies

- 4.4.18 Flexibility would need to be incorporated into any planning policy wording to allow for changes in the future water regime in response to climate change, wider catchment management and demands of development at certain times in certain locations.
- 4.4.19 An overarching Urban Blue Corridor policy could be contained in a Core Strategy but worded in such a way that it is flexible and allows 'delegation' through an SPD or development management DPD. A SPD or DPD approach would allow selective amendments and updates to agreed Urban Blue Corridors and allow greater flexibility in terms of being able to amend the



SPD on an ad hoc timescale. It would also involve revision of a single document, rather than a selective revision of an LDF Core Strategy.

- 4.4.20 Future planning policies will need to be based on specific, detailed research to provide as much certainty as possible and to limit the need to revise adopted SPDs, DPDs, IDPs, Core Strategy policies and so on. These might focus on areas of higher surface water flood risk, or be a response to anticipated areas of focus for new development.

Delivery through Existing Policies

- 4.4.21 Delivery of Urban Blue Corridors would require a combination of incorporation into planning policy and local strategies, and partnership working with interested parties including local communities and public and private sector organisations.

- 4.4.22 Subsequent to the preparation of an Urban Blue Corridors (Delivery) Strategy, LDFs should establish a clear policy hierarchy for Urban Blue Corridors. To encourage the integration of Urban Blue Corridors into development, the LDF may require developers to consider Urban Blue Corridors through several means including:

- Setting policy in the Core Strategy;
- Setting specific Urban Blue Corridor policies for particular sites under Site Allocations DPDs;
- Adopting the Urban Blue Corridor strategy as a DPD or SPD with which developers will be required to comply;
- Inclusion of Urban Blue Corridors (and associated infrastructure) in the IDP; or
- In cases where a large area is being earmarked for development then Urban Blue Corridors may form a key component within a specific AAP.

- 4.4.23 IDPs perhaps offer the best opportunity for inclusion of Urban Blue Corridors within the existing spatial planning system. An IDP identifies the infrastructure required within a LA to enable development proposed in the Core Strategy. The key objective of the IDP is to prepare a formal document setting out infrastructure requirements within an LA for the next 15-20 years. This informs the decisions and prioritisations that are undertaken by all partner organisations. The IDP identifies the existing deficiencies and surpluses, future requirements (what, where and when), responsibility for provision, and how it will be funded. This can be summarised in a schedule to confirm location, project name/description, reason for requirement, lead and other agencies, cost, phasing, sources of funding and risk analysis. As infrastructure and services can be provided by many different organisations, the IDP is the vehicle through which integration between organisations can be achieved.

- 4.4.24 Figure 20 and Figure 21 provide examples of the identification of infrastructure projects and their proposed delivery schedule within an IDP. The approach aligns with the proposed delivery of Urban Blue Corridors Infrastructure, and offers the opportunity to embed Urban Blue Corridors within the LA planning process.

- 4.4.25 LAs may also publish developer guidelines in response to principles defined by Urban Blue Corridor strategies. Case Study 1 presents an example of how policies implemented through the LDF can aid in the consideration and development of Urban Blue Corridors within the local spatial planning system.



GI category	Programme	Delivery Partners	Stakeholders	Cost	Funding	Completion
Access/ movement/ recreation/ leisure Habitat Landscape Flood Cooling	Mayor of London Green Grid - Wandle Valley	London Boroughs of Sutton, Merton, Wandsworth, Lambeth and Croydon	Mayor of London Design for London		LBC, EA, LDA, TfL	2013
	Mayor of London Green Grid - London Downlands Partnership	London Boroughs of Sutton and Croydon Surrey County Council Corporation of London Reigate and Banstead Borough Council Tandridge District Council Countryside Agency	Mayor of London Design for London		LBC, LDA	
Access, movement, recreation and leisure	Parks to Be Proud	LBC	LBC GLA		LBC Capital Programme, S106/ CIL, GLA/Design for London, Heritage Lottery Funding, and other funding streams	2020
	Play Areas	LBC	LBC		£60.000 Department for Children, Schools and Families LBC Capital Programme, S106, Heritage Lottery Funding, other funding streams and funding grants	2012
	Sport pitches	LBC	LBC		LBC Capital Programme, S106, Heritage Lottery Funding, and other funding streams	2015
	Public Realm Improvements	LBC	LBC TfL LDA		LBC, LDA, TfL, Network Rail, GAF, private developers.	2035
	Walking and Cycling on Greenways	LBC	LBC TfL Sustrans / Connect 2 PCT		TfL LBC Capital Programme s106	2025
Habitat Provision and Access to Nature	Biodiversity Action Plan	LBC	LBC London Downlands Partnership Wandle Valley		LBC LDA	
	Mayor of London's Access to Nature	LBC	LDA		Mayor of London LDA	

Figure 20: Example Infrastructure Projects (taken from Croydon IDP Consultation Document⁶⁸)

Delivery programme	Infrastructure Project	Planned provision	Lead Partner	Delivery Partners / stakeholders	Delivery Mechanism/ Funding source	Cost (if known)	Location	2011-2015	2016-2020	2021-	Notes
Sustainable City Programme	Biodiversity Action Plan	Habitat Action Plan: Chalk Grassland Habitat Action Plan: Heathland Habitat Action Plan: Mixed Deciduous Woodland and Wet Woodland Habitat Action Plan: Ponds and open Water, Eutrophic Standing Water River restoration projects included: Wandle Park, Norbury Park	LBC	London Downlands Partnership, Wandle Valley	LBC		Borough-wide				
	Mayor of London - Access to Nature	To improve access to nature across London. Areas included: Queens Road Cemetery, Melfort Ave Rec, Norbury Hall Park, Addiscombe Railway Park, Purley Way East Playing Fields, Pollards Hill, Park Hill, Haling Grove, Wandle Park, Duppas Hill, Norbury Park & Brook, Cane Hill Hospital West, Waddon Ponds, Melfort Ave Rec	LDA	LBC, Mayor of London			Borough-wide				
	Sustainable Energy	CMC District Heating, CHP related to energy centres on NHS Capital Programme	LBC	NHS, LDA, HCA, land-owners & businesses	Energy Service Company, developers, investors, funding institutions, NHS Croydon Capital Programme		Borough-wide	Y	Y		
	Mayor of London's Capital Growth	Community food growing: Addington. Tasty Parks and Gardens to introduce productive vegetation (e.g. fruit trees) in public open spaces. Market landshare schemes to encourage sharing of maintenance and productive use of existing garden land stock. Grow Green: education, grant and know-how support for urban agriculture Greening brown fields: temporary lease, landstock database	LBC	Mayor of London	LBC, Mayor of London		Borough-wide	Y	Y		
Mayor of London - Wandle Valley Green Grid	Thornton Heath Recreation Ground, Wandle Park River Restoration, New South Quarter – Croydon River Restoration, Wandle Park, Waddon Ponds, Regeneration of Wellesley Road and Park Lane, Croydon Connect2, C_Charge	Wandle Valley Regional Park	LBC, LB Sutton, LB Merton, LB Wandsworth, LB Lambeth	LBC, EA, LDA, TfL		Borough-wide	Y				

Figure 21: Example Infrastructure Delivery Schedule (taken from Croydon IDP Consultation Document⁶⁸)



Delivery through Green Infrastructure

- 4.4.26 There is no conclusive evidence that opportunities for, and the potential benefits of Urban Blue Corridors are fully considered within Green Infrastructure strategies. Few examples of setback, deculverting and re-establishment of flood plains have been identified within Green Infrastructure strategies, and consideration of overland flow paths appears limited.
- 4.4.27 There are several possible explanations for these gaps. Green Infrastructure strategies are a relatively new concept and in the early development of Green Infrastructure, most strategies have been prepared at a strategic spatial level. Strategic objectives are therefore yet to be transposed into local policies and initiatives. The emergence of detailed strategies at borough or district levels is largely a recent development and, given the complex nature of flood management, specific proposals will need to be subjected to detailed analysis at a more local level.
- 4.4.28 To put forward proposals for significant infrastructure improvements, a good understanding of deliverability is required. This requires detailed feasibility studies and robust options appraisal. Green Infrastructure strategies may not be the appropriate tool to determine the preferred management option for an Urban Blue Corridor. Instead they could be assessed and proposed within other strategies such as LFRM strategies, SFRA and SWMPs. The value of Green Infrastructure strategies may instead lie in taking the opportunities identified in other strategies such as SWMPs and BAPs and ensuring that as they are taken forward, they maximise additional multifunctional benefits of Green and Blue Infrastructure.
- 4.4.29 In some cases, a lack of evidence may mean that Green Infrastructure strategies are unable to make spatially specific recommendations for new or improved Urban Blue Corridors. For example, until the recent emergence of SWMPs, information on surface water flooding and overland flow paths may not have been sufficient to accurately inform Green Infrastructure planning.
- 4.4.30 Green Infrastructure provision should be targeted at areas of greatest need. This may be from a biodiversity, flood risk or recreational perspective depending on the priorities identified by the LA and the evidence base studies that are conducted to inform the development of the LDF. Box 6 provides some examples of Urban Blue Corridor-related proposals that have emerged from Green Infrastructure strategies.



Box 6: Examples of Blue Corridor Related Recommendations through Green Infrastructure Strategies

Examples of high level Green Infrastructure objectives and strategic level recommendations:

- *“Increase natural storage capacity, reduce the run-off rate of storm water and increase onsite water purification and infiltration”, “Permeability in settlements across the subregion should be maximised”, or “Promote river corridor management to provide multifunctional benefits for flood defence, recreation, landscape and biodiversity.”*
- *“Green Infrastructure within development should protect existing floodplains and provide opportunity for Sustainable Urban Drainage Systems through urban areas.”*
- *“Given that there is likely to be redevelopment within the floodplain, there will be increased emphasis on innovative, flood resistant and resilient design, including a requirement to normally set back development from the watercourse”.*

Examples of more specific opportunities and measures identified within Green Infrastructure strategies aimed at guiding development in a certain location:

- The Green Infrastructure Strategy for the Partnership for urban South Hampshire makes a specific recommendation for the area of Totton, where a network of narrow waterway corridors pass through the urban area, many of which are culverted, and have limited access. The strategy proposes the development of *“a strategy for watercourse enhancement and cycle/footpath improvements in Totton”* which *“should explore opportunities to enhance watercourse corridors through deculverting”*. (http://www.push.gov.uk/push_gi_strategy_adopted_june_10-3.pdf)
- *“Strengthen semi-natural features and improve habitats along rivers enhancing Pin Brook as a wetland habitat and establishing the Brook as a continuous wildlife corridor linking habitats to the east and the Clyst Valley, including the Rockbears Stream and Cranny brook at Cranbrook and also National Trust land north of the railway line, to woodland and meadow habitats to the north of Exeter”*. (<http://www.teignbridge.gov.uk/CHttpHandler.ashx?id=22953>)

Delivery through New Local Policy

- 4.4.31 There is no statutory legislation through which to encourage or force the implementation of Urban Blue Corridors. Given the current Government’s vision of ‘Localism’ and ‘Community-led initiatives’, the creation of new national legislation or (non-statutory) policy is unlikely. The delivery of schemes will therefore require the creation of local policies and potential adaptation to national planning policy (e.g. PPS25) rather than statutory changes through primary or secondary legislation (which does not comply with the Government’s ‘light touch’ approach). It is recognised that whilst policy is capable of being a material consideration in spatial planning decisions, it is not legislation and therefore not statutory. As such, the delivery of Urban Blue Corridors will require local policies and promotion within and by LAs and local communities.
- 4.4.32 In order to effectively establish Urban Blue Corridors in the spatial planning system, it is likely that local or sub-regional policy will be required, either through adaptation to existing policy (i.e. PPS25) or through a separate policy (and associated guidance documents). This will raise the profile for the consideration of Urban Blue Corridors and should influence their consideration during the creation of LDFs and development proposals. Through this route, specific policies can be developed for all urban LAs, rather than on an ad-hoc process.
- 4.4.33 It is important to note that there is no policy or legislation that prevents LAs deciding that Urban Blue Corridors are the best solution to meeting improved flood risk management. The London Borough of Sutton has drafted policies for inclusion within its ‘Site Development Policies DPD: Proposed Submission’ document⁷⁶, which includes Development Management Policies specifically related to the protection of Urban Blue Corridors and/or opening up watercourses (Policy DM7 - Flood Risk). These include policies encouraging the setback of development beyond that of the statutory Environment Agency 8 metres setback, deculverting and restoring river channels and maximising the multiple benefits of Green and Blue Infrastructure (Box 7).



- 4.4.34 The London Borough of Sutton has also drafted a Climate Change Adaptation Strategy⁷⁷, which was developed as part of the Council's participation in the EU GRaBS Project. This sets out a number of principles for the inclusion of Blue Infrastructure within the Borough.
- 4.4.35 Case Study 1 provides further information on the drivers and delivery process for the Wandle Valley Regional Park project.

Box 7: Examples of Policy Delivery through DPDs (London Borough of Sutton, Draft Site Development Policies DPD)

Policy DM7 - Flood Risk

(c) Proposed developments should seek to reduce flood risks to and from new development and enhance the ecological functioning of river corridors by:

- maintaining an 8m buffer strip with bankside vegetation intact along all fluvial river corridors and, where possible, limited built development within 20m of the river bank;
- ensuring that, for proposals on previously developed sites, peak run-off rates and annual volumes of run-off are less than the previous conditions on the site and comply with the minimum peak time attenuation rates set out in the Council's Sustainable Design and Construction IPG (or subsequent SPD);
- where feasible, seeking to achieve 'greenfield' run-off rates from the site by incorporating sustainable urban drainage systems (SUDS) in appropriate circumstances and/or green roofs or walls in order to minimise surface run-off to natural watercourses or municipal drainage systems;
- maximising the benefits of blue and Green Infrastructure for flood storage, biodiversity and habitats, environmental enhancement and in creating communities that are fully adapted to future climate change scenarios, including exposure to higher temperatures in accordance with Policy DM8;
- where flood storage is removed, providing compensatory storage to ensure that there is no loss in flood storage capacity;
- maximising opportunities for deculverting and restoring river channels, flood flow pathways and floodplains to their natural state to reduce flood risks downstream;
- maintaining existing flood defences; and,
- relocating existing development to land in zones with a lower probability of flooding.

Source: Extract of Draft Site Development Policies DPD: Proposed Submission Document – July 2010

Box 8: Examples of Policy Delivery through Climate Change Adaptation Strategy (London Borough of Sutton)

Flood Risk

- locating more vulnerable forms of development and community infrastructure, including housing, away from areas at higher risk of fluvial, surface water, sewer and groundwater flooding, taking account of the extent of the potential hazard arising from flood depths and flow velocities;
- working with the Environment Agency, the private utilities and other bodies to coordinate investment in flood alleviation and flood storage measures as part of an integrated approach to urban drainage, including provision of temporary water storage capacity to reduce peak flows during flood events;
- maximising the flood storage role of rivers, natural floodplains, ponds, aquifers and other water features;
- restoring culverted or confirmed watercourses to their natural state;
- providing space for rivers and watercourses by protecting natural floodplains where possible, creating areas that flood to compensate for any loss of floodplain and direct floodwater away from homes;
- providing space for rainfall by creating areas that slow and store rainwater out of the floodplain to reduce surface water runoff rates to at least equivalent of greenfield rates;
- creating linked networks of open space or 'green grid' (see above) to promote natural drainage patterns and minimise runoff;
- creating space for amenity by locating play and recreation areas in areas designed to flood;
- using sustainable urban drainage systems (SUDS) to minimise and slow the rate of runoff from new development including green roofs, rainwater harvesting, porous surfaces in non-clay areas permeable surfaces, flood pathways, filter strips, swales, detention basins, ponds, infiltration reed beds and stormwater wetlands, while maximising their ecological and amenity benefits; and
- ensuring that developments within areas of higher flood risk, will safeguarding access routes and incorporating flood resilience measures and materials as part of the design of new buildings.

Source: Extract of Draft Borough Climate Change Adaptation Strategy – May 2010



Community Masterplanning

- 4.4.36 Masterplanning will form an important stage in designing and delivering the aspirations of Urban Blue Corridors. Masterplanning of regeneration areas, or those areas identified as part of AAPs, will be the first stage in transposing the strategic aspirations and policies into practical realities whilst providing aesthetical environments for new development. There needs to be a more pro-active 'development management approach' amongst policy planners, with more emphasis on preparing development briefs, Masterplanning and early consultations with developers. The LFRM strategy offers the opportunity to facilitate the pro-active 'development management approach'.
- 4.4.37 This document is not intended to act as a design guidance and as such a summary of proposed Masterplanning considerations are provided here but will need to be revisited as part of any Good Practice Guidance document.
- 4.4.38 Consideration of the best areas for Urban Blue Corridors includes identification of:
- Opportunities (through strategic mapping outputs);
 - Area specific drivers, benefits and barriers;
 - Approximate costs;
 - Funding opportunities and mechanisms;
 - Timescales for development and delivery; and
 - Governance structure and on-going maintenance and preservation.
- 4.4.39 The Masterplanning stage should see the transposition of the strategic aspirations into key proposals maps for the area and land-use mapping. For example,
- "To facilitate efficient delivery of high quality development, Local Planning Authorities should draw on relevant guidance and standards and promote the use of appropriate tools and techniques, such as Design Coding alongside urban design guidelines, detailed Masterplans, village design statements, site briefs and community participation techniques."*⁷⁸
- 4.4.40 The purpose of the Masterplan should be to:
- Help develop the area as a whole in a way that responds to local economic, social and environmental change and fits well into the existing community;
 - Help identify the potential of the area for development and then how separate sites within it can be best used;
 - Make better use of under-developed land;
 - Involve the local community in the development process and help build consensus about the future of the area;
 - Define proposals that will deliver high quality, sustainable buildings and public spaces;
 - Help co-ordinate education, health, leisure and other services in the area; and
 - Make the most of natural assets such as the landscape, topography and ecology.
- 4.4.41 Box 9 provides an example of how flood modelling outputs can be used to provide recommendations through the spatial planning system for delivery through Masterplanning, particularly with regards to designated 'no build zones' or 'space for water' areas and/or land use planning zones throughout the urban environment.

Box 9: Example of Spatial Planning Recommendations in Heavily Urbanised Areas

Streams of Graz', Graz, Austria

The 'Streams of Graz' is a ten-year project run by the Federal Ministry of Agriculture and Forestry, Environment and Water Management (BMLFUW), the Land of Styria and the City of Graz. Capacity constraints within the existing streams and channels in the area, and poor ecological quality, meant that endangered flood zones in Graz were identified for protection (coordinated with spatial planning), alongside measures to improve water ecology and improve open space and recreational opportunities in the city.

Precipitation – Discharge modelling helped identify those areas at greatest risk of flooding. Spatial Planning Recommendations were based on these modelling result and included:

- Masterplan Revision - all planned retention basins (primary and secondary options) should be defined as priority areas for protective water management measures. Open areas within the existing HW100 high water marks (discharge study Graz streams 1997) should be identified accordingly to ensure that they remain free as priority areas for the discharge of floods and as inundation zones.
- Changes in the land-use plan - to set aside these areas, retention basins and retention zones should be assigned to the category 'open space with special uses' and, in part, additionally designated as 'reservation areas'. Depending on the level of protection which is to be achieved until protective measures have been implemented, building land, development areas and open space with special uses are to be distinguished in the land-use plan according to the system in use.

