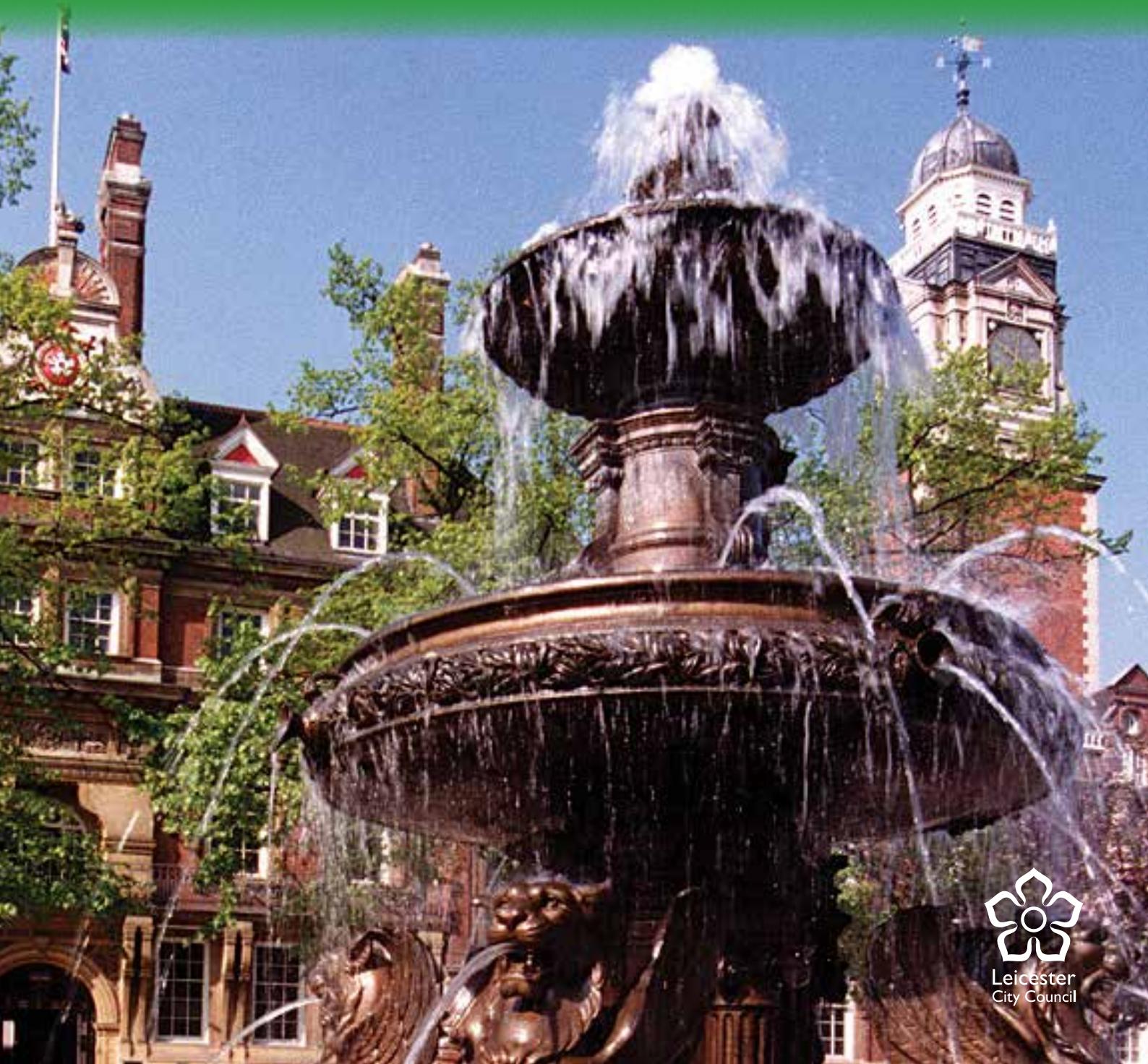


Leicester City Council's

Climate Change Adaptation Plan

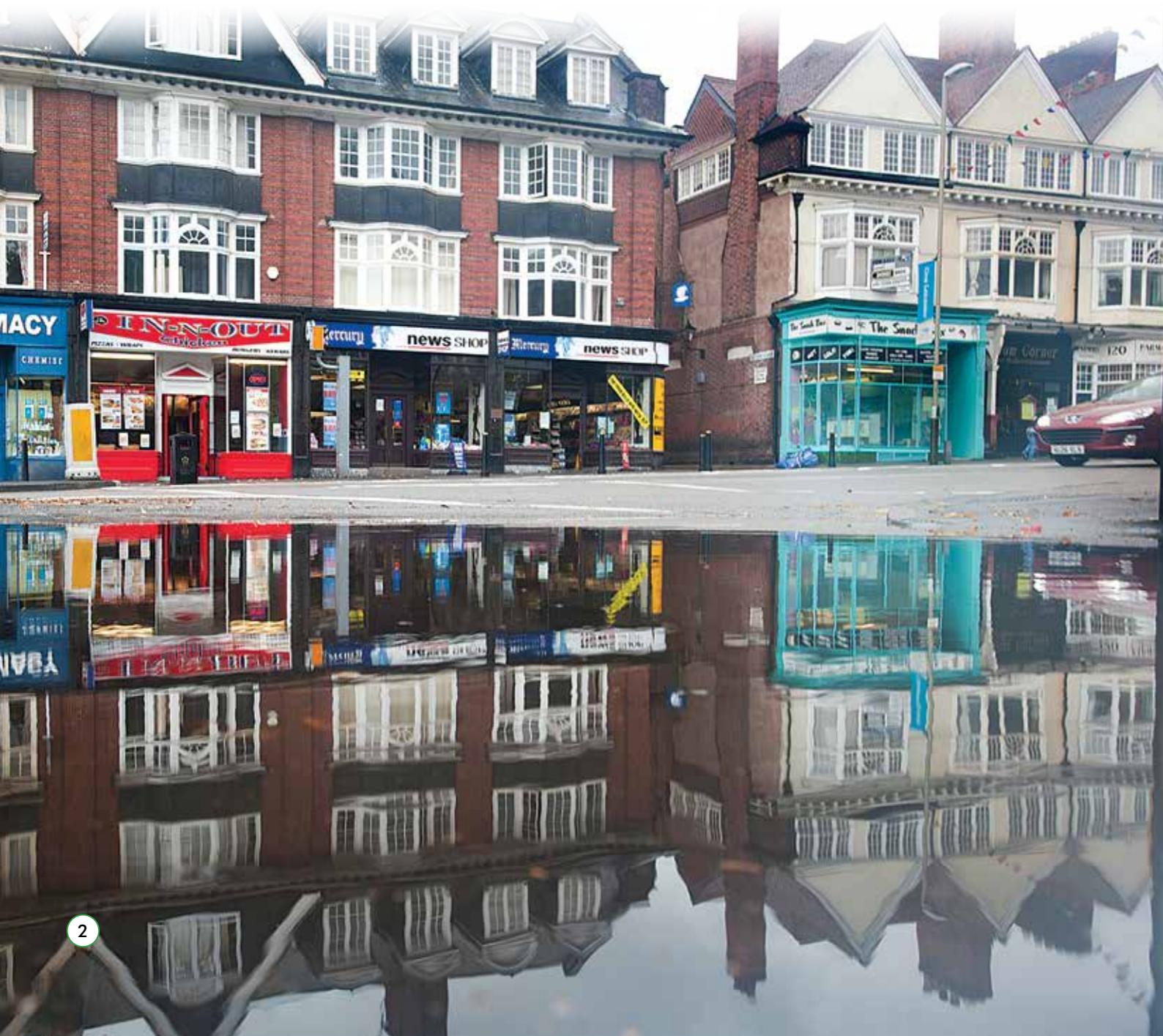
November 2013



Why is Leicester City Council adapting to climate change?

Already the UK is experiencing changes to its climate, resulting in more extreme weather events. UK Climate Projections 2009 data for the East Midlands suggests that, by the 2050s the region may see an increase in the average summer temperature of around 2.5°C, and a decrease of winter temperatures of around 2.2°C;

there is likely to be more rain in the winter and less rain in the summer. These changes can affect the ability of the council to deliver its services, and put people and places at risk, especially the more vulnerable in society. As part of its risk management approach, the council has addressed this by producing an Adaptation Action Plan.