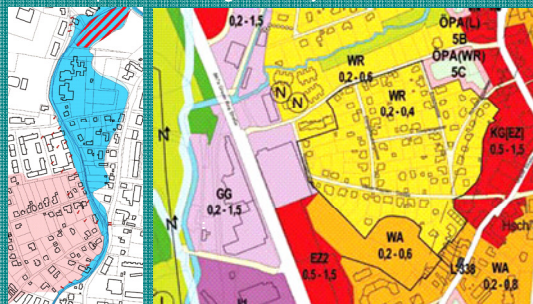


Figure 22: HW100 High Water Boundary Considerations for Masterplanning (left) and Land Use Plan (right)

Source: <http://www.wasserwirtschaft.steiermark.at/cms/beitrag/10960200/4660198/>

Site-Specific Considerations

- 4.4.42 To successfully implement Urban Blue Corridors, there needs to be an understanding of the opportunities and benefits of individual schemes at a given location, using best available evidence. Opportunities need to be identified through the spatial planning framework, developed further through Masterplanning at an AAP level and then the specific development design requirements developed/implemented at a local level, once consideration has been given to the local conditions.
- 4.4.43 This could be through specific site plans for individual multifunctional and aspirational aims and benefits. For companies or authorities with land-holdings or activities that impact on ecosystems and habitats, the most effective means of managing biodiversity is through developing site BAPs. Separate plans can be drawn-up for each site, and can be linked with local and national biodiversity priorities as well as the overall Company Biodiversity Action Plan (CBAP).
- 4.4.44 In addition to assisting companies in managing their land holdings, the process of developing and implementing site plans can be a useful mechanism for raising employee awareness about biodiversity, flood protection, open space, recreation opportunities, gaining stakeholder trust and buy-in, providing training and motivation for staff to become involved in the process and demonstrating what a company is undertaking for the local environment and community.



- 4.4.45 It is at a site level that design and performance specifications can be agreed and aspirations translated into on-the-ground measures, such as implementation of SuDS to help deliver the overall Urban Blue Corridor visions (Box 10). It is at this level that functional and operational procedures can be agreed, e.g. closure of parks during times of flood. Guidance need to be locally-tailored as well as strategically as sites will have individual concerns/issues. Site specific Flood Risk Assessments should comply with LA policy to ensure that Urban Blue Corridor objectives can be met.
- 4.4.46 Consideration of design principles such as building resilience will be an integral part of this stage of developing Urban Blue Corridors (Box 11).

Box 10: Example of use of SuDS in Planning for Urban Blue Corridors

Water and Storm Management in the City of Malmö, Sweden

The Ekostaden Augustenborg project (launched in 1998) took a wide-ranging approach to making the neighbourhood more environmentally friendly, and physically and socially attractive. Climate change considerations were an important part of the project, both in terms of mitigating the causes of climate change and adapting to its effects. The adaptations included an open, surface level storm water system, green rooftops and improvements to green spaces. The project also introduced renewable energy sources, recycling systems, sustainable construction and local transport initiatives.

Benefits from the development include:

- The open storm water management system provides a high quality landscape for both residents and biodiversity
- The open water system retains 70% of all rainfall onto the site and collects water from rooftops and other impervious surfaces and is channelled through canals, ditches, ponds and wetlands before finally draining into a traditional closed sub-surface storm water system
- The storm water system is an integral part of the landscape
- The green spaces and storm water system have helped improve the image of the neighbourhood and had had both environmental and social benefits.

Design and Implementation Mechanisms:

- Community Involvement - incorporating public consultation, including regular community workshops, meetings and informal gatherings.
- Ongoing Management and Maintenance - the housing company and the city renegotiated management responsibilities and agreed a joint management contract for the waste and water systems and the open and green spaces. Management work is jointly funded through the housing company which incorporates costs into rents, the water board through the water rates, and the city council's standard maintenance budgets. Management is the responsibility of external managers working for a joint management board of City of Malmö and MKB Housing Company, without tenant representation as it was considered that there was a lack of skills and capacity in the local resident population to undertake management responsibilities.

Evaluation:

- Effective Flood Management - although the impetus behind creating the open storm water system was to prevent flooding, it has the added benefit of creating a good quality landscape and a better habitat for wildlife. The open storm water system was designed to accommodate a major rainfall event of a scale that occurs only once in 15 years. However, in the summer of 2007 a one in 50-year event occurred, cutting most of Malmö off from the rest of Sweden. Augustenborg was not adversely affected, suggesting that its storm water system is performing to a higher standard than it was originally designed to meet.

Source: <http://www.cabe.org.uk/case-studies/ekostaden-augustenborg?photos=true>



Box 11: Example of Design Considerations in Development of Urban Blue Corridors

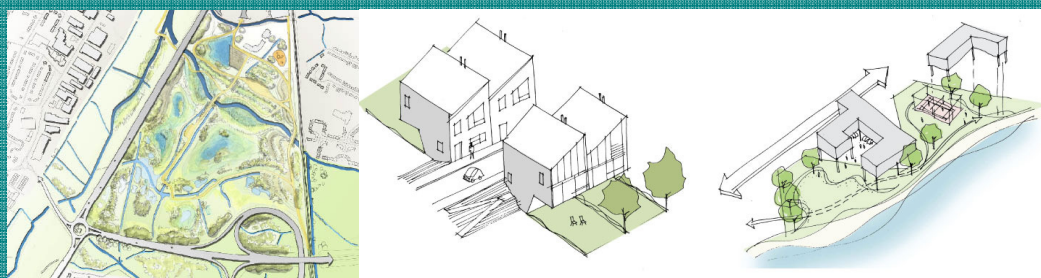
Ashford Canal District and Nature Park

Ashford Canal District has been identified as a strategic development site within the Ashford Regeneration Plans. However, the site is within the floodplain and therefore poses technical difficulties to bring forward for development. A nature park and exemplar flood-resilient development will provide a landmark gateway into Ashford.

Excavations in the new nature park area, and within the development site itself, will create water meadows, a wildlife haven for rare flora and fauna. Works to the river channel will create a more natural form with marginal river stands. The combined nature park and development will reduce flood-risk to other parts of Ashford.

Flood resilient houses will be docked to raised 'dry home zones' and designed to allow floodwater to pass beneath them safely. Semi public gardens will be designed to be enjoyed by local residents without loss of floodplain.

Offices will be raised high off the ground on stilts to elevate them above potential flood levels and to create usable space below. The generous undercrofts will be used for parking and recreational facilities for office workers.



Team: DHA Planning, HR Wallingford, Ashford's Future, Ashford Council, BACA.

Source: BACA, <http://www.baca.uk.com/projects/view/068/page:2#/projects/view/068>

4.5 Summary

- 4.5.1 The development and delivery of Urban Blue Corridors is most appropriate at the Masterplanning level and should draw heavily upon the outputs of the SWMP and accompanying flood risk maps, which would identify overland flow paths and ponding areas as well as opportunities for improving Ordinary Watercourses. The development of LFRM strategies making use of existing flood risk assessments should enable a more holistic approach to flood risk management, through LLFAs working in partnership with other organisations, including water companies. The development of LFRM strategies can provide an excellent opportunity to explore whether Urban Blue Corridors are a suitable management tool for local flood risk.
- 4.5.2 Urban Blue Corridors can deliver multiple benefits, and one of the key aims of the concept is adding value and trying to identify where multiple benefits might be possible, and how these can be achieved. Therefore, if an Urban Blue Corridor is established, it is important to see how other benefits can also be included.
- 4.5.3 The local planning system in isolation will not offer the mechanisms to deliver Urban Blue Corridors. There is a need for a lead organisation (perhaps the LLFA) to establish a vision ahead of development pressure arising. This will allow everyone who might have a part to play (including LA, developers, community) to ensure that their actions are striving towards the shared vision, and enable flood risk to be fully assessed and the best and most cost effective way of managing it identified. The vision could be developed in LFRM strategies which can set out how Urban Blue Corridors could be delivered.
- 4.5.4 In developing Urban Blue Corridors, there is a need to ensure that the potential for wider Green Infrastructure benefits are recognised at the outset and are integrated as early as possible into



- the process, and that where possible they enhance connectivity between other areas of Green Infrastructure.
- 4.5.5 Local Development Planning (the LDF process) is currently the area where Green Infrastructure and Urban Blue Corridor benefits can be integrated. Green Infrastructure /surface water management should be integrated throughout the development plans and not necessarily through one policy focussing on surface water / Green Infrastructure.
- 4.5.6 It is essential that Urban Blue Corridors are considered holistically, rather than being viewed as a 'bolt on' afterthought. They need to be introduced into the LDF and be identified on Key Diagrams and Proposals Maps, through AAPs, and site-specific studies, and be planned for in IDPs, with clear associated policies and supporting evidence. Alternatively areas designed to 'make space for water' should be identified and protected at the earliest opportunities in the planning process (Case Study 1).
- 4.5.7 The delivery of Urban Blue Corridors requires better use of existing legislation, improved spatial and land use planning, and improved mechanisms to optimise land and water management. Additionally, in developing the feasibility, scope and detail of Urban Blue Corridors the various departments in LAs will need to work closely together. In two tier authorities, County and District levels will need to closely work together.
- 4.5.8 There are several potential funding mechanisms for Urban Blue Corridors but a Community CIL seems the most appropriate to ensure that there is holistic consideration of Urban Blue Corridors across the urban area.



5 Case Studies

5.1.1 This section presents three case studies where the principles of Urban Blue Corridors have been, or are in the process of being, applied through a strategic planning approach.

5.1.2 The case studies provided are:

- Case Study 1: Wandle Valley Regional Park, Southwest London;
- Case Study 2: IBA Emscher Park, Germany; and
- Case Study 3: Lower Derwent, City of Derby, UK.



Case Study 1: Wandle Valley Regional Park, Southwest London ⁱⁱ	
REQUIREMENT & AIMS	<p>The proposed Wandle Valley Regional Park follows the course of the River Wandle from Croydon through Sutton, Merton and Wandsworth to the River Thames. Historically the River Wandle has played a vital role in communications, trade and human settlements within the southwest of London (and the London Boroughs of Croydon, Merton, Sutton and Wandsworth). The London Plan recognises the Wandle Valley as an opportunity area, a development corridor with potential for intensification of housing, town centres and business growth. The London plan also makes a strategic and spatial planning commitment to work with Boroughs and other partners to achieve new regional parks in London, of which the Wandle Valley Regional Park will be the first.</p> <p>The Wandle Valley Regional Park vision is <i>“for a linear Regional Park that gives public access to the length of the River Wandle, linking a series of open spaces, recreational areas and havens for wildlife; and connecting through green routes to the adjacent wider regeneration corridor with its residential areas, business parks and town centres”</i>⁷⁹</p> <p>The proposed creation and long-term development of the Wandle Valley Regional Park has provided the opportunity for the London Boroughs of Croydon, Merton, Sutton and Wandsworth to consider the adoption of Urban Blue Corridors and similar Blue Infrastructure measures to deliver the long-term environmental improvement within their Boroughs, in particular through regeneration and new development initiatives.</p> <p>Examples of initiatives, driven by, or contributing to the Wandle Valley Regional Park include:</p> <ul style="list-style-type: none"> • London Borough of Croydon – the New South Quarter mixed use development by Barratt Homes in the centre Croydon will deliver approximately 800 residential units, several commercial units and additional community uses such as a nursery, medical centre, cycle paths, footpaths and new access to the adjacent Wandle Park for the site and wider area. The scheme includes deculverting of the River Wandle that previously ran hidden from view through the site.⁸⁰ • London Borough of Sutton - the development of the Wandle Valley Regional Park is being taken forward as the Council's flagship proposal for the regeneration of the Hackbridge area to create the first 'sustainable suburb' within London by 2025. The Borough is part of the GRaBS initiative and is looking to incorporate measures to adapt to climate change and provide multifunctional use of blue/green land within the Borough. The aim is to improve access to the River Wandle for residents, especially within Hackbridge and for visitors to the Hackbridge area for recreation and leisure. It aims to improve the environment and public amenity of the open spaces along the River Wandle and to enhance the nature conservation and biodiversity value of this stretch of the River.
STAKEHOLDER ENGAGEMENT	<p>Following a number of previous environmental, economic development and community initiatives, and initial steps to consolidate these processes through the Wandle Valley Green Ribbon Initiative in 2005 (a sub-regional response to the Greater London Authorities Blue Ribbon Strategy), the Wandle Forum was formed in 2005 to provide a more co-ordinated approach to initiatives within the Wandle Valley and bring together key stakeholders including London Boroughs, statutory agencies, landowners, community groups and businesses.</p> <p>Following the identification of the Wandle Valley as a Regional Park opportunity, and building on the work of the Wandle Forum, Groundwork together with the Greater London Authority initiated a high-level Steering Group with a commitment to creating a Regional Park; the majority of whom have formalised this commitment through the adoption of a Statement of Support. The Steering Group includes representatives from:</p> <ul style="list-style-type: none"> • Groundwork London; • London Boroughs of Croydon, Merton, Sutton and Wandsworth; • South London Partnership; • Greater London Authority; • Elected Members Group; • Natural England; • Environment Agency; • Mitcham Common Conservators; • Wandle Forum; • National Trust; and • Pro-Active South London.

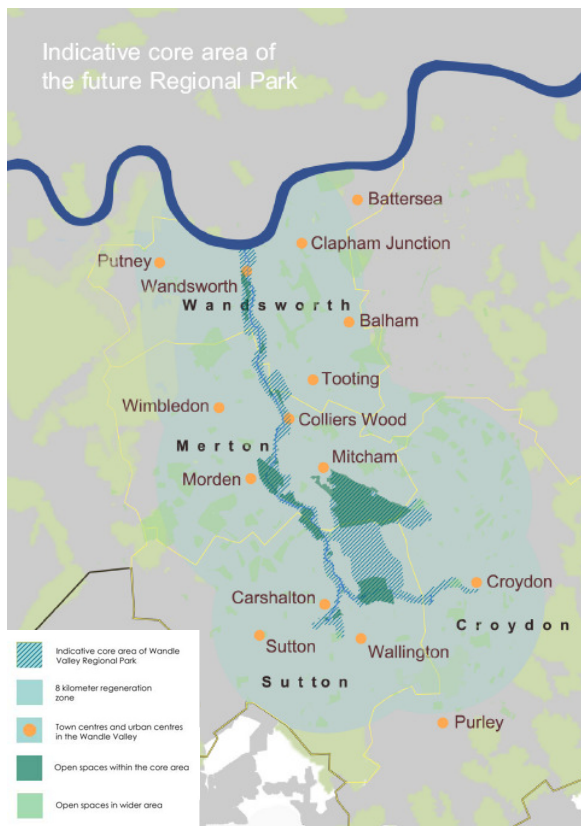
ⁱⁱ The information presented in this case study is based on information received from the London Borough of Sutton and TCPA (via the Questionnaire), information available as part of the GRaBS and LIFE projects, and additional publicity information available at the time of the study.



Case Study 1: Wandle Valley Regional Park, Southwest London⁷⁸

DEVELOPMENT & DESIGN

LOCATION & EXTENT



Proposed Wandle Valley Regional Park Extent⁷⁹



Example Local Initiative: Hackbridge Masterplan 'Making Space for Water' Plans⁸¹

MAINTENANCE / PRESERVATION

The creation of the Wandle Valley Regional Park is a long-term process. Whilst the 'Vision' has been established, the Implementation Framework and long-term governance for the Park are still being developed. The aim for the maintenance/preservation for the Park is to:

- Provide effective and inclusive governance structures, enabling a strong partnership to develop creative and innovative approaches to the Park's long-term resourcing and management; and,
- Engage local communities at all stages of development (thereby encouraging ownership of the Park).

FUNCTIONALITY

The Wandle Valley Regional Park aims to fulfil a number of functions and inform and add value to future development of the sub-region. In relation to Urban Blue Corridors and Blue Infrastructure aspirations it will:

- Act as a best practice model for utilising the potential of an open space network in adapting and mitigating the effects of climate change;
- Manage water collection and flood risk with multi-functional flood storage areas and incorporation of SuDS into open space planning, new developments and retrofitting of existing buildings and spaces;
- Enhance the river environment to improve water quality and water levels along the river including, deculverting the River Wandle in Croydon and, where possible, creating natural banks along the river's length;
- Encourage the visual and, where appropriate, physical, linkages of development to the Wandle Valley Regional Park to maximise benefit of business to the river and open spaces;
- Provide public access along the River Wandle and linked green areas, including new and existing wildlife sites; and
- Provide a range of formal and informal recreational uses and landscapes.

COSTS & FUNDING

A funding Strategy will be developed to help realise the priorities set out in the Implementation Framework. A number of organisations are already involved in conservation, areas, education and other relevant projects in the Wandle Valley.

The Steering Group recognise that a coordinated partnership-based approach to fundraising will be crucial to deliver the wider vision for the Regional Park. It will be essential to identify resources that will enable the delivery of projects and also establish and maintain sound governance structures and maintenance arrangements for the Regional Park.

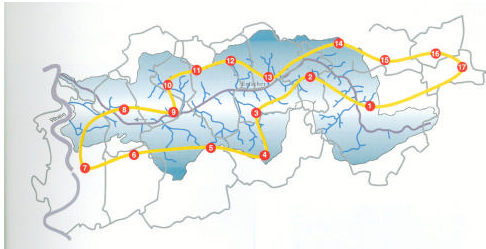

Examples of funding for existing initiatives include:

- Global to Local Foundation (not-for-profit organisation) has been successful in attracting funding of £265,000 from the Landfill Communities Fund for a project on the Wandle within the London Borough of Sutton. The funding for the works has been provided by the landfill operative company Viridor with a 10% contribution from the London Borough of Sutton. This project for the London Borough of Sutton proposes environmental improvements for 8 sites along the River Wandle in the Hackbridge Area, at significant points of public access and visual importance.
- One million pounds was secured within the Section 106 agreement for the New South Quarter development in Croydon. This will be used for a river restoration and park enhancement scheme in Wandle Park. The agreement also includes a maintenance programme for the restored river channel on the development site.