Background to the plan

The development of the LCC Adaptation Action Plan began in 2006. Following widespread consultation with key LCC officers and Senior Managers, potential risks to Council services from future climatic change were identified and an Adaptation Risk Register was developed. These risks were then scored using a risk assessment methodology, a combination of the LCC Corporate Risk Assessment and the Eco-Management and Audit Scheme (EMAS) Significance Matrix. From this process, issues were identified that were considered to require immediate attention to reduce the impact of future climate change.

These issues were categorised under 3 Significant Effects. These are:

- flash flood Risk
- summer Heat waves and Prolonged Periods of Increased Average Temperatures
- reduced Summer Water Availability

A series of actions were then developed to respond to the three areas described previously. The plan has been updated regularly since it was developed to reflect the changing work of the council to adapt to climate change.



Leicester City Council adapting to climate change

Local Climate Impacts Profile

During the summer of 2008, Leicester City Council participated in the 'Local Climate Impacts Profile' (LCLIP). This project sought to assess the impact of weather on the delivery of LCC services and infrastructure between 2000 and 2008. The full findings of this study were published and are available on the Leicester City Council Website Environment pages. Between 2000 and July 2008, the Leicester City area experienced a total of 102

weather events that affected council services to some extent. Storms and high winds have been the most frequent weather event. In total, these events cost Leicester City Council £3.56 million, and have severely impaired the council's service provision on several occasions. Weather events have also benefited the council; mainly due to increased attendance at council run events and the recent trend of reduced gritting requirements.

Climate Change Supplementary Planning Document (SPD)

A supplementary planning document has been developed to support the implementation of relevant Core Strategy policies on climate change mitigation and adaptation relating to buildings, travel and other aspects of land use. The purpose of the Climate Change Supplementary Planning Document (SPD) is to provide practical advice to planners, architects, developers and Leicester City Council officers on how to address the issue of climate change in relation to new development. The document was published in January 2011 and can be accessed here <http://www.leicester.gov.uk/your-council-services/ep/planning/plansandguidance/ldf/spd/climate-change-spd/>



Surface Water Management Plan Study - modelling & risk assessment phase.

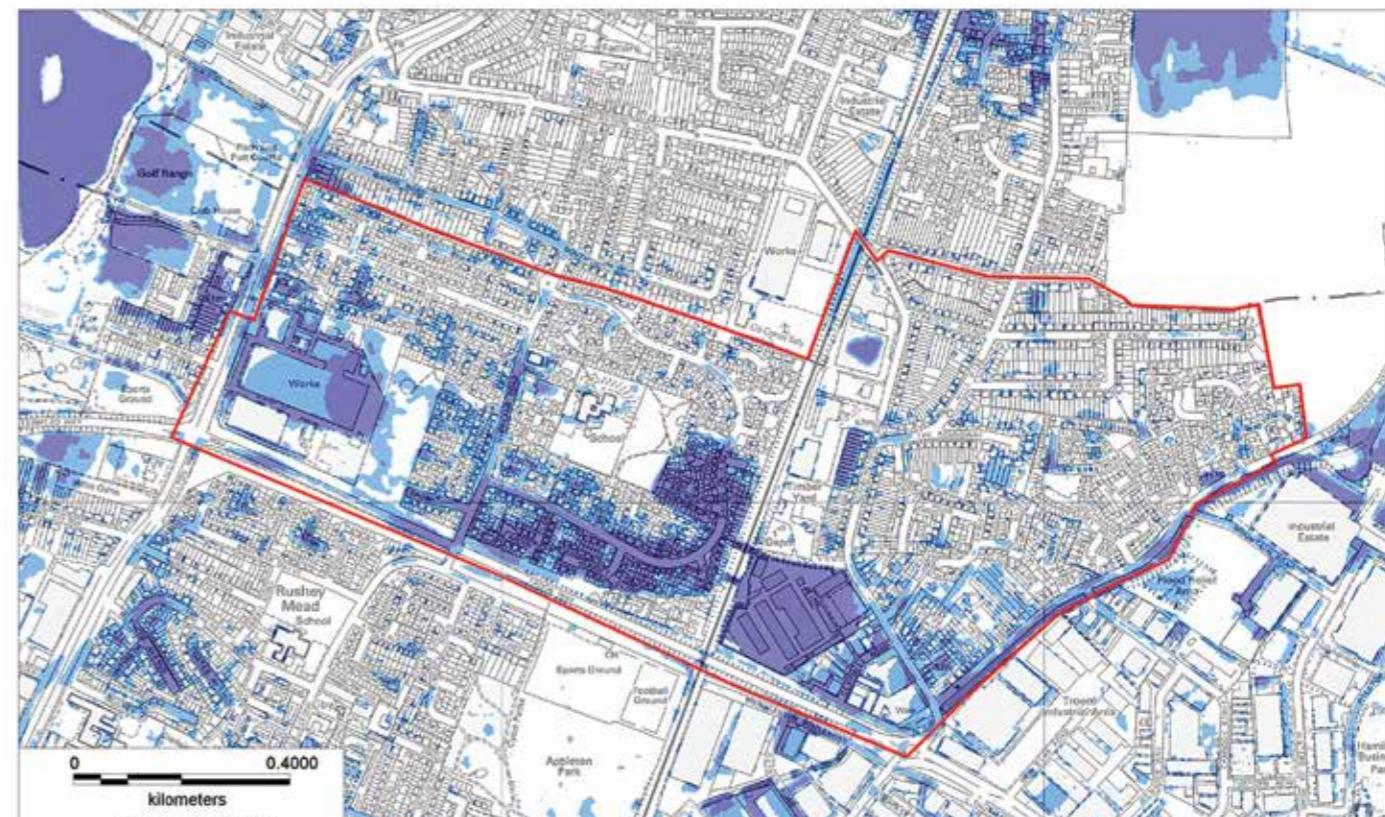
The Surface Water Management Plan (SWMP) Study has been funded and commissioned due to Leicester's status as a nationally significant area at risk of surface water flooding. The study has provided detailed evidence to identify the location of areas at risk from surface water flooding in the City. This has been combined with the Environment

Agency's flood risk mapping for the main river network to provide a comprehensive assessment of flood risk in the Leicester area. The city-wide modelling and risk assessment phase of the SWMP was completed in March 2012 and is now being used to inform the delivery phase. Actions around the delivery phase are contained within the action plan.

Map of flooding hotspots

Part of the initial phase of the SWMP involved identifying and mapping all flash flood hotspots within Leicester and identifying the causes of flooding such as lack of capacity, poor maintenance etc. The work that has been done and the maps and information that the council now has are invaluable in preparing the city to the effects of increased rainfall and river flooding from storm events. The mapping has identified priority areas

where improved flood management is required and has helped the council to understand where green infrastructure interventions would be beneficial. This mapping has also identified which communities should be engaged on developing their response to flooding to help increase the resilience of the people of Leicester. Further work will be undertaken in the delivery phase of the SWMP to explore these different areas.



City Wide Pluvial Model 1:200yr
Troon Way Critical Drainage Area

One of the outcomes of the modelling work done during the SWMP were a range of maps highlighting areas where flooding was most likely

Heat wave recovery plan

Understanding how a heat wave would affect the council and its services is essential to building a resilient organisation. Being able to advise people on how to keep cool and looking after the vulnerable such as the elderly who live on their own or in care homes would all be part of the council's response. Cities are particularly

vulnerable to heat, due to the built up nature of the area, and a smaller amount of green and open space than more suburban or rural areas. A heat wave recovery plan forms part of the council's emergency plan. For this, the council uses the national advice and guidance developed by the Department for Health which is available at <http://www.dh.gov.uk/health/2012/05/heatwave-plan/>

Publish guidance for developers on SUDs & examples of SUDs

Sustainable urban drainage (SUDs) are drainage solutions that provide an alternative to the traditional engineered solutions that are often installed around new developments and in towns and cities. They can improve on these traditional approaches by imitating natural drainage systems which lower the flow of flood waters and can store more water at peak times. In this way the capacity

of an area to cope with flooding is increased, at the same time as improving water quality and enhancing amenity and biodiversity. Alternative drainage solution such as SUDs can help areas adapt to climate change and so the council encourages the inclusion of UD's by developments that are initiated within the City. To help with this, the council have published guidance for developer which will be published on the council's website shortly.



6

Adaptation to climate change in project guidelines for major projects

New Leicester City Council developments and major projects should include a risk assessment of the impacts of future climate change at the design stage. All major projects are managed through the major project guidelines. As part of the process, project managers are required to undertake a sustainability impact assessment (SIA). The SIA

tool takes managers through an assessment of their project and its risks in relation to climate change.