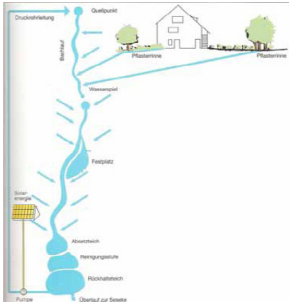



Case Study 1: Wandle Valley Regional Park, Southwest London ¹	
DELIVERY	<p>The vision for the Wandle Valley Regional Park will be developed and an Implementation Framework will be developed and agreed by the Steering Group partners. The Framework will combine strategic objectives with a spatial plan showing opportunities for interventions and a prioritised action plan for delivering cross-cutting, strategic and local projects. The Framework will set out common objectives for developing, design and management as well as a timetable for implementing short-, medium- and long-term measures.</p> <p>At a Borough Level, delivery of Urban Blue Corridors and infrastructure are likely to be achieved through:</p> <ul style="list-style-type: none"> • Core Planning Strategy DPDs; • Site Development Policies Proposed Submission Documents; • Area Masterplans i.e. Draft Hackbridge Masterplan⁶²; and • Climate Change Adaptation Plans. <p>A Masterplan for the Hackbridge area⁶³ demonstrates how site-specific measures can begin to be incorporated to deliver the principals of Urban Blue Corridors in new development, with consideration for the functionality under different storm scenarios. A number of sites were simultaneously assessed to prioritise the use of sites at lowest risk of flooding first, and consider the use of flood-risk measures on the upstream sites being used to reduce flood risk to sites down stream. The project reinforces an identity which will link into the Wandle Valley Regional Park and, it is hoped, will be coordinated throughout the other 3 boroughs (Merton, Wandsworth and Croydon) through which the Wandle runs. This will serve to raise the profile of the Regional Park and publicise the river as a health and amenity resource, encouraging cycling and walking along its length. All these factors aspire towards encouraging sustainability.</p>
POLICY	<p>There are several Policy drivers for the development of the Wandle Valley Regional Park at the sub-regional, local and site level:</p> <ul style="list-style-type: none"> • The London Plan contains a clear commitment to supporting the partnership-based development of the Wandle Valley Regional Park to <i>“create a new regional park that integrates and contributes to the regeneration of the Wandle Valley Development Corridor”</i>⁶⁴ • The London Boroughs of Croydon, Merton, Sutton and Wandsworth emerging LDFs include priorities on protecting and enhancing the environment, cultural heritage or economic potential as well as fostering community cohesion, and all contribute to the objectives for the Wandle Valley Regional Park. • The strategic objectives of key non-statutory landowners such as the national Trust also play an important role in creating a coherent Regional park. • Other partners, such as Natural England, the Environment Agency and Groundwork London have included the Wandle Valley Regional Park in their regional strategies and business plans. <p>As an example, the London Borough of Sutton’s ‘Site Development Policies DPD: Proposed Submission’ document⁷⁶ includes development management policies specifically related to the protection of Urban Blue Corridors and/or opening up watercourses (Policy DM7 - Flood Risk - Box 7) including:</p> <ul style="list-style-type: none"> • Maintaining an 8m buffer strip with bankside vegetation intact along all fluvial river corridors and, where possible, limited built development within 20m of the river bank; • Maximising the benefits of Blue and Green Infrastructure for flood storage, biodiversity and habitats, environmental enhancement and in creating communities that are fully adapted to future climate change scenarios, including exposure to higher temperatures in accordance with Policy DM8; and • Maximising opportunities for deculverting and restoring river channels, flood flow pathways and floodplains to their natural state to reduce flood risks downstream. <p>The London Borough of Sutton has also drafted a Climate Change Adaptation Strategy⁷⁷, which was developed as part of the Council’s participation in the EU GRaBS Project. This sets out a number of principles for the inclusion of Blue Infrastructure within the Borough including:</p> <ul style="list-style-type: none"> • Providing space for rivers and watercourses by protecting natural floodplains where possible, creating areas that flood to compensate for any loss of floodplain and direct floodwater away from homes; • Providing space for rainfall by creating areas that slow and store rainwater out of the floodplain to reduce surface water runoff rates to at least equivalent of greenfield rates; • Creating linked networks of open space or ‘green grid’ (see above) to promote natural drainage patterns and minimise runoff; and • Creating space for amenity by locating play and recreation areas in areas designed to flood.
LESSONS LEARNT	<p>The establishment of the Wandle Valley Regional Park is a long-term aim and therefore as it develops, there will be a number of outcomes and lessons learnt. At this stage however, the main messages are:</p> <ul style="list-style-type: none"> • A coordinated approach is required to take forward the development of a Regional Park through making use of well-established partnerships (public and private) and existing initiatives; • Putting the objective of a Wandle Valley Regional Park into the London Plan provided a key driver for development and encouraged LAs to ensure the Regional park will be written into their respective LDFs and future funding programmes; • Bringing together landowners as well as statutory and voluntary stakeholders early in the process allows economic and political barriers to be overcome; and, • The development of an Implementation Framework allows strategic objectives to be considered alongside a spatial plan showing opportunities for interventions and a prioritised action plan for delivering cross-cutting, strategic and local projects. The Framework allows discussion and agreement on common objectives for developing, design and management as well as a timetable for implementing short-, medium- and long-term measures. These measures can then be incorporated into local planning and site-specific developments.



Case Study 2: IBA Emscher Park, Germany ⁸⁵	
REQUIREMENT & AIMS	<p>The Ruhr District of Germany (containing 12 cities and covering approximately 800km²) was formally the heartland of Europe's steel and coal industries. However, over the past 30 years, these heavy industries have been massively restructured, causing the abandonment and dereliction of many steel works and coal mining operations throughout the region. Consequently, Ruhr has been left with a legacy of environmental contamination as the old industrial work yards have slowly become brownfield sites in need of restoration.</p> <p>In the 1989, the State Government of North Rhine-Westphalia created a regional redevelopment plan entitled the "International Building Exhibition (IBA) at Emscher Park", planning out, over the course of a ten year period, how IBA Emscher Park was to encourage the ecological, economic, and urban revitalization of the Ruhr Valley and the Emscher River through several collaborative partnerships with various agencies and, notably, 17 LAs of the Ruhr district. After the IBA expired in 1999, a successor plan to promote redevelopment called "Project Ruhr" took over the task of management and, presently, the entire project series is in its final phase which focuses on clean up the Emscher River which for decades, had a reputation of being a biologically dead "open sewer," acting as a waste water canal since the end of late 19th century; this is due for completion in 2014.</p> <p>The idea is to achieve lasting improvement in the living and working environment of more than 2 million regional inhabitants by connecting isolated open spaces, restoring the landscape and upgrading the ecological and aesthetic quality of the countryside. Projects in the Emscher Landscape Park range from large-area development of fallow land to the smallest "construction sites", installations of biotopes or the planting of trees - in total about 200 individual schemes.</p>
STAKEHOLDER ENGAGEMENT	<p>In this process of structural change the IBA Emscher Park co-operates with many bodies including: local government authorities, industry, associations, pressure groups and the people. The councils of the 17 local communities of the Emscher region voted to join the building exhibition upon its formation. IBA GmbH acts as a moderator and often also as an initiator. Responsibility for individual projects rests in each case with the "contractual bodies", usually the LAs, but also enterprises and initiatives.</p> <p>Developmental changes taking place, from Duisburg to Dortmund, require joint efforts within the region. Many Ruhrgebiet residents are working on IBA projects. They help to establish new housing areas, develop ideas for the use of old buildings, they offer their knowledge of mining history and the iron and steel mills, or they actively work on co-designing their greenbelt recreation areas. These people are bearing the main load of regional development. Some of these initiatives have developed into employment and training bodies, which have been particularly influential in bringing young long-term unemployed back into working life.</p>
DEVELOPMENT & DESIGN	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>LOCATION & EXTENT</p>  <p>Figure: Stormwater Route throughout Park</p> <p>The Emscher Landscape Park acts as a "green connector" between the settlements of the Ruhr valley, following the path of the Emscher River and using the abandoned industrial areas along it as a unique form of greenspace. In addition to connecting the 17 towns located along the river valley, this new east-west oriented green corridor joins seven existing but expanded north-south greenbelts. The park (460km²) is composed of regenerated brownfields, reclaimed forests, and existing recreational areas that together provide a cohesive set of green infrastructure for the entire region. The specific projects that created the park system ranged from the development of large fallow land areas to small scale construction schemes to installations of biotopes to the simple planting of trees.</p> <p>The Emscher River system, which runs through the middle of the green plan and stretches a distance of 70 kilometres from east to west through the region, contains around 550km of waterways.</p> </div> <div style="width: 48%;"> <p>FUNCTIONALITY</p> <p>Now that much of the mining in the region has ceased, underground sewers have been installed to carry waste away from the river and promote its re-naturalization. Additionally, the river has been re-profiled to allow for better flooding management and, to slow the speed of the currents, part of the river's course has been changed from a straight narrow concrete channel back to a wide curved pool. Trees and native plants have been introduced along the bank, which have improved the water quality as well as the ecosystems in the area.</p>  <p>The Emscher River before and after restoration⁸⁶</p> </div> </div>



Case Study 2: IBA Emscher Park, Germany ⁸⁵	
MAINTENANCE / PRESERVATION	<p>During the past ten years about 120 projects in six central working areas have been developed and realised.</p> <p>Emscher IBA also includes some 25 housing projects; approximately 3,000 refurbished and 2,500 new housing units with sustainable features</p> <p>Integrating the unemployed and developing new fields of work are the aims in all sectors of the IBA. At the end of 1996 the region was called to "take the initiative". The goal was to support small, privately organised, city neighbourhood projects where energy and commitment had been initially generated by the citizens themselves – regardless of their social, cultural or ecological field of activity. Such projects are also initiators for structural change. They make substantial contributions to improving infrastructure possibilities, local community activity networking and recycling of unused space and buildings.</p>
COSTS & FUNDING	<p>Funding for Emscher Park was derived from a variety of sources. The State Government of North Rhine Westphalia allocated 17.9 million EUR for IBA but much of the invested money came from developers, private companies, non-profit groups and local town governments that worked specifically on individual projects connected to the park. By the summer of 1993, a total of EURO 2.5 billion had been invested in the redevelopment, of which about two thirds came from public funds and one third from private investments.</p> <p>Altogether, the process of river regeneration has required an investment of 4.4 billion Euros and will take until 2014. However, it has provided a highly visible symbol of positive change that should have lasting benefits for the Ruhr valley.</p>
DELIVERY	<p>The Emscher Landscape park has been designed and delivered (ongoing) at three distinct levels:</p> <ul style="list-style-type: none"> • Level 1 - A connected exhibit park covering the entire Emscher area (460km², 70km east-west distance) connecting the remaining open spaces between the industrial cities. Development goals have been set for the Emscher area as a whole, and a regional development strategy has been developed; • Level 2 - A regional open-space system – park project organised in 7 regional greenways. 3-5 cities belong to one greenway with common planning, projects and measures; • Level 3 – Individual projects – landscape design, biotope management, forest planting, housing construction projects, arts projects etc., including a system of new bikeways and footpaths.
POLICY	<p>The Emscher Landscape Park has been delivered (ongoing) through policy recommendations at the three levels::</p> <ul style="list-style-type: none"> • Level 1 - Connected exhibit park - Development goals have been set for the Emscher area as a whole, and a regional development strategy has been developed; • Level 2 - A regional open-space system –the cities contained in each of the 7 greenways have common planning, projects and measures; • Level 3 – Individual projects – project specific considerations. <div style="display: flex; justify-content: space-around;">    </div>
LESSONS LEARNT	<ul style="list-style-type: none"> • Once one of the most polluted and environmentally devastated regions of the world, the Ruhr district has been reborn. With the "IBA at Emscher Park" initiated in 1989, the run-down industrial landmarks of the region have been transformed to serve new recreational uses while still preserving the area's rich history. The redevelopment has given the region a greener image, created a more cohesive community and maintained the area's identity. • Emscher Landscape Park is the largest renaturalisation project in Europe • The project has achieved lasting improvements in the living and working environment of the involved towns by upgrading the ecological and aesthetic quality of their nearby countryside. Furthermore, by reusing and preserving the impressive relics of the industrial era, the Ruhr region has been able to keep its unique identity and has branded itself as an ancient monument of industrial society. • Since the development of Emscher Park, the image of the area has improved dramatically and approximately 5,000 new jobs have been created • The project has increased the citizens' awareness of the historical significance of their surroundings • Emscher Park has become a symbol for innovation and is a good example of how unique opportunities can be identified in a place full of challenges. The entire project serves as a model to areas with a similar industrial history • The moving of coal mining operations and decrease in risk of subsidence, allows sewerage to be confined to underground pipes and treatment to be decentralised; as such, the concrete linings are no longer needed. As such, the river now offers habitat opportunities for plants and animals, and recreation and leisure areas for the town's inhabitants. • Through the strategic delivery of the Emscher Park (Level 1), large tourist projects and promotions can be undertaken and wider benefits realised than at the site-specific level e.g. the "Industrial Heritage Trail" presents the region's industrial legacy to visitors:



Case Study 3: Lower Derwent, City of Derby ⁱⁱⁱ					
REQUIREMENT & AIMS	<p>A Blue Corridor is planned for the River Derwent through the City of Derby^{87,88}. The aim is to enhance the river corridor as an environmental, cultural and historic asset, increasing flood protection, protecting and enhancing biodiversity, and providing an attractive and safe living and working environment. Flooding occurs during a 25 year – 50 year flood event and approximately 3,650 residential and commercial properties at risk during a 100 year flood event. Incorporating the impacts of climate change this increases to 4,350 houses and estimated flood damage cost of £600M.</p> <p>The “Blue Corridor Vision” aims to:</p> <ul style="list-style-type: none"> • Make the river an integral part of the urban environment; • Increase flood protection through the City of Derby; • Provide environmental improvements; and • Reduce the impact on existing and future development. <p>by:</p> <ul style="list-style-type: none"> • Identifying a 100 year framework for sustainable management of flood risk through Derby; • Providing a five year plan of investment for flood risk management; and • Identifying measures to maximise environmental and social opportunities. <p>This will be achieved by replacing and raising defences outside Derby, realigning defences away from the river through Derby city centre and providing increased protection and improving flow through key conveyance routes.</p>				
STAKEHOLDER ENGAGEMENT	<p>Derby City Council and the Environment Agency have worked closely together to understand and establish the Blue Corridor through the City Centre. As a new concept to the Local Authority (in 2009), the Environment Agency has been the main driver in communicating the idea and vision to the Authority to further all parties understanding of what a Blue Corridor is and the impact (positive and negative) on the zone in question.</p> <p>Cooperation and communication has been a key component of the Blue Corridor Vision. A number of consultation documents have been produced, a launch event was held and further meetings, workshops and drop-in sessions have taken place. This has enabled all parties to understand and take forward the concept and the advantages this has to the receiving environment (social, economic and environmental).</p>				
DEVELOPMENT & DESIGN	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>LOCATION & EXTENT</p> <p>The corridor will be located through the City of Derby and include the River Derwent. When established, the corridor will be 120 metres wide and will broadly extend to the boundary defined in green in the figure above⁸⁹.</p> </td> <td style="width: 50%; vertical-align: top;"> <p>MAINTENANCE / PRESERVATION</p> <p>The Blue Corridor through Derby is not yet in place but once established it is expected that main river flood risk management and maintenance will be carried out by the Environment Agency’s Operational team in accordance with their normal flood risk management duties. Through future agreements there will be expected to be complimentary maintenance agreements with Derby City Council to pick up those issues that would not be covered by the Environment Agency. Once superseded by the new line of defences, existing defences will no longer be maintained.</p> <p>To secure the corridor for the long term (100 years), the Environment Agency is working closely with the Derby City Council to enable the Blue Corridor to be protected.</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>FUNCTIONALITY</p> <p>The functionality of the corridor is to allow the area within the corridor to flood up to 1:100 year flood event. The land within the ‘Blue Corridor’ will effectively become part of the river’s functional floodplain (Flood Zone 3b) and national policy guidance in PPS25 advises against most forms of development within such areas.</p> <p>Additional functionality is to facilitate enhanced biodiversity, provide an attractive and safe living and working environment, and enhance the river corridor as an environmental, cultural and historic asset.</p> </td> <td style="vertical-align: top;"> <p>COSTS & FUNDING</p> <p>Derby is currently one of the Environment Agency’s main priorities for investment nationally and funding can be achieved through these routes if it can be shown to be viable and economic. Though the council would not be responsible for implementing the scheme, they have significant land and property holdings within the likely ‘Blue Corridor’ and would incur significant costs with relocating these.</p> </td> </tr> </table>	<p>LOCATION & EXTENT</p> <p>The corridor will be located through the City of Derby and include the River Derwent. When established, the corridor will be 120 metres wide and will broadly extend to the boundary defined in green in the figure above⁸⁹.</p>	<p>MAINTENANCE / PRESERVATION</p> <p>The Blue Corridor through Derby is not yet in place but once established it is expected that main river flood risk management and maintenance will be carried out by the Environment Agency’s Operational team in accordance with their normal flood risk management duties. Through future agreements there will be expected to be complimentary maintenance agreements with Derby City Council to pick up those issues that would not be covered by the Environment Agency. Once superseded by the new line of defences, existing defences will no longer be maintained.</p> <p>To secure the corridor for the long term (100 years), the Environment Agency is working closely with the Derby City Council to enable the Blue Corridor to be protected.</p>	<p>FUNCTIONALITY</p> <p>The functionality of the corridor is to allow the area within the corridor to flood up to 1:100 year flood event. The land within the ‘Blue Corridor’ will effectively become part of the river’s functional floodplain (Flood Zone 3b) and national policy guidance in PPS25 advises against most forms of development within such areas.</p> <p>Additional functionality is to facilitate enhanced biodiversity, provide an attractive and safe living and working environment, and enhance the river corridor as an environmental, cultural and historic asset.</p>	<p>COSTS & FUNDING</p> <p>Derby is currently one of the Environment Agency’s main priorities for investment nationally and funding can be achieved through these routes if it can be shown to be viable and economic. Though the council would not be responsible for implementing the scheme, they have significant land and property holdings within the likely ‘Blue Corridor’ and would incur significant costs with relocating these.</p>
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Figure: Derby Rugby Club, June 2007⁸⁹

ⁱⁱⁱ The information presented is based on information received from the Environment Agency (via the Questionnaire), information available from Derby City Council and additional publicity information available at the time of the study.



Case Study 3: Lower Derwent, City of Derby ⁱⁱⁱ	
DELIVERY	<p>The mechanism for development and delivery is through the LDF Core Strategy, aligning the Core Strategies of Derby and surrounding councils, and taking into account other strategies including the Sustainable Community Strategy and Open Space Strategy. The process for implementation was an outcome of the Trent Catchment Floodplain Management Plan and the subsequent Lower Derwent Strategy. The Blue Corridor for Derby City was identified as a preferred option versus high floodwalls immediately adjacent to the river through the city. Land management options and flood storage are also part of the strategy upstream and downstream of Derby City but the Blue Corridor was the option through the City.</p> <p>The existing Masterplan for the City Centre is being revised in light of the proposed Blue Corridor, and will explore how the Blue Corridor can contribute to the long term social and economic future of Derby through appropriate and creative land uses. The Environment Agency and Derby City Council are working together to help manage current development proposals so that development that happens now does not compromise the establishment of the Blue Corridor for the long term. Since both the Flood Risk Strategy and the revised Masterplan are incomplete the Environment Agency are reliant on PPS25 and the existing Local Development Plan. At present, developers have been patient and are looking to work with the Environment Agency and Council, probably as a result of the current economic climate. However, as there is currently no legislative driver for Urban Blue Corridors, the time taken for strategies and detailed schemes to come to fruition could mean that developers may try to get ahead of the scheme under current policy.</p> <p>Derby City Council are also looking at how they would need to manage existing development that may become part of the 'functional floodplain' such as LA owned flats and houses – this has both social (on the residents) and economic (on the Local Authority) impacts. Moving people out of the Blue Corridor may take longer than expected due to current Authority spending restrictions.</p> <p>One of the most challenging concepts that has to be overcome is the timescale for implementation. The vision is to establish Blue Corridor for the 1:100 year event and many of the long term activities will take place over a 50 year timescale; this is a timescale that the LA (and general public) do not normally work to. The Environment Agency and Local Authority are working together to identify how the scheme can be divided into more manageable periods with decision making process clarified and triggers identified which dictate the timescales that those decisions need to be acted upon.</p>
POLICY	<ul style="list-style-type: none"> • The Trent Catchment Floodplain Management Plan governs the Environment Agency's flood management targets within Derby. • The establishment of the Blue Corridor will be secured through the completed Lower Derwent Strategy which is expected in late 2011. • Derby City Council has placed the overall concept of the requirement for long term flood management and climate change into their draft Core Strategy (started but not yet complete). • There will be a revised Masterplan completed on behalf of Derby City Council to guide land use and expected landscape character in the Blue Corridor. • Derby City Council is aiming to produce design guidelines for the Blue Corridor to further help those wanting to develop in the corridor zone.
LESSONS LEARNT	<p>Key considerations for establishment:</p> <ul style="list-style-type: none"> • Guidance to help key stakeholders to have an overall picture of Blue Corridors with promoters adding the detail –the Local Authority has found that the establishment of a corridor has impacts across the whole of the Authority and not just drainage and planning functions. • Planning Policy support for LAs whilst a Blue Corridor is being developed; • Changes to the blight compensation rules when an area is identified for a Blue Corridor – preferably to identify a no 'blight issue' when the Blue Corridor is identified for the wider benefit and safety of the public; • Combining the standard cost benefit analysis methods with the cost benefit ratios of savings made through better planning in the Blue Corridor; and • Giving LAs a better understanding of both the spatial and temporal aspects of the development of the Blue Corridor over a greater span of time than most LAs are used to considering. <p>Key considerations for success⁸⁹:</p> <ul style="list-style-type: none"> • The key to a successful Blue Corridor is having a clear vision of what a Blue Corridor actually is, the opportunity and pitfalls; • Communication is vital and the methods of communication need tailoring to specific audiences; • Consider impact of climate change early in appraisal; • Work hard at engagement and be willing to listen and adapt; • Approach of proposing a principle and not having an absolutely defined alignment; and • Focus on achieving the long term aim and establishing a vision e.g. "The Blue Corridor".