The Environment Team provide further advice to any project managers who identify that they need to investigate the impacts that a changing climate may have on their project.

Local food charter

In 2012, Leicester City Council led a partnership project to develop a Leicester Local Food Charter. The food charter encourages residents in Leicester to buy local food and be aware of the climate change impacts of their food purchases. The charter was launched in July 2012 and can be found here [http://www.leicester.gov.uk/your-council-services/ep/the-environment/greener-](http://www.leicester.gov.uk/your-council-services/ep/the-environment/greener-leicester/climate-change-action-programme/)

leicester/food-drink-charter. Leicester City Council continue to be involved in the development of an action plan that supports the local food charter, and this project is captured now in the City Wide Programme of Action on Climate Change. [http://www.leicester.gov.uk/your-council-services/ep/the-environment/greener-](http://www.leicester.gov.uk/your-council-services/ep/the-environment/greener-leicester/climate-change-action-programme/)



7

	Project title	Description	Current progress update	Lead service area	Status		Project title	Description	Current progress update	Lead service area	Status
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Reducing the impact of flooding on council services and infrastructure

1	Surface Water Management Plan (SWMP) Delivery Phase	The evidence that has been produced as part of the SWMP process will be used to identify options for managing flood risk in the city, bring forward flood risk management initiatives and improve the City Council's responses to flooding.	The results of the SWMP Study will be used in various ways both feeding in to on-going work on flood risk management and into new projects and statutory requirements that will increase the City's resilience to flooding. Any distinct projects are mentioned as so in the columns below. Detailed analysis of areas identified as being at increased risk of surface water flooding is underway and options are being identified to manage or reduce the flood risk in these areas.	Planning, Transportation and Economic Development	On-going
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2	Local Flood Risk Management Strategy (LFRMS)	As a Lead Local Flood Authority, the City Council has responsibility for developing a Local Flood Risk Management Strategy for their area covering local sources of flooding.	A programme of work with milestones is in place. Key statutory actions have already been completed including the preparation of a Preliminary Flood Risk Assessment, establishing governance and partnership arrangements and preparation of register of critical assets that have a significant effect on flood risk. Work is now underway to prepare the formal strategy document outlining the current and future direction and actions we propose to take to manage flood risk in the City. Work is also underway to co-ordinate our activities with flood risk management partners such as the Environment Agency and Severn Trent Water. Consultation on the Local Flood Risk Management Strategy is being prepared.	Planning, Transportation and Economic Development	On-going
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3	Develop community engagement plans	Part of the responsibilities of a lead local flood authority are to ensure that communities who live in areas that could potentially be affected by floods are informed and understand how they can prepare and become more resilient to flooding.	Working with colleagues at the Local Resilience Forum and the Environment Agency, Leicester City Council have developed a Community Engagement "toolkit". A community engagement exercise took place in the Tudor Road area of the city in May this year. Other areas at high risk of flooding have been identified and a programme is being developed to visit each area in turn.'	Planning, Transportation and Economic Development	On-going
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Reducing the impact of flooding on council services and infrastructure

4	Develop an action plan based on the commendations within the SWMP	There are a number of actions contained within the SWMP final report that detail how Leicester can improve its response to flooding. An action plan will be developed that incorporates these recommendations.	The action plan will form an essential part of the wider Local Flood Risk Management Strategy and will summarise the actions we have decided to implement for the delivery phase of the SWMP. The outputs from the detailed analysis of flood risk areas and options appraisal will be used to inform this. The Northfields flood Alleviation Scheme is the first scheme to be identified to go ahead starting with feasibility work this winter.	Planning, Transportation and Economic Development	On-going
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5	Establish arrangements for the approval and adoption of Sustainable Urban Drainage Systems (SuDS)	As a result of the Flood and Water Management Act 2010, Leicester City Council will become responsible for approving, adopting and maintaining drainage plans and SuDS schemes that meet the National Standards for sustainable drainage.	The outcome from the national consultation exercise on the legislation to establish SuDS Approval Bodies (SAB's) has not yet been published. This requirement is expected to be introduced in April 2014 for new developments and will be completely separate from the requirement to gain planning permission.	Planning, Transportation and Economic Development	Responsibility is likely to come into force in April 2014.
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6	Manage development to reduce erosion from surface water flooding	Devise standards for using tools such as strategic location of planting in new developments at risk of flooding to minimise the risk of erosion caused by floodwater.	The outputs from the SWMP study include directions and velocities of flood flow for different scenarios. That information could be overlaid with information on the drift and bedrock in the city to show areas where there could be high velocities and weak rocks.	Planning & Economic Development	Project on hold due to lack of resources.
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7	Buildings risk assessment analysis	To build a picture of which buildings within the council's stock are most vulnerable to climate change.	A process for understanding which buildings are most at risk from changes in the climate has been piloted and is planned to be rolled out to all council buildings. The pilot trialled a self-assessment process which would mean each responsible officer in a council building could complete the assessment themselves.	Environment Team & Property	Project to be completed by the end of 2014/15.
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	Project title	Description	Current progress update	Lead service area	Status
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Reducing the impact of flooding on council services and infrastructure

8	Develop design codes for Ashton Green	To inform the development of Ashton Green (2,500 homes) two documents will be drafted, Green Infrastructure Strategy and Design Guidance. Both documents will build on the vision of Ashton Green as a sustainable place to live and provide details of how the design will reduce its impact on the environment and adapt to climate change.'	The first draft will be completed by January 2014, however, they will then be discussed with appointed developers (who will take at least 6 months to be appointed) and so changes are likely. The codes aim to be finalised by December 2014.	Urban Design (Nicola Handa)	December 2014
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9	Map of drainage assets	Create a citywide map of all drainage assets (culverts, gullies etc.) Once complete this will allow a more effective review of the drainage maintenance scheme.	All footway gullies and about 70% of the road gullies have been recorded. The gullies are recorded as a layer on a map of the City. The information has yet to be checked for the quality of the information.	Planning, Transportation and Economic Development	On-going
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10	Improvement to storm sewer network	Improvements are sought where possible to the existing storm sewer network to increase capacity to accommodate higher flow rates.	Surface Water Management Plan outputs have highlighted areas where existing storm water sewer network needs to be improved. This information is being shared with Severn Trent Water Limited as they are responsible for the sewerage network. Moving on to the implementation phase of the Surface Water Management Plan, schemes will be identified and prioritised based on the available funding.	Planning, Transportation and Economic Development	On-going
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	Project title	Description	Current progress update	Lead service area	Status
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Reducing the impact of flooding on council services and infrastructure

11	Emergency response to flooding	Ensuring that a procedure to cover the emergency response to a major flood event affecting the city wide road network is included in the Business Continuity and Emergency Plan for Leicester City Council.	The corporate flooding emergency plan is available and managed by the Emergency Management Team. Last year 'Kingfisher' exercise was to test the plan and it worked well. Highway Management have its own action plan to deal with the flooding events. The next step is to undertake the community engagement to offer advice on the self-help measures.	Planning, Transportation and Economic Development	On-going
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12	Roadside maintenance	Review of maintenance regimes for the clearance of roadside gullies, culverts and the drainage network and amend as necessary to cope with the changing climate. This can only take place once the citywide drainage assets have been mapped and flood hotspots identified.	Flood hotspots have been identified through the Surface Water Management Plan Study. Our maintenance regime has yet to be reviewed. Some good practices emerged from the 3-cities (Derby, Leicester and Nottingham) joint Drainage Asset Management Project. Further information can be found in the Good Practice Guide. A gully replacement programme has been started to replace old Victorian gullies with new larger ones in areas of higher flood risk.	Planning, Transportation and Economic Development	On-going
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Reducing the Impact of summer heat waves and increased average temperature on Council Services and Infrastructure

13	Green roofs	Investigate and cost opportunities to retrofit 'cool' or green roofs to council buildings as part of any refurbishment, renewal or maintenance programme to help mitigate the Urban Heat Island effect.	A paper was brought to the board in July 2011 detailing two feasibility studies that had been undertaken into retro-fitting green roofs. These two examples were not financially viable but investigations will continue to be made into other potential sites for green roofs on council owned and developed buildings.	Property & Environment Team	On-going
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	Project title	Description	Current progress update	Lead service area	Status
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Reducing the Impact of summer heat waves and increased average temperature on Council Services and Infrastructure