6 High Level Road Map for Delivery of Urban Blue Corridors

6.1 Delivery Options

6.1.1 The High Level Road Map builds on the consultation exercise, literature review, case studies and findings presented within this study, to identify the proposed route to delivery of Urban Blue Corridors. The High Level Road Map articulates where changes to the spatial planning system are needed or whether incentives can be created to enhance the uptake of multifunctional Urban Blue Corridors. Several preliminary options have been identified in Section 4, including:

- Ad-hoc approach (e.g., land negotiations, development negotiations);
- Quasi-legislative (e.g., incentives);
- Partially embedded in the spatial planning system (e.g., good practice guidance);
- Fully embed in the spatial planning system with delivery plan (e.g., Introduce new PPS).

6.1.2 The considerations for the various options are presented in Table 9. Six options have been considered:

1. 'Do Nothing';
2. Delivery of Urban Blue Corridors with no changes to existing planning policy;
3. Delivery of Urban Blue Corridors with minor changes (i.e. amendments) to existing planning policy;
4. Delivery of Urban Blue Corridors with major changes (i.e. new policy) to existing planning policy;
5. Delivery of Urban Blue Corridors through integration/joint approach with Green Infrastructure; and
6. Delivery of Urban Blue Corridors as part of Green Infrastructure.

6.1.3 The preferred proposed route to delivery has been chosen following careful consideration of the case studies and recommendations made in this Scoping Report, and consideration of the Coalition Government's proposed approach to local planning and 'bottom-up' guidance and policies. **The recommended route to implementation is to plan for, and deliver, Urban Blue Corridors through minor changes to existing planning policy.** This is recommended as the best route for delivery, given current Government stance and required drivers for delivery through the local planning system. It is recognised that a 'top-down' approach is no longer the preferred route for guiding local planning decisions but that some form of driver needs to be embedded in National policy to encourage consideration of Urban Blue Corridors as part of current and future surface water management. It is proposed that through minor amendments to, for example PPS25 and/or its successor guidance, the necessary lever will be created for the consideration of long-term surface water management in local planning decisions. Additionally, with the FWMA and increased partnership working, there will be a new role for LLFAs in managing local flood risk; this in turn should help strengthen the evidence base to encourage changes in planning policy.

6.1.4 Section 6.2 provides the High Level Road Map for the delivery of Urban Blue Corridors.



Table 9: Potential Routes to Delivery of Urban Blue Corridors (preferred option highlighted in black box)

Option		Description	How?	Suggested Approaches
'Do Nothing'		Carry on as currently with ad-hoc Urban Blue Corridors development and delivery.	N/A	N/A
Delivery of Urban Blue Corridors through Planning Policy	No changes to existing planning policy	No changes to existing legislation but increased promotion/awareness of Urban Blue Corridors concept with review of delivery in the future.	<ol style="list-style-type: none"> Promotion to LAs, local communities and project stakeholders on Urban Blue Corridors concept, benefits, opportunities and case studies. Through: <ul style="list-style-type: none"> Briefing Notes Workshops Training Sessions LA Committee Meetings Capacity building within LAs to plan for/consider current and future flood risk Urban Blue Corridors Good Practice Guide on concept, opportunities, case studies, funding routes (including CBA) and delivery, including worked examples of implementation routes. 	<ul style="list-style-type: none"> Briefing Notes Workshop/ Training provision Committee Meeting Attendance Good Practice Guide CBA Study Developer Negotiation/Leverage
	Minor changes to existing planning policy	Minor changes to existing planning policy (e.g. minor amendments to PPS25) and increased promotion/awareness of Urban Blue Corridors concept.	<ol style="list-style-type: none"> Promotion to LAs, local communities and project stakeholders on Urban Blue Corridors concept, benefits, opportunities and case studies. Through: <ul style="list-style-type: none"> Briefing Notes Workshops Training Sessions LA Committee Meetings Capacity building within LAs to plan for/consider current and future flood risk Urban Blue Corridors Good Practice Guide on concept, opportunities, case studies, funding routes and delivery, including worked examples of implementation routes. Minor amendments to existing planning policy (e.g. through PPS25) 	<ul style="list-style-type: none"> Briefing Notes Workshop/ Training provision Committee Meeting Attendance Good Practice Guide Policy amendment justification and recommendation CBA Study Developer Negotiation/Leverage
	Major changes to existing planning policy	Major changes to existing planning policy (e.g. significant amendments to policy documents or new planning policy). Increased promotion/awareness of Urban Blue Corridors concept.	<ol style="list-style-type: none"> Promotion to LAs, local communities and project stakeholders on Urban Blue Corridors concept, benefits, opportunities and case studies. Through: <ul style="list-style-type: none"> Briefing Notes Workshops Training Sessions LA Committee Meetings Capacity building within LAs to plan for/consider current and future flood risk Urban Blue Corridors Good Practice Guide on concept, opportunities, case studies, funding routes and delivery, including worked examples of implementation routes. Major amendments to existing planning policy (e.g. through PPS25 or new national planning policy document). 	<ul style="list-style-type: none"> Briefing Notes Workshop/ Training provision Committee Meeting Attendance Good Practice Guide Policy amendment justification and recommendation CBA Study Developer Negotiation/Leverage
	As part of Green Infrastructure	Integration with Green Infrastructure Planning and Strategies with Urban Blue Corridors considered as a separate entity within these.	<ol style="list-style-type: none"> Promotion to LAs, local communities, project stakeholders and Green Infrastructure practitioners on Urban Blue Corridors concept, benefits, opportunities and case studies. Through: <ul style="list-style-type: none"> Briefing Notes Workshops Training Sessions Capacity building within LAs to plan for/consider current and future flood risk Working with Natural England to incorporate Urban Blue Corridors in existing Green Infrastructure Guidance. 	<ul style="list-style-type: none"> Briefing Notes Workshop/ Training provision Committee Meeting Attendance Recommendations for changes to Green Infrastructure Guidance
	Delivery through Green Infrastructure Planning	Considered as part of Green Infrastructure and included as part of this in production of Strategies/Policies.	<ol style="list-style-type: none"> Promotion to Green Infrastructure practitioners on Urban Blue Corridors concept, benefits, opportunities and case studies. Working with Natural England to incorporate Urban Blue Corridors in existing Green Infrastructure Guidance. 	<ul style="list-style-type: none"> Briefing Notes Recommendations for changes to Green Infrastructure Guidance



6.2 Preferred Route to Delivery - Minor Changes to Existing Planning Policy

High Level Road Map

- 6.2.1 Figure 23 sets out the recommended High Level Road Map for the delivery of Urban Blue Corridors.

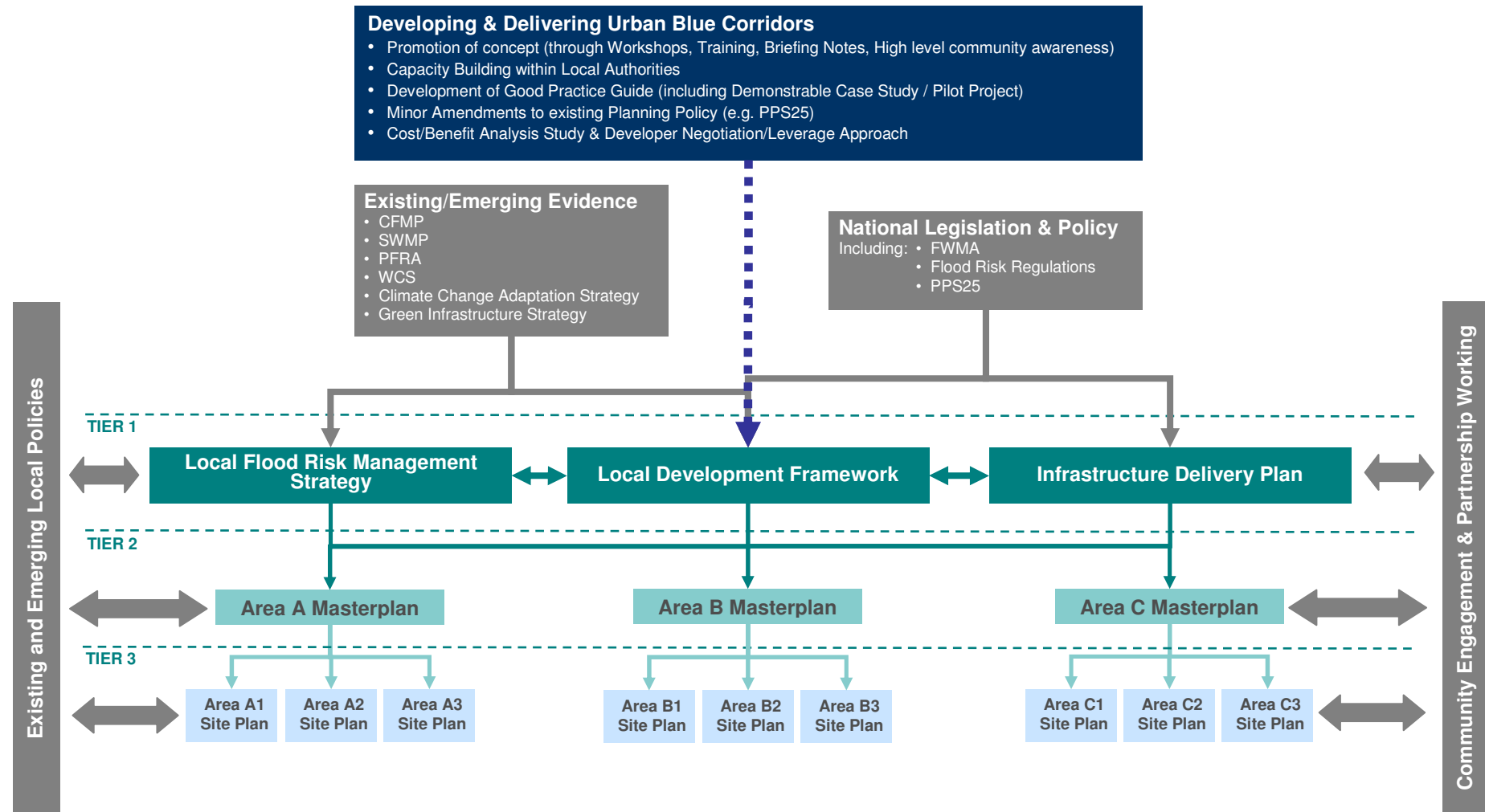


Figure 23: Preferred Route to Delivery - High Level Road Map for the Delivery of Urban Blue Corridors



Actions for Delivery

- 6.2.2 The successful incorporation of Urban Blue Corridors within the local planning system requires a number of actions to address the key barriers to delivery identified through this study, which include:
- Lack of awareness within LAs and across stakeholders on the Urban Blue Corridors concept and benefits that can be delivered;
 - Lack of knowledge regarding current and future surface water flood risk and coordination/cooperation between departments within LAs;
 - Lack of identified mechanism for developing and delivering Urban Blue Corridors through the existing local planning system (particularly following the removal of 'top-down' mechanisms (such as RSS and new National Planning Policies));
 - Lack of existing policies of legislation relating, in particular, to the consideration of surface water flooding planning and mitigation (especially with regards to climate change adaptation) in local planning;
 - Lack of existing evidence on how the environmental, social and economic benefits and outcomes from Blue Infrastructure schemes can be suitably included within a Cost/Benefit assessment; and
 - Lack of evidence/consideration to the leverage/negation required with developers to consider the inclusion of Urban Blue Corridors both within and adjoined to their sites.
- 6.2.3 LFRM strategies will play an important role in delivering Urban Blue Corridors, and overcoming the barriers identified above in the short-medium term.
- 6.2.4 It is recommended that the delivery of Urban Blue Corridors should be through a range of promotional and educational routes including:
- Promotion to LAs, local communities, private and public stakeholders on Urban Blue Corridors concept, benefits, opportunities and case studies, including through:
 - Briefing Notes
 - Workshops
 - Training Sessions
 - Attendance at LA Committee Meetings
 - Capacity Building in LAs (part of which could be achieved through the promotional activities);
 - Urban Blue Corridors Good Practice Guide on concept, opportunities, case studies, funding routes and delivery, including worked examples of delivery routes;
 - Minor amendments to existing planning policy, e.g. through PPS25 to incorporate stronger wording for planning for surface water flood risk, designation of overland flow paths and due consideration to Urban Blue Corridors during the LA, Masterplanning and site specific planning stages;
 - Cost/Benefit Analysis (CBA) study to identify how cost/benefit considerations can be taken into account and suitably assessed as part of any Urban Blue Corridor development; and



- Developer Negotiation/Leverage through consideration of the outcomes of the Good Practice Guide, CBA study and promotional activities to identify the best way to encourage developers, at a local level, to consider the delivery of Urban Blue Corridors within (or outside) or their development site.

Route for Delivery

6.2.5 As discussed in previous chapters, and illustrated in the High Level Road Map, the development and delivery of Urban Blue Corridors should be delivered at a local level through:

- A three-tiered planning approach (sub-regional/LA-wide, Community-wide Masterplanning and Site-Specific level);
- Utilisation of existing and emerging evidence, including SWMPs, SFRAs, PRFAs, LFRM Plans, LFRM strategies, WCS, Climate Change adaptation studies and Green Infrastructure studies;
- Conformity with existing national legislation and planning policy, including FWMA, Flood Risk Regulations and PPS25;
- Conformity with existing and emerging local planning policies (Urban Blue Corridors should feed into and help form these policies as the LA and Masterplanning level); and,
- Community engagement and private and public sector partnership working throughout the lifecycle of the projects (including on-going maintenance).

6.2.6 The three tiers of delivery are discussed below.

Tier 1 - Local Authority and Cross-Local Authority

Local Development Framework (LDF)

6.2.7 Local Development Frameworks (LDFs) should establish a clear policy hierarchy for Urban Blue Corridors within the LA administrative area. The LDF is a collection of local development documents produced by the local planning authority which collectively form the spatial planning strategy for its area. Within the LDF, the core strategy sets out the vision, strategic objectives and delivery strategy for achieving the spatial strategy³⁰. To encourage the integration of Urban Blue Corridors into development, the LDF may require developers to consider Urban Blue Corridors through several means including:

- Setting policy in the Core Strategy;
- Setting specific Urban Blue Corridor policies for particular sites under Site Allocations DPDs;
- Adopting the Urban Blue Corridor strategy as a DPD or SPD with which developers will be required to comply;
- Inclusion of Urban Blue Corridors (and associated infrastructure) in the Infrastructure Delivery Plan (IDP); or
- In cases where a large area is being earmarked for development then Urban Blue Corridors may form a key component within a specific Area Action Plan (AAP).



Infrastructure Delivery Plans (IDPs)

- 6.2.8 IDPs offer the best opportunity for inclusion of Urban Blue Corridors within the existing spatial planning system. An IDP identifies the infrastructure required within a LA to enable development proposed in the Core Strategy. The key objective of the IDP is to prepare a formal document setting out infrastructure requirements within an LA for the next 15-20 years; to inform the decisions and prioritisations undertaken by all partner organisations. The IDP identifies existing deficiencies and surpluses, future requirements (what, where and when), responsibility for provision, and how it will be funded. This can be summarised in a schedule to confirm location, project name/description, reason for requirement, lead and other agencies, cost, phasing, sources of funding and risk analysis. As infrastructure and services can be provided by many different organisations, the IDP is the vehicle through which integration between organisations can be achieved.

Local Flood Risk Management (LFRM) Strategies

- 6.2.9 Under the FWMA (2010) LLFAs are required to develop LFRM Strategies for their areas. LFRM strategies will set out how flood risk will be managed and encourage partnership working between key stakeholders concerned with the management of surface water in the local area. This in turn should open up opportunities to manage/develop components of Urban Blue Corridors. Building on the findings and recommendations of PFRAs, CFMPs, SFRAs and SWMPs, the development of LFRM strategies can provide an excellent opportunity to explore whether Urban Blue Corridors are a suitable management tool for local flood risk, and enable LLFAs to make better informed decisions on surface water management including the consideration of Urban Blue Corridors.

Tier 2 – Community-Wide Masterplanning / Area Action Plans (AAPs)

- 6.2.10 AAPs offer the best opportunity for delivering Urban Blue Corridors at the community-wide Masterplanning level, and will guide the transposition of the strategic aspirations into key practical realities whilst providing aesthetical environments for new development, i.e. through proposals maps for the area and land-use mapping. They should aim to:
- Help develop the area as a whole in a way that responds to local economic and social change and fits well into the existing community;
 - Help identify the potential of the area for development and then how separate sites within it can be best used;
 - Make better use of under-developed land;
 - Involve the local community in the development process and help build consensus about the future of the area;
 - Define proposals that will deliver high quality, sustainable buildings and public spaces;
 - Help co-ordinate education, health, leisure and other services in the area; and
 - Make the most of natural assets such as the landscape, topography and ecology.

Tier 3 – Site Specific

- 6.2.11 To successfully implement Urban Blue Corridors, there needs to be an understanding of the opportunities and benefits of sustainable flood risk management and multifunctional land use at a given location, using best available evidence. Opportunities and policies identified through the Masterplanning stage need to be applied at the site-specific level and consideration given



to the specific development design requirements developed/implemented at a local level, once consideration has been given to the local conditions. This could be through specific site plans for individual multifunctional and aspirational aims and benefits. It is at a site level that design and performance specifications can be agreed and aspirations translated into on-the-ground measures, such as implementation of SuDS to help deliver the overall Urban Blue Corridor visions. It is at this level that functional and operational procedures can be agreed, e.g. closure of parks during times of flood. Guidance need to be locally-tailored as well as strategically as sites will have individual concerns/issues.

- 6.2.12 For companies or authorities with land-holdings or activities that impact on ecosystems and habitats, one of the most effective means of managing biodiversity may be through developing site BAPs. Separate plans can be drawn-up for each site, and can be linked with local and national biodiversity priorities as well as the overall Community Biodiversity Action Plan.
- 6.2.13 Table 10 provides examples of the potential routes to delivering Urban Blue Corridors at a site-specific level. The examples are not exhaustive and are intended to provide an indication of the types of considerations and potential routes for individual developments.



Table 10: Potential Routes for Delivery at a Site Specific Level

OBJECTIVES	CURRENT DELIVERY MECHANISM	BARRIERS	STRATEGY
Increased buffer zone or development set back to edge of watercourse.	Regional Byelaws	Planning emphasis on protection of greenbelts over river corridors. Perceived lack of available resources to scrutinise development applications.	Produce example guidance on SPDs. Development of new Regional Byelaws or river-specific byelaws with tailored setbacks.
Steer development away from overland flow paths	None	Missing base data. In most cases overland flow paths are yet to be identified in urban settings and town centres.	Could be delivered through SWMPs, River Corridor Improvement Plans and/or LFRM strategies.
Deculverting a culverted section of watercourse	Land negotiations with land owner or Sec 106 agreement. EA policy on deculverting, SPDs.	Lack of clear process / procedure and responsible party.	Development of new / stronger policy through LFRM strategies.
Increased recreational access and public footpaths	Land negotiations with riparian owner or developers	Insufficient priority within current planning system.	Maximise use of stakeholder consultation to identify solutions.
Biodiversity enhancements	BAP targets and in a few cases river restoration strategies.	Piecemeal approach on the back of a development when negotiated. Lack of a sound strategy and local funding initiatives.	Create National Indicator and targets for biodiversity enhancements. Review Greenbelt policies.
River restoration (partial scale to full-scale)	Sec 106 funding, Environment Agency funding, EU funding, HLF funding.	Lack of council-owned river restoration strategy or vision for river corridor.	Build incentives for developers. Establish LA targets for metres of river restoration/ annually.
Establishment of a river corridor with similar weighting / governance as greenbelt land	None	Town and Country Planning Act	Discuss options with stakeholders.
Inclusion of Urban Blue Corridor as part of existing Green Infrastructure	None	Lack of understanding among Green Infrastructure planners regarding Urban Blue Corridors	PPG17 or increased promotion amongst Green Infrastructure of Urban Blue Corridors concept
Linking of blue spaces (rivers, ponding areas, overland flow paths) together	None	Lack of evidence and knowledge in LAs regarding ponding areas and overland flow paths	Through spatial planning system in conjunction with Green Infrastructure and/or LFRM strategies
Community Engagement	Local initiatives	Allocating lead body and getting sign-up organisations	River Restoration Groups, Environment Agency and Local Authority publicity.



7 Next Steps for ‘Developing Urban Blue Corridors’

7.1 Introduction

7.1.1 This Scoping Report has examined current knowledge and the available literature from many angles - barriers, drivers, funding opportunities, policy and management - in an attempt to present opportunities for Urban Blue Corridors to a range of audiences. This has included a literature review, targeted consultation with different departments within LAs and environmental, planning and building organisations, and demonstration of how the principles of Urban Blue Corridors can be implemented at a range of scales through the provision of three case studies.

7.1.2 A series of recommendations have been identified to aid in the delivery of Urban Blue Corridors. These are dependent on the future Government agenda and should not be considered as exhaustive.

7.2 High Level Recommendations for ‘Developing Urban Blue Corridors’

7.2.1 The following high level recommendations are made for ‘Developing Urban Blue Corridors’:

Recommendation 1 – Develop Clear Guidance

7.2.2 Awareness of Green and Blue Infrastructure among the planning community rose significantly from 2000 onwards. This provides an opportunity to ensure that momentum can be maintained by embedding these topics into the new national planning regime proposed by the Coalition government. Hence, there will be a requirement to ensure that local initiatives are being promoted and implemented to ensure that Urban Blue Corridors are being given the required consideration in local planning decisions. An Urban Blue Corridor Good Practice Guide should be developed to provide this impetus.

7.2.3 This research has identified the need for improved guidance/good practice to demonstrate the principles of Urban Blue Corridors and how these can be delivered through the existing spatial planning system. This should also identify how multiple benefits can be achieved. This guidance will need to be aimed at a sub-regional and local level to allow LAs to use the overarching recommendations to develop local, area specific guidance.

7.2.4 The production of a Good Practice Guide (GPG) aimed at planning practitioners may be one of the most effective methods of introducing the concept of Blue Corridors into the planning system. A GPG would ensure ready reference and clarity for LAs and planners. The guide might either take the form of a physical document or a web-based e-learning resource. The guide would also raise the awareness of the Urban Blue Corridors concept or ‘vision’.

7.2.5 In order to ensure the maximum possible acceptance, relevance and clarity, the GPG would need to include input from relevant stakeholders and its production should therefore be overseen by a steering group including representatives from Defra, DCLG, the Royal Town Planning Institute (RTPI) and the Local Government Association as well as the consultant team.

7.2.6 The GPG should build on the case studies presented in this document from the UK and overseas in order to illustrate real-world application of Urban Blue Corridor delivery, as well as



clear recommendations and suggestions across the full range of issues relating to Urban Blue Corridors.

- 7.2.7 A pilot study should be undertaken to test the proposed Good Practice Guide and illustrate how Urban Blue Corridors can be defined at a strategic level and implemented at a local scale (though Masterplanning and site-specific assessments).

Recommendation 2 - Utilise Existing Studies

- 7.2.8 The development and delivery of Urban Blue Corridors is most appropriate at the Masterplanning level and should be developed in Local Flood Risk Management Strategies and draw heavily on the outputs of existing and emerging studies such as SWMPs, PFRAs and SFRAs. The findings and recommendations from Water Cycle Studies should also be considered (where undertaken).

- 7.2.9 One of the key issues which has become evident during the study is the need for local councils to physically translate SWMPs into outcomes to:

- Ensure that SWMPs are delivered in a consistent way;
- Encourage the delivery of Urban Blue Corridors vis-à-vis SWMPs;
- Utilise the spatial planning system to help deliver and strategically encourage the development of Urban Blue Corridors;
- Ensure Phases 3 & 4 of SWMPs provide clear direction to guide the delivery of Urban Blue Corridors; and
- Utilise LFRM strategies to develop and implement objectives where Urban Blue Corridors are suitable.

- 7.2.10 An Infrastructure Delivery Plan can be used to support a Core Strategy and act as evidence for informing a tariff based infrastructure levy (development tax).

Recommendation 3 – Ensure Collaborative Working

- 7.2.11 The European Commission's Thematic Strategy on the Urban Environment⁹¹ promotes the improvement of the environmental performance of cities through a more integrated approach to environmental management and sustainable urban transport plans, and encourages the dissemination of best practice between cities. The FWMA also advocates local partnership working.

- 7.2.12 The Flood and Water Management Act (2010) places a duty on collaborative and cooperative working and this will provide a strong driver for LLFAs and stakeholders to work closer together. As Urban Blue Corridors will aim to deliver multi-benefits and are multifunctional, there are strong opportunities for local authority departments, and public and private sector organisations, including water companies, to work together to manage local flood risk and develop LFRM strategies, and in turn use these strategies as a tool to design, plan, implement and maintain Urban Blue Corridors.

Recommendation 4 – Maximise Benefits

- 7.2.13 When developing Urban Blue Corridors, the potential for wider Green Infrastructure benefits should be integrated as early as possible into the process, and, where possible, enhance connectivity between other areas of Green Infrastructure.



- 7.2.14 There is a need to identify Urban Blue Corridor projects which have effectively maximised Green Infrastructure benefits as best practice examples for Local Authorities to follow.

Recommendation 5 – Quantifying and Understanding Benefits of Urban Blue Corridors

- 7.2.15 Currently the benefits of Urban Blue Corridors and quantification of these are poorly understood. This study has started to identify the potential benefits of Urban Blue Corridors and how these can be delivered through sustainable flood risk management. However, further research is recommended on quantifying and understanding the costs and benefits of Urban Blue Corridors to identify how the costs and benefits for these schemes can be assessed, and provide the evidence that Urban Blue Corridors are a cost-effective approach to managing local flood risk.

Recommendation 6 – Embed Urban Blue Corridors in Existing Policy and Guidance

- 7.2.16 The principles of Urban Blue Corridors (including green infrastructure) should be embedded in guidance for SuDS, Flood Risk Management Plans and LFRM strategies, which are currently in development and offer the opportunity for linkages to Urban Blue Corridors, as well as climate change adaptation strategies and sustainable development policies.

Recommendation 7 - Promote Community Engagement and Educate Communities

- 7.2.17 Involving people in the development and delivery of local schemes can aid in Place Making and is a key part of the Government's Big Society, which includes the engagement of local communities, placing them at the heart of the local planning system. Engagement in the design and delivery of Urban Blue Corridors offers the opportunity to foster ownership and involvement for communities. However, there may be limitations to this approach, for example: Do the public understand flood risk and its potential mitigation? Are the right options being presented? Do people like the idea of amenity space by rivers rather than houses being built directly on the river frontage?

- 7.2.18 There is a lot to gain and learn from community engagement and a lot to teach. A series of consultations and meetings with local representatives may be required at an early stage of the development process to educate the local community on the principles of Urban Blue Corridors, their functionality and their benefits.

- 7.2.19 In the new Big Society-driven system, there will be a need to assist and educate communities and LAs on the wider role and benefits of Urban Blue Corridors. This could be achieved through a series of workshops, talks, attendance at community meetings and briefing notes.

Recommendation 8 – Use Urban Blue Corridors in Adaptation to Climate Change

- 7.2.20 One of the key roles for Urban Blue Corridors is in providing the means and infrastructure to adapt to the impacts of climate change and provide resilience measures, i.e. in terms of planning for the likely impact of increased rainfall and flooding consequences. Investing in infrastructure to adapt to the likely impacts of climate change now will be cheaper than having to deal with expected climate change impacts in the future.

Recommendation 9 – Raise Awareness of Urban Blue Corridors

- 7.2.21 Definition of the role of LLFAs in development and delivery of Urban Blue Corridors is required, along with how delivery of schemes can help to deliver the Flood Risk Regulations and FWMA requirements.



7.2.22 Production of a series of Briefing Notes and Workshops/Seminars summarising the concept of Urban Blue Corridors, and how they can be implemented, to a range of different relevant audiences, including:

- Local authorities (including Spatial Planning, Emergency Planning, Structures and Drainage, Highways, Parks, Regeneration/assets and Facilities Management, Education and Urban Design departments);
- Local communities;
- Environmental organisations and legislators;
- Water companies and asset owners;
- Local voluntary groups and organisations;
- Planning practitioners and associations; and
- Developers, architects and contractors.

Recommendation 10 – Establish Consultation within LAs at High Level

7.2.23 It is recommended that consultation and promotion of Urban Blue Corridors with Councillors and key members of LAs is undertaken to ensure better knowledge regarding Urban Blue Corridors and the benefits they can deliver. These could be delivered through Councillor training and/or committee meetings.



Appendix A – FD2619: Developing Urban Blue Corridors

The research undertaken on this project is carried out under the joint Defra/Environment Agency Strategy and Policy Development theme. The Strategy and Policy Development theme sets out to provide an evidence base to support better policy in flood risk management and covers areas of strategic national interest and areas of developing policy⁹². The research under this project will inform policy and its implementation in promoting sustainable approaches and adaptation.

Within current Flood Risk Management policy there is a gap with respect to planning for, and managing overland flow paths, and therefore there is a requirement to ensure that SWMPs become a material planning consideration. This project aims to scope the opportunities, barriers and drivers toward establishing multi-purpose Urban Blue Corridors, and begin to build the necessary evidence base for achieving this. This has been undertaken in three stages:

- Phase 1 – identification of gaps and current understanding/information in regard to implementing Urban Blue Corridors, though a consultation exercise with LAs, major housing developers and key stakeholder groups;
- Phase 2 – identification of the opportunities, barriers and drivers to the development of Urban Blue Corridors including a high level Cost Benefit Analysis. Case studies will be presented as evidence of potential delivery mechanisms; and
- Phase 3 – reporting on the findings of the study and developing a high level road map for implementation of Blue Corridors in the urban environment.

The project aims to realise significant benefits for those involved in local and national planning and flood risk management (managing, planning, designing, maintaining and setting policies). These benefits include:

- Shared understanding of the concept of Urban Blue Corridors and how these can be implemented between local and national planners, developers, environmental legislators and organisations, and other interested parties;
- Provision of underlying evidence base and planning tools to support to LAs in identifying opportunities and increasing the implementation of Blue Corridors within urban areas;
- Provision of an evidence base for the coordinated and holistic short, medium and long term approaches required to develop Urban Blue Corridors; and
- Identification of opportunities to adapt to likely future climate change impacts, managing associated flood risks and the need to maximise social, economic and environmental benefits from major regeneration initiatives.

The project has been guided by a project steering group comprising representatives from Defra, the Environment Agency, Department for Communities and Local Government (DCLG), URS / Scott Wilson, Kingston University and London Borough of Croydon.



Appendix B – Consultation Exercise



B1 – Local Authorities and Environmental Organisations Questionnaire



Defra Developing Urban Blue Corridors Project (FD2619)

Introduction

Urban Blue Corridors represent a new area of thinking within government. The initial drivers for this concept are linked to providing more sustainable flood risk management, but more recently it has been recognised that their potential could be expanded to include other benefits such as biodiversity, amenity, water quality, health and improving access for recreation.

Definition

Urban blue corridors are urban areas in which development is set back from watercourses enabling overland flow paths to connect water-related assets to facilitate natural hydrological and ecological processes. These areas may be called something else within your own organisation.

Purpose

Defra's Developing Urban Blue Corridors project is the first stage in translating the aspiration of urban blue corridors into practice. The purpose of the project is to scope the existing evidence and knowledge, identify gaps and develop a high level road map for implementation. As part of the scoping phase, we are consulting with Local Planning Authorities, the Environment Agency, CLG and major developers to identify the existing level of understanding of urban blue corridors and how these are, or could be included within the spatial planning system.

How to Contribute

Thank you for agreeing to complete this questionnaire which aims to elicit your experiences and thoughts regarding urban blue corridors and their role and function within the spatial planning system.

Once you have completed the questionnaire please return to Sarah Kelly by e-mail: sarah.kelly@scottwilson.com or post: Scott Wilson, Alencon Link, Basingstoke, Hampshire, RG21 7PP.

The deadline for the questionnaire completion is: Friday 2nd July 2010.

Please contact Sarah Kelly or Matthew Graham on 01256 310200 if you would like more information on the project or have any queries regarding the questionnaire.



Part A: About You and Your Authority/Organisation

Q1. Your name, job title and contact details

(These details will only be used if we wish to contact you to follow up suggestions or case studies)

Name:

Job Title:

Local Authority/Organisation:

Tel No:

E-Mail:

Q2. What is your main role in your work?

- | | | | |
|-----------------------------------|--------------------------|--|--------------------------|
| (a) Building control | <input type="checkbox"/> | (e) Landscape architect | <input type="checkbox"/> |
| (b) Drainage engineer | <input type="checkbox"/> | (f) Town planner (development control) | <input type="checkbox"/> |
| (c) Emergency/contingency planner | <input type="checkbox"/> | (g) Town planner (policy) | <input type="checkbox"/> |
| (d) Highway engineer | <input type="checkbox"/> | (h) Urban designer | <input type="checkbox"/> |

Other *(please state)*:

Q3. Who in your Authority/organisation do you consider has responsibility/experience/expertise of surface water management planning?

Q4. Are overland surface water flow paths and ponding areas recorded and mapped in your authority area/organisation?

Yes *(If yes, please provide details below on how this is used to inform planning decisions)*

No

Q5. Does your Authority/Organisation have policies that protect surface water infrastructure:

- | | | | |
|-------------------------|--------------------------|--------------------------------|--------------------------|
| (a) Balancing Ponds | <input type="checkbox"/> | (d) Safeguarding Ponding Areas | <input type="checkbox"/> |
| (b) Overland Flow Paths | <input type="checkbox"/> | (e) Water Bodies | <input type="checkbox"/> |
| (c) River Corridors | <input type="checkbox"/> | (f) SuDS | <input type="checkbox"/> |



Q6a. Does your Authority/Organisation have policies that actively encourage the creation of multi-functional open space/blue corridors?

Yes (If yes, please proceed to Q6b)

No (If no, please proceed to Q7)

Q6b. Please indicate which of the following planning policies apply and provide examples below:

- (a) De-Culverting
- (b) Preservation of surface water overland flow path/ponding area
- (c) Opening up of hidden or buried watercourses
- (d) Increases to the 'standard' Environment Agency 8-metre set back
- (e) Through strategic planning policies
- (f) Other

Examples:

Q7. How does your Authority/Organisation resolve cross-departmental issues related to drainage, flood risk, SuDS design, adaptation to climate change, provision of multi-functional open space and river corridor set backs? (For example, for a new major planning application)

Q8. Who are the main stakeholders in your Authority area/organisation involved in initiatives related to urban blue corridors? (Please state name and status, e.g. charity, voluntary group, private developer etc.)

3



Part B: Current Understanding and Implementation of Urban Blue Corridors

Q9. Based upon what you have read so far, how would you rate your current understanding of Urban Blue Corridors?

1 2 3 4 5
Low High

Q10. In your opinion, what priority is currently given to protecting/earmarking urban blue corridors in your Authority/Organisation?

1 2 3 4 5
Low High

Q11. In your Authority/Organisation, are blue corridors considered in their own right or as part of Green Infrastructure?

- (a) Considered in own right
- (b) Considered as part of Green Infrastructure
- (c) Not considered

Q12. Are any urban blue corridors being actively implemented in your area?

Yes (If yes, please provide details below and proceed to Q13)

No (If no, please proceed to Q15)

Q13. What is the process for implementation (e.g. Section 106 developer agreements)?

Q14. What arrangements does your Authority/organisation make with regard to ongoing maintenance/conservation of urban blue corridors?

4



Q15. In your opinion, what is the current level of understanding/co-operation from and between partner organisations (e.g. Water Companies, Developers, and Environment Agency) with respect to urban blue corridors? (Please state organisation(s) and any additional comments below)

1 2 3 4 5
Low High

Organisation(s) and Comments:

Q16. Which, if any, of your regional/local plans/strategies/masterplans/core documents/agreements contain policies/actions that relate or refer to urban blue corridors (please list)?



Part C: Drivers, Barriers and Opportunities

Q17. In your opinion, which are the 5 main **drivers** for urban blue corridors in your Authority area/organisation? (Please number from 1 to 5, with 1 being the main driver)

- (a) Surface Water Management Plan Technical Guidance (Defra, March 2010)
- (b) National Indicator 188 (Planning to Adapt to Climate Change)
- (c) National Indicator 189 (Flood & Coastal Erosion Risk Management);
- (d) Civil Contingencies Act (2004);
- (e) Catchment Flood Management Plans;
- (f) Pitt Review & Government Response (December 2008);
- (g) Floods & Water Management Act (2010)
- (h) Flood Risk Regulations 2009
- (i) EU Water Framework Directive & urban diffuse pollution (2000)
- (j) Making Space for Water (March 2005)
- (k) Planning Policy Statement 25: Development & Flood Risk (PPS25)
- (l) Planning Policy Statement 1: Delivering Sustainable Development (PPS1)
- (l) Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9)
- (m) Biodiversity Action Plan (BAP) targets
- (n) Other (please state)

Q18. In your opinion, what are the main **barriers** to developing/implementing urban blue corridors in your Authority area/organisation? (Please tick those that apply)

- (a) Timescales to introduce the concept to professional planners, developers/landowners and the public and gain their acceptance.
- (b) Resistance from landowners or developers seeking to promote alternative land uses which might generate greater financial rewards.
- (c) Current development buffer or set back policy is inadequate.
- (d) Limited available opportunity to influence development plans and introduce new policy concepts.
- (e) Lack of knowledge/understanding of (i) urban blue corridors
- (ii) benefits of urban blue corridors

Continued overleaf.....



Q18 cont.

- (f) Lack of negotiating leverage with major developers
- (g) Lack of co-ordinated support by the Environment Agency, CLG etc.
- (h) Costs of establishment and long term maintenance/protection
- (i) Housing targets
- (j) Transport Schemes
- (k) Maintaining/Developing employment/industrial land
- (l) Lack of institutional capacity/problems with planning inspectorate
- (m) Others (please list)

Q19. In your opinion, what would need to change for urban blue corridors to be easily implemented to reduce flood risk for the future?

Q20. In your opinion, what are the main opportunities for urban blue corridors in your area (e.g. where could urban blue corridors be safeguarded)?

Q21. In your opinion, would the introduction of a specific National Indicator help to increase the pace of implementation?

- Yes
- No

Q22. What do you think would be the key benefits of urban blue corridors in your area (e.g. water quality, reduction in flood risk, amenity)? *(Please list)*



Q23. In the future, what priority should be given to urban blue corridors?

1 2 3 4 5
Low High

Q24. In your opinion, are urban blue corridors achievable? *(tick one only)*

- (a) Within current legislation / planning policy
- (b) With only minor changes in legislation / planning policy *(please explain changes required)*
- (c) Only with major changes in legislation / planning policy *(please explain changes required)*
- (d) An unachievable ideal *(please explain why)*

Q25. Please provide any additional comments in relation to urban blue corridors below:

Thank you for your time in completing this questionnaire.



B2 – Planning Association and Institute Questionnaire



Defra Developing Urban Blue Corridors Project (FD2619)

Introduction

Urban Blue Corridors represent a new area of thinking within government. The initial drivers for this concept are linked to providing more sustainable flood risk management, but more recently it has been recognised that their potential could be expanded to include other benefits such as biodiversity, amenity, water quality, health and improving access for recreation.