14	Shading the urban environment	Review the opportunity for the provision of trees to shade and cool urban areas through evapotranspiration as part of the LCC tree strategy.	The Environment team and the Trees and Woodlands team will be taking forward the creation of a Tree Strategy over the next year.	Environment Team Trees and Woodlands Team	During 2013/14
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15	Develop a heat vulnerability map	The Heat Vulnerability Map will highlight the areas in Leicester that are most vulnerable during heat waves. The map will contain overlays of areas with several indicators of vulnerability such as built and green space coverage, areas of social deprivation etc. The resource will be immensely useful to Leicester City Council and community partners when they need to prioritize areas in the greatest need of resources during a heat wave. It can also be used to plan adaptive responses in the long term (for e.g. planning green infrastructure projects).	This mapping project is under development by the Environment team.	Environment Team	During 2014/15
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(12)

	Project title	Description	Current progress update	Lead service area	Status
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Reducing the Impact of summer heat waves and increased average temperature on Council Services and Infrastructure

16	Map of drainage assets	Create a citywide map of all drainage assets (culverts, gullies etc.) Once complete this will allow a more effective review of the drainage maintenance scheme.	All footway gullies and about 70% of the road gullies have been recorded. The records are still to be transferred to create a citywide map. This will then inform effective maintenance regime.	Planning, Transportation and Economic Development	On-going
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17	Publish a Green Infrastructure Strategy	Publish a Green Infrastructure Strategy to demonstrate how sustainable management of our natural environment can deliver benefits to residents such as improved air quality, reduced flood risk and increased biodiversity.	One way of building the city's resilience to climate change effects, such as increased flooding and hotter summers is through natural interventions such as planting trees for shade and to strengthen the ground against subsidence caused by flooding. Green Infrastructure encompasses this approach and describes the method of integrating a network of high quality green and blue spaces and other environmental features at a range of spatial scales.	Conservation & Nature	March 2014
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18	To ensure any decision making to do with the city centre accommodation strategy considers climate change adaptation considerations.	Providing advice and guidance to the group responsible for overseeing the city centre accommodation strategy.	A member of the Environment team is on the advisory group for the relocation project. There have been a set of standards developed for any new building.	Environment Team	On-going
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Reducing the Impact of lower summer water availability on Council Services and Infrastructure

19	Tree stock inspection	Regular inspection and maintenance to be carried out on the existing tree stock to reduce the risk of damage to private property from subsidence.	The aims and obligations of this action have been met and regular inspection and maintenance continues to be carried out.	Parks and Green Spaces	On-going
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(13)

	Project title	Description	Current progress update	Lead service area	Status
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Reducing the Impact of lower summer water availability on Council Services and Infrastructure

20	Consideration of tree locations	Specialist advice should be sought from the Trees & Woodlands Team and careful consideration given to the location and species of new trees to be planted by LCC to ensure they are at a sufficient distance from existing buildings and infrastructure to reduce subsidence risk to an acceptable level.	Anyone involved in tree planting at LCC is asked to seek advice from this team. The majority of tree planting proposals pass by the team for comment, although the process for this happening may need to be reviewed to ensure it is robust. This could be incorporated into the development of the Tree Strategy.	Parks and Green Spaces	On-going
21	City-wide drought plan	Develop a Leicester specific Drought Resilience Plan.	<p>It would be beneficial to have a drought resilience plan for Leicester City Council Services with the big water users reducing their water usage in a BAU scenario.</p> <p>1. First Step will involve identification of key water users and find out any existing actions they have in place to reduce water use.</p> <p>2. Another action would be looking at appropriate planting of drought resilient species within the landscape.</p>	Regeneration Transport & Highways, Parks and Green Space & Environment Team	To be developed in 2013/14
22	Develop Leicester City Council-specific emergency drought measures	Ensure that city council services have measures for drought preparedness in their business continuity plans	Individual BCP's should be in place for each Service within Divisions. The responsibility for ensuring they are and they are fit for purpose rests with Divisional Directors. A BCP should be designed to respond to any incident that would affect service delivery including fire, flood or drought.	All Directors	On-going

Notes

Further Information

For more information on the council's plans to adapt to climate change please contact:

Environment Team
Leicester City Council
environment@leicester.gov.uk