Definition

Urban blue corridors encompass the idea that, within the urban development, development, both new and existing, is set back from, or planned around, watercourses, overland flow paths and surface water ponding areas to create a network of urban corridors designed to facilitate natural hydrological processes whilst minimising urban flooding, enhancing biodiversity and improving access to recreation.

Purpose

Defra's Developing Urban Blue Corridors project is the first stage in translating the aspiration of urban blue corridors into practice. The purpose of the project is to scope the existing evidence and knowledge, identify gaps and develop a high level road map for implementation. As part of the scoping phase, we are consulting with Local Planning Authorities, the Environment Agency, CLG, major developers and other relevant organisations to identify the existing level of understanding of urban blue corridors and how these are, or could be included within the spatial planning system.

How to Contribute

Thank you for agreeing to complete this questionnaire which aims to elicit your experiences and thoughts regarding urban blue corridors and their role and function within the spatial planning system.

Once you have completed the questionnaire please return to **Andrew Luke** by e-mail: andrew.luke@scotwilson.com.

The deadline for the questionnaire completion is: **Friday 27th August 2010**.

Please contact Andrew Luke on 0117 9171172 or Sarah Kelly on 01256 310765 if you would like more information on the project or have any queries regarding the questionnaire.



Part A: About You and Your Authority/Organisation

Q1. Your name, job title and contact details

(These details will only be used if we wish to contact you to follow up suggestions or case studies)

Name:

Job Title:

Local Authority/Organisation:

Tel No:

E-Mail:

Q2. What is your main role / area of expertise?

- | | | | |
|-----------------------------------|--------------------------|--|--------------------------|
| (a) Building control | <input type="checkbox"/> | (e) Landscape architect | <input type="checkbox"/> |
| (b) Drainage engineer | <input type="checkbox"/> | (f) Town planner (development control) | <input type="checkbox"/> |
| (c) Emergency/contingency planner | <input type="checkbox"/> | (g) Town planner (policy) | <input type="checkbox"/> |
| (d) Highway engineer | <input type="checkbox"/> | (h) Urban designer | <input type="checkbox"/> |

Other *(please state)*:

Q3. In your experience are the following issues adequately addressed through national, regional and local planning policies?

- | | | | |
|----------------------------------|--------------------------|---------------------------------|--------------------------|
| (a) Balancing Ponds | <input type="checkbox"/> | (d) Safeguarding Ponding Areas | <input type="checkbox"/> |
| (b) Overland Flow Paths | <input type="checkbox"/> | (e) Water Bodies | <input type="checkbox"/> |
| (c) River Corridors | <input type="checkbox"/> | (f) SuDS | <input type="checkbox"/> |
| (g) Set back | <input type="checkbox"/> | (h) green / blue infrastructure | <input type="checkbox"/> |
| (i) multifunctionality of assets | <input type="checkbox"/> | | |

Q3b. If you felt that the issues outlined above (Q3) are not currently being addressed adequately, what improvements could be made?



Q4. In your experience are the following issues adequately addressed in development proposals?

- | | | | |
|----------------------------------|--------------------------|---------------------------------|--------------------------|
| (a) Balancing Ponds | <input type="checkbox"/> | (d) Safeguarding Ponding Areas | <input type="checkbox"/> |
| (b) Overland Flow Paths | <input type="checkbox"/> | (e) Water Bodies | <input type="checkbox"/> |
| (c) River Corridors | <input type="checkbox"/> | (f) SuDS | <input type="checkbox"/> |
| (g) Set back | <input type="checkbox"/> | (h) green / blue infrastructure | <input type="checkbox"/> |
| (i) multifunctionality of assets | <input type="checkbox"/> | | |

Q4b. If, you felt that the issues outlined above (Q4) are not currently being addressed adequately, what improvements could be made to encourage the implementation of these features?

Q5. Does your Organisation have policies / actively encourage the creation of multi-functional open space/blue corridors?

- Yes (If yes, please proceed to Q5b)
No (If no, please proceed to Q6)

Q5b. Please indicate which of the following policies apply and provide any examples below:

- | | |
|---|--------------------------|
| (a) De-Culverting | <input type="checkbox"/> |
| (b) Preservation of surface water overland flow path/ponding area | <input type="checkbox"/> |
| (c) Opening up of hidden or buried watercourses | <input type="checkbox"/> |
| (d) Increases to the 'standard' Environment Agency 8-metre set back | <input type="checkbox"/> |
| (e) Through strategic planning policies | <input type="checkbox"/> |
| (f) Other | <input type="checkbox"/> |

Examples:

3



Part B: Current Understanding and Implementation of Urban Blue Corridors

Q6. Based upon what you have read so far, how would you rate your current understanding of Urban Blue Corridors?

1 2 3 4 5
Low High

Q7. In your opinion, what priority is currently given to protecting/earmarking urban blue corridors?

1 2 3 4 5
Low High

Q8. In your Organisation, are blue corridors considered in their own right or as part of Green Infrastructure?

- | | |
|--|--------------------------|
| (a) Considered in own right | <input type="checkbox"/> |
| (b) Considered as part of Green Infrastructure | <input type="checkbox"/> |
| (c) Not considered | <input type="checkbox"/> |

Q9. Are you aware of any blue corridors that are being actively implemented?

- Yes (If yes, please provide details below and proceed to Q13)
No (If no, please proceed to Q15)

Q10. What is the process for implementation (e.g. Section 106 developer agreements)?

4



Q11. In your opinion, what is the current level of understanding/co-operation from and between partner organisations (e.g. Local Authorities, Water Companies, Developers, and Environment Agency) with respect to urban blue corridors? (Please state organisation(s) and any additional comments below)

1 2 3 4 5
Low High

Organisation(s) and Comments:

Q12. Are you aware of any regional/local plans/strategies/masterplans/core documents/agreements contain policies/actions that relate or refer to urban blue corridors (please list)?

5



Part C: Drivers, Barriers and Opportunities

Q13. In your opinion, which are the 5 main drivers for urban blue corridors? (Please number from 1 to 5, with 1 being the main driver)

- (a) Surface Water Management Plan Technical Guidance (Defra, March 2010)
- (b) National Indicator 188 (Planning to Adapt to Climate Change)
- (c) National Indicator 189 (Flood & Coastal Erosion Risk Management);
- (d) Civil Contingencies Act (2004);
- (e) Catchment Flood Management Plans;
- (f) Pitt Review & Government Response (December 2008);
- (g) Floods & Water Management Act (2010)
- (h) Flood Risk Regulations 2009
- (i) EU Water Framework Directive & urban diffuse pollution (2000)
- (j) Making Space for Water (March 2005)
- (k) Planning Policy Statement 25: Development & Flood Risk (PPS25)
- (l) Planning Policy Statement 1: Delivering Sustainable Development (PPS1)
- (l) Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9)
- (m) Biodiversity Action Plan (BAP) targets
- (n) Other (please state)

Q14. In your opinion, what are the main barriers to developing/implementing urban blue corridors? (Please tick those that apply)

- (a) Timescales to introduce the concept to professional planners, developers/landowners and the public and gain their acceptance.
- (b) Resistance from landowners or developers seeking to promote alternative land uses which might generate greater financial rewards.
- (c) Current development buffer or set back policy is inadequate.
- (d) Limited available opportunity to influence development plans and introduce new policy concepts.
- (e) Lack of knowledge/understanding of (i) urban blue corridors
 (ii) benefits of urban blue corridors

Continued overleaf.....

6



Q14 cont.

- (f) Lack of negotiating leverage with major developers
- (g) Lack of co-ordinated support by the Environment Agency, CLG etc.
- (h) Costs of establishment
- (i) Costs of long term maintenance/protection
- (j) Housing targets
- (k) Transport Schemes
- (l) Maintaining/Developing employment/industrial land
- (m) Lack of institutional capacity/problems with planning inspectorate
- (n) A culture of short term thinking means that long term contributions are not supported
- (o) Problems with cross-boundary working
- (p) It is difficult to quantify the full economic benefits
- (q) There is an inadequate evidence base
- (r) Insufficient planning at a landscape scale
- (s) There is insufficient guidance on identifying opportunities and implementing BCs
- (t) Inadequate weight in national policy
- (u) Inadequate weight given in local planning policies
- (v) Public health and safety issues
- (w) Others (please list)

Please provide additional comment:

Q15. In your opinion, what would need to change for urban blue corridors to be easily implemented to reduce flood risk for the future?



Q16. In your opinion, what are the main opportunities for urban blue corridors (e.g. where could urban blue corridors be safeguarded and what should their functions include)?

Q17. In your opinion, would the introduction of a specific National Indicator help to increase the pace of implementation?

- Yes
No

Q18. In the future, what priority should be given to urban blue corridors?

1 2 3 4 5
Low High

Q19. In your opinion, are urban blue corridors achievable? (*tick one only*)

- (a) Within current legislation / planning policy
- (b) With only minor changes in legislation / planning policy (*please explain changes required*)
- (c) Only with major changes in legislation / planning policy (*please explain changes required*)
- (d) An unachievable ideal (*please explain why*)

Q20. Please provide any additional comments in relation to urban blue corridors below:

Thank you for your time in completing this questionnaire.



B3 – Summary of Key Findings from Consultation Exercise

Introduction

A targeted consultation exercise was undertaken to gather evidence on the current understanding, approach and attitude to Urban Blue Corridors within LAs and across wider stakeholders (Figure 4). The aim was to seek a variety of views across LA departments to see if the concept of Urban Blue Corridors was being considered.

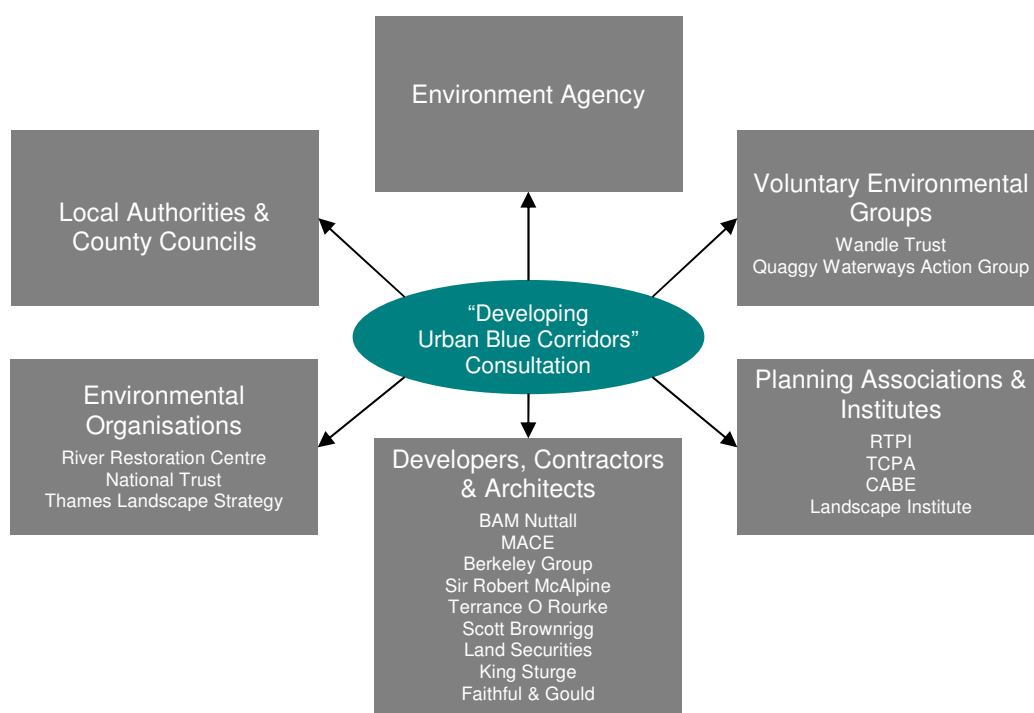


Figure 24: Developing Urban Blue Corridors Research Consultees

The consultation exercise aimed to elicit, through a questionnaire and telephone interviews, an understanding of the current approach and attitude towards Urban Blue Corridors and the perceived driver, benefits and barriers to developing these, providing examples of where such schemes have been undertaken and lessons learnt from these.

Local Authorities

The responses received from LAs showed that overall, there is little awareness of the concept or benefits of Urban Blue Corridors, and delivery through the spatial planning system, where it does occur, tends to focus on a single aspect of the scheme (flood risk), with little consideration to the multi-benefits that can be derived. There is no legislative driver or guidance to encourage spatial planners within LAs to consider Urban Blue Corridors, and no identified mechanism for delivery, particularly with regards to overland flow paths. Many authorities consider Urban Blue Corridors as part of Green Infrastructure rather than in their own right.



Delivery

SWMPs and SFRAAs are the main mechanisms through which surface water flow paths and ponding areas are currently recorded and mapped within LA boundaries. In the future, PFRAs will bring these studies together to provide one reference document for flood risk information. It is important to note that SWMPs are generally under development and they will not yet have developed sufficiently to influence planning and strategic approaches to flood risk. Thus there needs to be a newer way of thinking about the opportunities to manage flood risk.

The majority of LAs consulted have existing policies to protect surface water infrastructure including SuDS, water bodies, balancing ponds and river corridors. However, policies to safeguard ponding areas and protect overland flow paths are less common, highlighting the gap in existing LA and National policies with regards to Urban Blue Corridors.

Generally within councils, where policies exist to actively encourage the creation of multifunctional open space/Urban Blue Corridors, the majority of these are included within strategic planning policies. Additional policies relate to deculverting, preservation of surface water overland flow paths/ponding areas, opening up of hidden or buried watercourse and increases to the 'standard' Environment Agency 8-16 metre set back (dependent on local byelaws). Case Study 1 (Section 5) provides an example of where surface water specific policies are being considered by the London Borough of Sutton within both the Site Development Policies DPD^{iv} and Climate Change Adaptation Strategy (developed through the council's involvement in the EU GRaBS project), as part of the wider Wandle Valley Regional Park objectives.

Most LAs have not actively encouraged or implemented an Urban Blue Corridor, though this is likely to change in the future with LLFAs needing to consider these as one way to manage local risks. Where they have been or are in the process of being implemented they are normally driven by the Environment Agency (e.g. Case Study 3, Section 5) or other initiatives (e.g. GRaBS in London Borough of Sutton) rather than the council themselves. Councils who have undertaken SWMPs appear to be more proactive in considering overland flow paths and surface water infrastructure but have yet to progress to defining or identifying Urban Blue Corridors within the strategic planning system.

Where Urban Blue Corridors or similar schemes have or are being implemented, this has tended to be through Section 106 developer agreements, planning policy guidelines, and/or emergency planning routes. Milton Keynes council have produced a Supplementary Planning Guidance SPG document for delivery within their administrative area⁹³, which aims to implement the requirements of PPS25 within Milton Keynes.

Management of surface water infrastructure and assets within councils normally involves managing open sections of ordinary watercourse and some main river corridors (in conjunction with the Environment Agency). These tasks may be managed by the Drainage departments (where they exist). Maintenance is geared towards managing flood defence, vegetation control and channel clearance through limited revenue budgets. In Milton Keynes, there is a close working relationship between the Environment Agency, the Internal Drainage Board (IDB), Anglian Water, the Milton Keynes Parks Trust and the Milton Keynes Council regarding the ongoing maintenance/conservation of the Urban Blue Corridors. In general terms, the maintenance/conservation of the land and land edge rests with the Milton Keynes Parks Trust whereas the maintenance/conservation of the water body rests with the Environment Agency and/or the IDB and/or Anglian Water Services.

^{iv} The Site Development Policies DPD both identifies a range of sites to meet the development needs of the Borough and puts forward policies for managing development across the Borough, in accordance with the Core Planning Strategy



Coordination

Internal

One of the key messages to come out of the consultation exercise was the differing attitudes and perceptions from different LA departments with regards to Urban Blue Corridors, particularly with regards to their priorities. However, the consultation exercise has found that, in the majority of cases, there is currently no clear lead for responsibility/experience/expertise of surface water management planning in LAs; this was a key finding and recommendation from the Pitt Report⁹⁴, and the new FWMA responsibilities should help to fill this gap. A key document to coordinate this could be through the Infrastructure Delivery Plan which brings together the key infrastructure planning requirements for the next plan period within a LA.

To illustrate the differing views, Table 11 presents a summary of responses from the London Borough of Croydon. The views expressed are those of the individual respondent within each department based on their experience and knowledge and are not necessarily representative of that department or council.

Table 11: Example Attitudes/Approaches to Urban Blue Corridors from Different Council Departments based on Croydon (Knowledge within Borough highlighted in blue)

Department	Emergency Planning	Emergency Planning	Nature Conservation and Countryside	Highways / Drainage	Planning Policy
Who has responsibility/experience/ expertise for surface water management planning?	<ul style="list-style-type: none"> Planning department Spatial planning Urban planners 	<ul style="list-style-type: none"> Highways Emergency planning (less) Environmental sustainability Planning and regeneration 	Not known since major restructuring of teams	Highways Drainage Planning	Structures Drainage
Are overland flow paths mapped?	Don't know	Don't know	Don't know	Yes	No
Policies to protect surface water infrastructure?	Think so	Yes - Balancing Ponds and SuDS	Don't know	Yes - Balancing Ponds, Ponding Areas, SuDS	Yes - Balancing Ponds and SuDS
Existing policies to encourage creation of multifunctional open space?	<unanswered>	<unanswered>	Yes	Yes	Yes
Current Understanding	Medium	Low	Medium	Medium	Medium
Current Priority	Low	Low	Medium	Medium	High
Future Priority	High	Medium	Medium	High	High

External

Traditionally, coordination between organisations has been lead by LAs or the Environment Agency. This has tended to be reactive (e.g. to past events) rather than pro-active. Moving forward there will need to be improved coordination between organisations to plan and deliver Urban Blue Corridors at the local level. This will require the formation of local partnerships and include communities.

Cooperation

Internal

As Urban Blue Corridors will aim to deliver multi-benefits and are multifunctional, there will be a requirement for the departments to work together to design, plan, implement and maintain Urban Blue



Corridors. This will require colleagues from Planning, Emergency Planning, Structures and Drainage, Highways, Parks, Regeneration/assets and Facilities Management, Education and Urban Design departments to work together to ensure that sustainable flood risk management, and the potential benefits from the delivery of Urban Blue Corridors can be realised at a strategic level across all disciplines within the LA.

External

The current level of cooperation between partner organisations, including LAs, water companies, developers and the Environment Agency, appears to vary on a case-by-case basis. Cooperation between, in particular, LAs and the Environment Agency appears to be greatest where previous flooding/surface water management issues have arisen; for example, the summer 2007 flooding in Hull and Derby. With respect to Urban Blue Corridors, cooperation appears to be working best where the Environment Agency has encouraged the concept and requirements through the local planning system^v.

There are few examples of cross-authority Urban Blue Corridors; however, this is likely to require consideration and cooperation by partner organisations including LAs and the Environment Agency. Case Study 1 provides an example of where cross-boundary issues are beginning to be considered in the development of the Wandle Valley Regional Park. Local partnerships (through FWMA) will be a major driver to cooperate strategically in the future.

Priority

The consultation exercise found that the current priority assigned to Urban Blue Corridors by LAs is low, and in most instances it is low where either current understanding of Urban Blue Corridors is poor and/or there has been no requirement to consider the approach through the spatial planning system (Figure 25). However, LAs consider that Urban Blue Corridors should have a higher priority in the future; there was no clear reason provided for this increased prioritisation, but it could be a result of consideration of climate change or an improvement in the understanding of the risk.

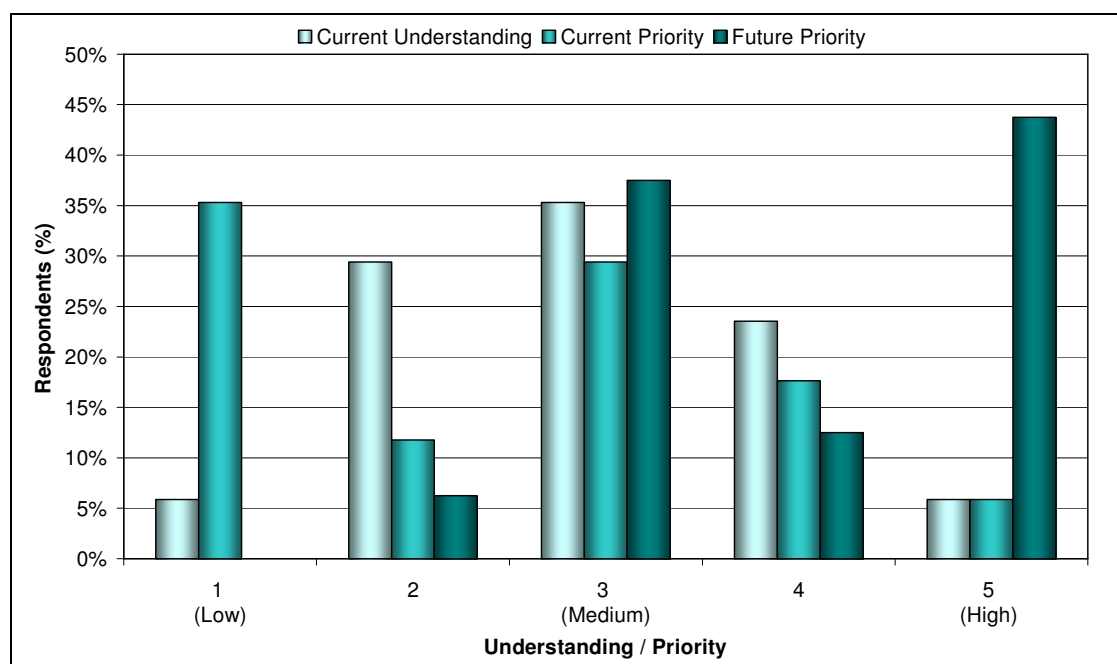


Figure 25: Current and Future Priority and Understanding of Urban Blue Corridors in LAs

^v See Case Study 1: City of Derby



The future priority assigned to Urban Blue Corridors was found to vary between respondents. Those working in parks and green spaces considered Urban Blue Corridors should be given a medium priority (perhaps as they consider them as part of Green Infrastructure), whilst those working in drainage and highways consider it should be given a high priority. Those working in spatial/urban planning and emergency planning were mixed in their responses.

Achievability

Current perception on the achievability of Urban Blue Corridors is divided. Nearly half of the respondents believe that it can only be achieved with major changes in legislation and/or planning policy; whereas around 40% of respondents believe that it is achievable through existing legislation and/or planning policy (Figure 26). Those working in drainage believe that Urban Blue Corridors can only be delivered through major changes to existing legislation and/or planning policy; whereas spatial and urban planners, who are at the front-end of policy making within LAs, are divided in their opinion.

It is recognised that the results from the consultation exercise may be skewed as 'Urban Blue Corridors' were a new concept to most respondents, and not necessarily recognised as 'stringing together' initiatives to deliver the principles of Urban Blue Corridors – such as SuDS. Moving forward, it is likely that through a better understanding of Urban Blue Corridors, and realisation of the benefits that can be derived, the achievability of Urban Blue Corridors will be recognised through existing initiatives, which perhaps previously, have been branded under separate drivers rather than as an Urban Blue Corridor.

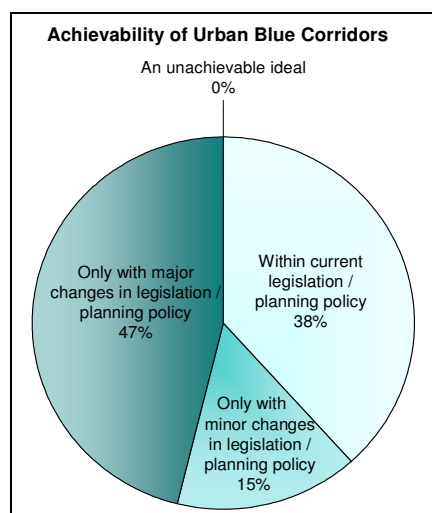


Figure 26: Achievability of Urban Blue Corridors

Planning Organisations

The Royal Town Planning Institute (RTPI), Town and Country Planning Association (TCPA), the Commission for Architecture and the Built Environment (CABE) and Landscape Institute were contacted to elicit their views and experience with regards to developing Urban Blue Corridors.

Town and Country Planning Association (TCPA)

The TCPA, through its GRaBS project and Inland Waterways project⁵⁹, has acquired a good knowledge base around the importance of Blue Infrastructure and gaps in spatial planning policy. They believe that planning policy on Green and Blue Infrastructure is (or was) making good progress (e.g. SuDS / flood risk management / Blue Ribbon Network / green roof / Green Grid policies in the revised London Plan); but that



planning reforms by the new Coalition Government are likely to severely impact on this through the abolition of proposed PPS and RSS, for example:

- Two key PPS, the draft PPS on Planning for a Natural and Healthy Environment; and the draft PPS on Planning for a Low Carbon Future in a Changing Climate, are now unlikely to be implemented, leaving a large gap in national guidance and policy on the delivery of Blue and Green Infrastructure in a changing climate; and
- Gaps in essential strategic policy will arise with the abolition of RSS and regional development agencies such as the Northwest Development Agency who were progressing in creating policies for Blue and Green Infrastructure (particularly in terms of adaptation benefits) into their regional Climate Change Action Plan⁹⁵, and a Green Infrastructure Climate Change Action Plan⁹⁶.

The TCPA believes that planning for the impacts of climate change provides a vital opportunity and driver for developing Blue Infrastructure (as evidenced through their work as part of the GRaBS project). Blue Infrastructure, such as Urban Blue Corridors, will play a vital role in creating climate resilient development, a role which the TCPA believe is not currently sufficiently recognised and utilised and lacks integration in mainstream planning. Regional planning has had a major role in identifying areas under threat from climate change impacts (e.g. flooding) and creating strategic guidance, technical advice and policy in preparing for, adapting to, and mitigating these impacts (particularly at the catchment-scale which crosses LA boundaries). Without clear directions from regional plans (including policies and technical advice towards the evidence base), local decision-making on Blue and Green Infrastructure will be relied upon for delivery, and collaboration between LAs will become more important. PPS25 sets out key planning objectives and a risk-based approach to managing flood risks, including through the use of SuDS and Blue Infrastructure).

Overall, however, delivery remains slow (especially in relation to Green and Blue Infrastructure in mitigating and adapting to climate change), and its outcomes lag behind those delivered in North West Europe. The TCPA believe that this is partially due to a lack of clear policy messages, but other barriers include lack of professional and political leadership, skills, knowledge, and resources. In addition to raising awareness amongst planners, Councillors must also receive training on planning in general and climate change in particular.

Another TCPA project on Inland Waterways⁵⁹ sets out policy advice and key planning policy challenges to unlocking the potential and benefits of inland waterways. A key conclusion was that:

“Planning policy gaps and imbalances do exist at all the different spatial levels (local, sub-regional, regional and national). This is partly attributable to a lack of awareness in the planning arena of:

- *The different roles that waterways perform; the types of economic, social and environmental benefits that can be generated by waterways for communities;*
- *How waterways can contribute to the delivery of regional targets and local ambitions; and*
- *How the planning system can remove obstacles to the delivery of public benefits offered by waterways.*

Waterways need to be recognised as a form of strategic and local infrastructure performing multiple functions and supporting the visitor economy, as well as regeneration, renewal and growth agendas.”

Royal Town Planning Institute (RTPI)

The RTPI believe that to adequately address surface water management within the urban environment through national and local policies, there is a requirement for an integration of policy related to water into a systems approach that encourages proactive design for water management and conservation at all scales from neighbourhood to whole-catchment. To adequately address these issues in development policies,



there is a need for a more proactive approach from local planners in the pre-application stage which could be aided by the provision of tailored local guidance; and it is often this accompanying guidance and regulation that is more important in facilitating delivery than a major shift in legislation. Clear Government guidance if required to enable Urban Blue Corridors to be easily implemented in the future.

The RTPI encourage and promote the creation of multifunctional open space/Urban Blue Corridors through policy discussions and events, and believe that it is possible to apply Urban Blue Corridors to all urban river systems.

Environmental Legislators & Organisations

Environment Agency

The Environment Agency were consulted with regards to Urban Blue Corridors, and responses were received from three different regions and from Flood Risk, Biodiversity and Planning Liaison staff covering three different regions. These responses (which should not be considered indicative of the organisation as a whole) provided examples of where Urban Blue Corridors or similar schemes had been implemented within their regions, perceived benefits, barriers and drivers for these schemes, and likely changes required to implement Urban Blue Corridors in the future.

Urban Blue Corridors are well understood and the concept established within the Environment Agency, but there are mixed opinions on their current priority and their delivery tends to be through flood risk initiatives.

The Environment Agency currently has policies to protect balancing ponds, river corridors, safeguarding ponding areas, water bodies and SuDS and actively encourage the creation of multifunctional open space and Urban Blue Corridors through deculverting and opening up of hidden and buried watercourses; for example, through the Environment Agency National Culverting Policy 85_10, and Conserving and Enhancing Biodiversity Policy 634_08. CFMPs and RBMPs assist in delivering these policies.

However, no policies exist to protect overland flow paths. Surface Water Flooding maps provided by the Environment Agency (ASSWF /Flood Map for Surface Water) highlight areas at risk of surface water flooding but cannot be used as the sole basis for planning decisions due to their indicative nature.

Surface water flooding maps have only recently been developed. However, through the development of PFRAs and LFRM strategies this type of flood risk will become better understood, and SFRAs should incorporate this information in the future and allow for better strategic planning.

The level of understanding and cooperation between the Environment Agency and partner authorities is variable and dependant on policy support within LDFs and Local Service Providers. It tends to be opportunistic, but is improving through strategic planning and development of regional initiatives such as the London Green Grid, and Southeast Green Infrastructure Partnership. However, under the Coalition Government's new planning approach, this will need to be delivered through local initiatives and cross-boundary collaborative projects.

In the case studies cited by the respondents (e.g. St. Mowden's Longbridge Regeneration (Box 12), Wandle Valley Regional Park (Case Study 1) and River Derwent through Derby City (Case Study 3)), the Environment Agency has been one of the driving forces behind the schemes. However, these schemes have focused on flood risk and/or river restoration for which there exist legislative drivers through which the Environment Agency can implement these schemes. In Derby (Case Study 3), a 'Blue Corridor Vision' has been developed through the Trent CFMP and Lower Derwent Flood Risk Management Strategy, and policies applied to encourage the development of green corridors, sustainable flood risk management and improved biodiversity habitats.



Urban Blue Corridors require strategic planning in that networks transcend LA boundaries. It is in this role, and the promoting of multiple benefit projects, which offer the greatest opportunities for Environment Agency involvement.

Box 12: Example of Long Term Flood Management through New Development

St. Modwen's Longbridge Regeneration, Birmingham

Reducing flood risk is a key part of the overall environmental strategy for the £1 billion regeneration of the 468 acre Longbridge site in Birmingham. The schemes includes improving approximately 2 kilometres of rivers, enhancing and partly realigning watercourses and opening up of the River Rea through the Longbridge North to create new open space/walkway.

As part of the flood risk strategy, following close liaison between the Environment Agency, Birmingham City Council and developer St Modwen, a temporary attenuation pond has been created at Longbridge West to hold back the flow of the River Rea and Callow Brook in times of flood, reducing long-standing flood risk issues in the Longbridge and Northfield areas. Additionally, the River Rea, which is partly in culvert throughout Longbridge (since 1916 est.), is set to be deculverted in the future and follow a new naturalised water course through a major new ecological park, to an urban park at the heart of a new town centre proposed for Longbridge North.

Source: Questionnaire Response and <http://www.environment-agency.gov.uk/news/108677.aspx>

National Trust

The National Trust, through their management of properties and landscape, aim to improve biodiversity and maintain habitats. Through the creation of, for example, Park Management Plans, and consultation with the Environment Agency, the National Trust aim to bring about improvements to river banks, creation of ponds and removal of rubbish and invasive species from rivers. As a charity, the National Trust has to raise funds for all projects, which they consider to be one of the main barriers to developing/implementing Urban Blue Corridors as there is a lack of funding availability. The National Trust often work in partnership with the Environment Agency, voluntary organisations, such as the London Wildlife Trust, local fishing clubs and local volunteers to facilitate enhancements.

The main opportunities for development are considered to be through collaborative projects such as the Wandle Valley Regional Park, to encourage landowners and authorities to work together and adopt a joined up approach to works on the river.

Developers, Contractors and Architects

A number of developers, contractors and architects were consulted to assess their view and attitudes towards Urban Blue Corridors, how they currently manage and plan for flood risk in developments, and perceived obstacles and barriers to incorporating overland flow paths and designated Urban Blue Corridors through development areas.

Of the developers who had experienced problems with flooding on sites, they encountered issues including:

- Delays to programme;
- Dewatering of excavations;
- Silt removal and clearance;
- Contamination; and
- Damage.



It was found that most developers had personal experience or an understanding of SuDS, but were less familiar with 'intentional ponding' and 'river corridors', which are not requirements for consideration within PPS25 (as part of a Flood Risk Assessment (FRA for a planning application)), and/or drainage schemes for development sites. Overland flow paths and blue corridors were on the whole little or unknown topics.

Flooding and planning for flooding are given a high level of consideration (average 83% of respondents) when designing/developing/constructing a site, with architects showing the highest consideration for flooding in the wider contexts. This is likely to be through PPS25's requirement for undertaking a FRA for sites that are over 1 hectare or are located within Flood Zones 2 and 3, as part of a Planning Application.

The anticipated impacts of flood measures on developments are varied but include:

...on the subject of flood water route through sites

- Building location/orientation affected, which might be detrimental to letting rates;
- Legacy issues regarding maintenance, Health and Safety issues, public liability;
- Density and character of development; and
- Plant choice, site fencing, compound location, fuel storage (during construction);

...on the subject of swale provisions

- Topography restrictions;
- Space availability;

...on the subject of strategic planting

- Ease of incorporation; and
- Secondary benefits for the development including desirability;

...on the subject of intentional areas of ponding

- Silting and rubbish issues; and
- Winter freezing.

The general consensus regarding anticipated benefits of incorporating the flood management measures listed above centred around increased development value, but it was felt that Government legislation or subsidy would be needed to stimulate developer 'buy in'.

The largest perceived hurdle to overcome differed between groups. The architects cited incorporating generic measures on specific sites as being a possible sticking point, and it was felt that site specific recommendations would be needed. They also recognised that a balance must be struck between environmental issues and commercial interest, as both can affect a community. The contractor and developer responses centred principally around the costs of incorporating the additional requirements.



Appendix C – Policy Drivers

Policy/Driver		Description	Urban Blue Corridor Aspirations						
			Flood Risk	Climate Change	Water Quality	Biodiversity	Multifunctional Land Use	Recreation	Sustainable Development/Housing Growth
European	EU Floods Directive (2007)	The Floods Directive (2007/60/EC) requires European Commission Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. The Directive also reinforces the rights of the public to access this information and to have a say in the planning process.	✓						
	EU Adaptation White Paper on Climate Change (2009)	Sets out a framework to reduce the EU's vulnerability to the impact of climate change, and specifically recognises the role that Green Infrastructure can play in adaptation and providing essential resources for social and economic purposes under extreme climatic conditions.		✓					
	EU Water Framework Directive (2000)	The Water Framework Directive (WFD) is a European Community Directive (2000/60/EC) of the European Parliament and Council designed to integrate the way water bodies are managed across Europe. The WFD was passed into UK law in 2003. The overall requirement of the directive is that all water bodies in the UK must achieve "good ecological and good chemical status" by 2015 through a catchment based system of River Basin Management Plans (RBMPs), incorporating a programme of measures (PoMs) to improve the status of all natural water bodies. Through RBMPs, the WFD seeks to integrate the management of water with land use planning, biodiversity, flood risk management, tourism, leisure, recreation, health and agriculture.			✓	✓			
	EU Habitats Directive (1992)	EU Habitats Directive forms part of Europe's nature conservation policy and aims to protect the wild plants, animals and habitats that make up the natural environment. The directive has facilitated the creation of <i>the Natura 2000 Network</i> , a Europe-wide ecological network of protected areas and species considered to be of national and international importance including Special Areas of Conservation (SAC) and Special protection Areas (SPAs). In total, the directive protects over 1.000 animal and plant species and over 200 "habitat types" (including wetlands) which are of European importance			✓	✓			
	EC Thematic Strategy on the Urban Environment (2006)	Promotes the improvement of the environmental performance of cities through a more integrated approach to environmental management and sustainable urban transport plans. Encourages the dissemination of best practice between cities.							✓
	European Landscape Convention (2000)	Promotes landscape scale planning through the protection, management and planning of European landscapes and organises European cooperation on landscape issues. Requires member states to establish and implement landscape policies aimed at landscape protection, management and planning.					✓		
	European Spatial Development Perspective	The European Spatial Development Perspective (ESDP) was approved by the Informal Council of Ministers of Spatial Planning of European Commission in 1999. The strategic aim of the document is to achieve a balanced and sustainable spatial development strategy, through providing an integrated, multi-sectoral and indicative strategy. The key ideas are: <ul style="list-style-type: none"> • an integrated approach - Not just to look at specific sectors of development activity (e.g. environment, economic development, or transport), but to recognise that they all affect each other; • spatial development - a much wider view of the development, vital for integrative approach; • strategic aspects - interlinked actions to achieve balanced and sustainable territorial development; and • indicative views - the responsibility lies with the developed regions and territories to implement the development principals. The sixty spatial development policies are intended to ensure the balanced and sustainable development in accordance with the basic objectives of Community policy: economic and social cohesion, knowledge-based economic competitiveness complying with the principles of sustainable development and the conservation of diverse natural and cultural resources.							✓
National	Flood Risk Regulations 2009	The Flood Risk Regulations 2009 (FRR 2009) came into force on the 10 December 2009. The FRR 2009 transpose Directive 2007/60/EC on the assessment and management of flood risks (the Floods Directive) into law in England and Wales. The Regulations require lead local flood authorities to, amongst other things, prepare preliminary flood assessment reports, identify flood risk areas, prepare flood hazard and risk maps and prepare flood risk management plans in relation to each flood risk area.	✓						
	Future Water (2008)	Future Water sets out the Government's vision for water in England in 2030. The strategy sets out an integrated approach to the sustainable management of all aspects of the water cycle, from rainfall and drainage, through to treatment and discharge. The strategy focuses on practical ways to achieve the vision to ensure sustainable use of water from the perspective of people, businesses and the environment. Specific aspects of the water sector considered in Future Water are: Water demand; Water supply; Water quality, and Flooding (river, coastal, surface water and groundwater flooding). The strategy also sets out the vision to cut greenhouse gas emissions, and discusses the regulatory framework for the water industry. The aim is to ensure sustainable delivery of water supplies, and help improve the water environment for future generations.	✓		✓				
	Making Space for Water (2004)	Making Space for Water outlines the Government strategy for the next 20 years to implement a more holistic and integrated approach to managing flood and coastal erosion risks in England. The policy aims to reduce the threat of flooding to people and property, and to deliver the greatest environmental, social and economic benefit. Making Space for Water considers all sources of flooding in determining flood risk, and ensures that climate change becomes a fundamental part of flood and coastal erosion management decisions. The holistic approach considered includes: <ul style="list-style-type: none"> • Better management of risk; • Land use planning through the planning system (including PPS25); • Environmental issues such as creation of wetland, and managed realignment; • Integrated Urban Drainage (IUD) management, and • Coastal issues. Amongst several other key drivers, the Making Space for Water document intended to improve the manner in which land use planning was undertaken. Since 2004, the particular goals alluded to in this document have been achieved. The Environment Agency's role as a statutory consultee has been extended in areas that are at risk of flooding. An integral part of this new direction for flood risk management planning in England was the production of a new PPS. As discussed within the document, the intention was 'to replace and improve the operational effectiveness of', PPG 25. The overriding document PPS25 was released in December 2006.	✓		✓		✓		



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		Flood Risk	Climate Change	Water Quality	Biodiversity	Multifunctional Land Use	Recreation	Sustainable Development/Housing Growth
SWMP Technical Guidance (2010)	In March 2010, Defra published a technical guidance document for preparing Surface Water Management Plans (SWMPs) inline with the objectives and principles of the first Government response to Making Space for Water consultation (March 2005) for better integrated urban drainage management. The guidance also forms part of the Government's response to Sir Michael Pitt's Review of the Summer 2007 floods, in particular recommendation 18 which suggested that "local surface water management plans as set out under PPS25 and coordinated by local authorities should provide the basis for managing all local flood risk". The outputs from a SWMP study are likely to be of considerable value to the spatial planning and development process and in return planners and developers may assist in the achievement of aspects of the action plan. Information and advice to planners might include: <ul style="list-style-type: none"> • maps to identify potential areas that are more vulnerable to surface water flooding, which can be used to inform development decisions and update information in SFRA's; • consideration of how proposed new development will drain to areas of existing surface water flood risk, and therefore the runoff requirements from these development sites; • information for supplementary planning guidance such as areas where SuDS would be effective or where special drainage arrangements should be applied to support the SWMP implementation, which can be used to inform the requirements for FRAs, and; • working with local authority planners to inform and find opportunities in spatial planning processes to make space for sustainable surface water risk management, groundwater recharge, Green and Blue Infrastructure and water quality improvements. Also to inform a surface water supplementary planning document or AAP. • a SWMP user guide explaining what the aims and objectives are, how the plan can be achieved and maintained and how it links to SFRA's. 	✓	✓					
Pitt Review & Government Response (2007/2008)	Comprehensive review of the lessons to be learned from the summer floods of 2007 undertaken by Sir Michael Pitt. The report called for calls for urgent and fundamental changes in the way the country is adapting to the likelihood of more frequent and intense periods of heavy rainfall. It made a series of recommendations including Recommendation 18: "Local Surface Water Management Plans, as set out in PPS25 and coordinated by local authorities, should provide the basis for managing all local flood risk.". The Government response to the Pitt review confirmed its support for the SWMP approach in high risk areas and the subsequent Flood and Water Management Act has implemented many of the recommendations of the Pitt Review.	✓	✓					
Flood and Water Management Act (2010)	The Flood and Water Management Act was enacted on 8 April 2010. The main aim of the Act is to improve both flood risk management and the way water resources are managed. It proposes to achieve this by creating clearer roles and responsibilities and instilling a more risk-based approach. This includes a new lead role for local authorities in managing local flood risk (from surface water, ground water and ordinary watercourses) and a strategic overview role for all flood risk for the Environment Agency. It is expected that the Act will be commenced in April 2011. However, risk management authorities will be expected to begin putting in place the organisational framework and strategic development ahead of this. The Act supports the implementation of recommendations made by Sir Michael Pitt in his 'lessons learned' report written after the 2007 floods. Key Measures The Act consolidates existing legislation relating to flood and water management. It aims to: <ul style="list-style-type: none"> • Reduce the likelihood and impacts of flooding. • Clarify roles and responsibilities. • Improve water quality. • Give water companies stronger powers to conserve water. • Improve the efficiency and management of the water industry. • Reduce pollution and improve water quality. The Act includes the following key actions: <ul style="list-style-type: none"> • Local councils will be given responsibility for surface water flooding. • The Environment Agency will have overall responsibility for flooding. • House builders and developers will be required to incorporate sustainable drainage systems into new developments. 	✓		✓				
Civil Contingencies Act (2004)	The Civil Contingencies Act, and accompanying non-legislative measures, delivers a single framework for civil protection in the UK. The Act is separated into two substantive parts: local arrangements for civil protection and emergency powers. Part 1 of the Act and supporting Regulations and statutory guidance Emergency Preparedness establish a clear set of roles and responsibilities for those involved in emergency preparation and response at the local level. Part 2 of The Act updates the 1920 Emergency Powers Act to reflect the developments in the intervening years and the current and future risk profile. It allows for the making of temporary special legislation (emergency regulations) to help deal with the most serious of emergencies.	✓						
Climate Change Act (2008)	The Climate Change Act was enacted on 26 November 2008. The Act creates a new approach to managing and responding to climate change in the UK, including: <ul style="list-style-type: none"> • Providing a legally binding long-term framework to cut carbon emissions, and • Creating a framework for building the UK's ability to adapt to climate change. The Climate Change Act enhances the UK's ability to adapt to the impact of climate change and establishes the following: <ul style="list-style-type: none"> • a UK wide climate change risk assessment that must take place every five years; • a national adaptation programme which must be put in place and reviewed every five years to address the most pressing climate change risks to England; • the Government has the power to require 'bodies with functions of a public nature' and 'statutory undertakers' (companies like water and energy utilities) to report on how they have assessed the risks of climate change to their work, and what they are doing to address these risks; • the Government is required to publish a strategy outlining how this new power will be used, and identifying the priority organisations that will be covered by it; • the Government will provide Statutory Guidance on how to undertake a climate risk assessment and draw up an adaptation action plan; and • the creation of an Adaptation Sub-Committee of the independent Committee on Climate Change in order to oversee progress on the Adapting to Climate Change Programme and advise on the risk assessment. 		✓					
PPS1: Delivering Sustainable Development	PPS1 sets out the Government's overarching planning policies on the delivery of sustainable development through the planning system. It states that "Planning authorities should prepare robust policies on design and access. Such policies should be based on stated objectives for the future of the area and an understanding and evaluation of its present defining characteristics. Key objectives should include ensuring that developments: <ul style="list-style-type: none"> • are sustainable, durable and adaptable (including taking account of natural hazards such as flooding) and make efficient and prudent use of resources; 							✓



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		Flood Risk	Climate Change	Water Quality	Biodiversity	Multifunctional Land Use	Recreation	Sustainable Development/Housing Growth
	<ul style="list-style-type: none"> optimise the potential of the site to accommodate development, create and sustain an appropriate mix of uses (including incorporation of Green and other public space as part of developments) and support local facilities and transport networks; respond to their local context and create or reinforce local distinctiveness; create safe and accessible environments where crime and disorder or fear of crime does not undermine quality of life or community cohesion; address the needs of all in society and are accessible, usable and easy to understand by them; and are visually attractive as a result of good architecture and appropriate landscaping. 							
PPS: Planning and Climate Change – Supplement to PPS1	The supplement to PPS1, Planning and Climate Change sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions and resilient to climate change. It states that "In deciding which areas and sites are suitable, and for what type and intensity of development, planning authorities should assess their consistency with the policies in this PPS. In doing so, planning authorities should take into account: <ul style="list-style-type: none"> the contribution to be made from existing and new opportunities for open space and Green Infrastructure to urban cooling, sustainable drainage systems, and conserving and enhancing biodiversity; and known physical and environmental constraints on the development of land such as sea level rises, flood risk and stability, and take a precautionary approach to increases in risk that could arise as a result of likely changes to the climate. 		✓					
PPS: Eco-towns – Supplement to PPS1	The Eco-towns PPS supplement to PPS1 sets out a range of minimum standards which are more challenging and stretching than would normally be required for new development. Many of the principles and stretching standards required by this PPS could potentially be adopted by other developers as a way of meeting the wider objectives of the PPS on Climate Change. The standards act to ensure that eco-towns are exemplars of good practice and provide a showcase for sustainable living and allow Government, business and communities to work together to develop greener, low carbon living. The PPS states that the design of eco-towns should take full account of the impact on local eco-systems, mitigating negative impacts as far as possible and maximising opportunities to enhance their local environments. The PPS also states that, in terms of flood risk, Flood Zone 2 should, as far as possible, be used for open spaces and informal recreational areas that can serve as multi-functional spaces, for example, those used for flood storage.							✓
PPG2: Greenbelt	PPG2 outlines the history and extent of Green Belts and explains their purpose, objectives and need for protection. Green Belts aim to safeguard the countryside through preventing urban sprawl, therefore keeping land open and providing a reserve of public open space. PPG2 assists in the transition towards sustainable urban development through outlining and preventing inappropriate development in designated areas, instead ensuring it occurs in the allocated areas outlined in development plans and encouraging urban regeneration. 3.2.37 Once defined, the use of land in Green Belts aims to fulfil the following objectives: <ol style="list-style-type: none"> provide access opportunities to the open countryside for the urban population; provide opportunities for outdoor recreation near urban areas; retain and enhance landscapes, near to where people live; improve damaged and derelict land around towns; secure nature conservation interests; and retain land in agricultural, forestry and related uses. 					✓		
PPS3: Housing	PPS3 supports the delivery of the Government's strategic housing policy objectives, in response to the needed step-change in housing delivery through a more responsive approach to local level land supply. PPS3 reflects the Government's commitment to improve affordability and supply of housing in all communities, including rural areas and should be regarded by local authorities in the preparation of regional spatial strategies and when making planning decisions on applications after April 2007. The Government's key housing policy goal is to ensure that everyone has the opportunity of living in a decent home, which they can afford, in a community where they want to live. The planning system should ensure a variety of housing developments in suitable locations, which offer a good range of community facilities and access to jobs and services, and a flexible, responsive supply of land, effectively managed, including re-use of previously-developed land, where appropriate. Sustainable development is one guiding principle, aiming to minimise environmental impact and account for climate change and flood risk.							✓
PPS9: Biodiversity and Geological Conservation	PPS9 sets out planning policies on the protection of biodiversity and geological conservation through the planning system, ensuring their consideration in land development decisions. It aims that planning, construction, development and regeneration should have minimal impacts on England's biodiversity and geology and enhance quality or spatial extent where possible. In achieving this, PPS9 hopes to enhance urban green spaces and biodiversity, ensuring healthy, functional ecosystems that will improve quality of life. Where appropriate developments should incorporate beneficial biodiversity or geological conservation interests within development design and on the event of unpreventable significant harm or adequate mitigation, refusal of planning permission is recommended.				✓			
PPS12: Local Spatial Planning	PPS12 sets out the Government's policy on local spatial planning, which plays a central role in the overall task of place shaping and in the delivery of land uses and associated activities. It explains what local spatial planning is, and how it benefits communities. It also sets out what the key ingredients of local spatial plans are and the key Government policies on how they should be prepared. It should be taken into account by local authorities in preparing development plan documents and other local development documents. PPS12 specifically states that "The core strategy should be supported by evidence of what physical, social and Green Infrastructure is needed to enable the amount of development proposed for the area, taking account of its type and distribution. This evidence should cover who will provide the infrastructure and when it will be provided. The core strategy should draw on and in parallel influence any strategies and investment plans of the local authority and other organisations." It also states that "Good infrastructure planning considers the infrastructure required to support development, costs, sources of funding, timescales for delivery and gaps in funding. This allows for the identified infrastructure to be prioritised in discussions with key local partners. This has been a major theme highlighted and considered via HM Treasury's CSR07 Policy Review on Supporting Housing Growth. The infrastructure planning process should identify, as far as possible: infrastructure needs and costs; phasing of development; funding sources; and responsibilities for delivery.							✓



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		Flood Risk	Climate Change	Water Quality	Biodiversity	Multifunctional Land Use	Recreation	Sustainable Development/Housing Growth
PPG17: Planning for Open Space, Sport and Recreation	PPG17 outlines policies to be accounted for by regional planning bodies and local authorities in preparing development plans and making decisions on individual planning applications. Open spaces, sport and recreation are an integral component for a good quality of life and therefore well implemented policies are necessary to deliver Government objectives for a high quality network of accessible open urban spaces, rural renewal, increased opportunities for community involvement and improved public health and lifestyles.						✓	
PPS25: Development and Flood Risk	<p>Planning Policy Statement 25 requires that local authorities achieve the following when preparing the local development framework:</p> <ol style="list-style-type: none"> 1. Set out policies that seek to avoid flood risk wherever possible and manage it elsewhere; 2. Seek opportunities to relocate particularly vulnerable developments to locations at less risk of flooding, taking into account the impacts of climate change; 3. Safeguard land from development that is required for current and future flood management. 4. Allocate all proposed development sites in accordance with the 'Sequential Test', reduce the flood risk and ensure that the vulnerability classification of the proposed development is appropriate to the Flood Zone classification; 5. Require site-specific Flood Risk Assessments to be submitted for all developments within Flood Zones 2 and 3 or over 1 hectare in size in Flood Zone 1 and for sites with identified flood sources, to assess the risk of flooding to the development and identify options to mitigate the flood risk to the development, site users and surrounding area; 6. Flood Risk to development should be assessed for all forms of flooding; 7. Where floodplain storage is removed, the development should provide compensatory storage on a level for level and volume for volume basis to ensure that there is no loss in flood storage capacity. <p>PPS25 aims to ensure that flood risk is taken into account at all stages in the planning process from the inception of regional and local policy through to individual development control decisions. The document seeks to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of high risk through the application of the sequential approach and the precautionary principle. It is acknowledged that, in some exceptional circumstances, it might not be possible to deliver available sites in lower risk zones through the sequential approach. Here policy will aim to ensure that the development will be safe, without increasing flood risk elsewhere and, where possible, reducing flood risk overall.</p> <p>Key Planning Objectives for reducing risk should be to use "opportunities offered by new development to reduce the causes and impacts of flooding e.g. surface water management plans; making the most of the benefits of Green Infrastructure for flood storage, conveyance and SuDS; re-creating functional floodplain; and setting back defences."</p>	✓	✓					
Draft PPS: Planning for a Low Carbon Future in a Changing Climate	The draft Planning Policy Statement: Planning for a Low Carbon Future in a Changing Climate brings together the Planning and Climate Change supplement to PPS 1 with the 2004 PPS 22 on Renewable Energy into a new draft PPS. This new PPS will replace the 2007 and 2004 PPS and it is proposed that it will become a consolidated supplement to PPS 1, incorporating new legislation and policy that has been put in place that affects planning and the policies that underpin plan-making and development management since the publication of the PPS1 supplement. This will support and provide an overarching framework for PPS 25 on Development and Flood Risk and emerging planning policies on Green Infrastructure (being consulted on separately).			✓				✓
Draft PPS: Planning for a Natural and Healthy Environment	The draft PPS states that planning should " <i>minimise vulnerability of places, people and wildlife to the impacts of climate change and contribute to effective climate change adaptation measures by maintaining, creating and improving networks of Green Infrastructure within both urban and rural areas</i> ". The draft statement also includes policy which promotes LAs to protect, enhance and create Green Infrastructure " <i>particularly in locations where it will assist in reducing the impacts of climate change by providing flood water storage areas, sustainable drainage systems, urban cooling and local access to shady outdoor space</i> "; it also places an emphasis on creating and enhancing linear connections between green spaces and natural habitats.			✓		✓		
Biodiversity Action Plan targets	The UK Biodiversity Action Plan (BAP) is the UK Government's response to the Convention on Biological Diversity (CBD), signed in 1992. The Convention called for the development and enforcement of national strategies and associated action plans to identify, conserve and protect existing biological diversity, and to enhance it wherever possible. The UKBAP describes the biological resources of the UK and provides detailed plans for conservation of these resources, at national and devolved levels. Action plans for the most threatened species and habitats have been set out to aid recovery, and reporting rounds show how the UKBAP has contributed to the UK's progress towards the significant reduction of biodiversity loss called for by the CBD.				✓			
Conservation of Habitats and Species Regulations 2010	On 1 April 2010 The Conservation of Habitats and Species Regulations 2010 replaced The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) in England and Wales. The Conservation of Habitats and Species Regulations 2010 are the principal means by which the Habitats Directive is transposed in England and Wales. They update the legislation and consolidate all the many amendments which have been made to the Regulations since they were first made in 1994. The Conservation of Habitats and Species Regulations 2010 apply in the terrestrial environment and in territorial waters out to 12 nautical miles.			✓	✓			
Sustainable Communities Act (2007)	The Sustainable Communities Act aims to promote the sustainability of local communities. The Act is designed to strengthen the role of communities and provides a simple process by which the ideas generated by local communities are fed through their local authority to Central Government. s well as enabling local communities and local authorities to make suggestions for Government action, the Sustainable Communities Act also ensures that communities are better informed about the public funding that is spent in their area. New "Local Spending Reports" provide quick and easy access to information about where public money is spent. This will enable local authorities, their partners and communities to take better informed decisions about the priorities they choose to pursue to promote the sustainability of their local community.							✓



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		Flood Risk	Climate Change	Water Quality	Biodiversity	Multifunctional Land Use	Recreation	Sustainable Development/Housing Growth	
Local	Catchment Flood Management Plans	Catchment Flood Management Plans (CFMPs) give an overview of the flood risk across each river catchment and estuary and recommend ways of managing those risks now and over the next 50-100 years. By considering all types of inland flooding, from rivers, ground water, surface water and tidal flooding, they take into account the likely impacts of climate change, the effects of how we use and manage the land, and how areas could be developed to meet our present day needs without compromising the ability of future generations to meet their own needs. They provide a strategic planning tool through which the Environment Agency works with other key decision-makers within a river catchment to identify and agree policies for sustainable flood risk management.	✓						
	River Basin Management Plans	River Basin Management Plans (RBMPs) seek to implement the aims of the Water Framework Directive (WFD) within England and Wales to integrate the management of water with land use planning, biodiversity, flood risk management, tourism, leisure, recreation and health and agriculture. These are achieved by devising a Programme of Measures (PoMS) to be undertaken by different organisations over the next six years. In England and Wales, the RBMPs (11 in total) were published by the Environment Agency in December 2009 and have been developed in consultation with a wide range of organisations and individuals, to plan water management in the river basin districts over the next six years (up to 2015).			✓	✓			
	Local Biodiversity Action Plans	Local Biodiversity Action Plans (LBAPs) were proposed as a way of stimulating effective local action for national priorities identified in the UK Biodiversity Action Plan, as well as for species and habitats which are particularly cherished or valued in local areas. Each Local Biodiversity Action Plan works on the basis of a partnership to identify local priorities and to determine the contribution they can make to the delivery of the national Species and Habitat Action plan targets. LBAPs help to: <ul style="list-style-type: none"> • ensure that nationally and locally important species and habitats are conserved and enhanced; • increase public awareness of the importance of biodiversity and the role it can play in areas such as health, education, regeneration and sustainable development; • involve relevant bodies and individuals; • refocus the tremendous conservation work currently undertaken by many groups and individuals; • stimulate new biodiversity projects; and • attract funding for biodiversity action; and provide research information on biodiversity enabling politicians and policy makers to make informed choices 				✓			
	National Indicator 188 (Planning to Adapt to Climate Change)	National Indicator 188 (NI 188) is designed to measure how well local authorities are assessing and addressing the risks and opportunities of a changing climate. It covers managing the risks to service delivery, the public, local communities, local infrastructure, businesses and the natural environment. Although it concentrates on the local authority, it also extends to action by members of the Local Strategic Partnership.		✓					
	National Indicator 189 (Flood & Coastal Erosion Risk Management)	National Indicator 189 (NI 189) is designed to measure the progress of local authorities in delivering agreed actions to implement long term flood and coastal erosion risk management (FCERM) plans; these plans are Shoreline Management Plans and Catchment Flood Management Plans (CFMPs). Adoption of CFMPs and Shoreline Management Plans should inform Regional Spatial Strategies and other plans.	✓						
	National Indicator 197 (Biodiversity)	National Indicator 197 (NI 197) measures the performance of local authorities at protecting and improving their local biodiversity. It is a calculation of the "proportion of Local Sites where positive conservation management has been or is being implemented". Biodiversity forms a part of many other National Indicators but NI 197 is the only indicator which directly measures the results of local authority actions on wildlife. In particular it covers sites that have been designated for their nature conservation or geological diversity. These sites may be known under varying terms in different local authorities but in London are generally known as 'Sites of Importance for Nature Conservation'.				✓			



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