

Appendix 4: Climate Change Adaptation Action Plan

Introduction

What is it? This is Part 2 of Leicester City Council's Climate Change Action Plan focused on Adaptation. Climate change adaptation is the ar and preparation for, key impacts of climate change across the complete range of LCC services, our estate and within our local area such a summers, milder wetter winters and more frequent extreme weather events such as localised flash flooding, heat waves and increased storm of the Climate Change Action Plan covers relates to actions to mitigate greenhouse gas emissions and was adopted in May 2007.

Why is it important? Leicester City Council has a long history of commitment to the environment and tackling global climate change at Leicester's Climate Change Strategy was published in 2003, which set a 50% CO2 reduction target from 1990 levels by 2025. The Council Nottingham Declaration on 2nd November 2006. This committed the organisation to set a greenhouse gas emission reduction target to c from its' own operations and develop plans with partners and local communities to progressively address the causes and effects of climate commitment is further reflected in the development of Leicester's Sustainable Community Strategy that focuses on the 25-year vision to ma Britain's sustainable city . The aim is to improve the quality of life for all residents, enhance the prosperity of the city and develop Leicester i clean and green city well adapted for the future. This action plan will help deliver those objectives by preparing LCC services to adapt to fi change.

How has it been developed? Following widespread consultation, with key LCC officers and Senior Managers, to highlight potential risk services from future climatic change, an Adaptation Risk Register was developed. The risks identified were then scored using a risk methodology, a combination of the LCC Corporate Risk Assessment and EMAS Significance Matrix (Appendix 2A). From this process 5 identified (scoring 18) that were considered to require immediate attention to reduce the impact of future climate change.

These 5 issues can be categorised under 3 Significant Effects

1. Flood Risk

2. Summer Heatwave's and Prolonged Periods of Increased Average Temperatures

3. Water Availability

5 Key Objectives were then developed to respond to each of these Significant Effects. A series of service level actions or responses, id officer recommendations, case studies and best practice guidance, have been developed to deliver each of the objectives. (See Below) **reports, policies and programmes have been taken into account in the development of this action plan and the plan will be su ongoing review to ensure that no contrary actions are developed.**

Each action has been assessed (High, Medium or Low) as to it's impact on the significant effect. The progress to date identifies if it is a ne action and the resource requirement indicates the implementation cost: either a No Regret measure, Low Regret measure or Win-Win measu measures indicate actions that will have benefit regardless of the extent of climate change, Low regret measures deliver the greatest benefi change develops and Win Win measures deliver additional benefits other than climate change adaptation (See Appendix 5 for a more detailed

How will it be managed? The 3 Significant Effects and 5 Objectives will be added to the EMAS Significant Effects Register and the Climate Adaptation Action Plan managed within the EMAS system. **The actions will be monitored and reviewed by the Environment Team timescales given and any progress updated.**

Action No.	Impact on significant effect	Description of Action	Service Area with Named Responsible Officer	Timescale for Action to be Completed	Progress to Date (New or Existing Action)	Resource Requirements (No regret, Low Regret or Win Win measure) No regret measures indicate actions that will have benefit regardless of the extent of climate change, Low regret measures deliver the greatest benefits as climate change develops and Win Win measures deliver additional benefits other than climate change adaptation
1		Flash Flooding				
1.1		Objective: Reduce the risk and impact of flooding across the city wide road network				
1.1.1	High	Review maintenance regimes for the clearance of roadside gullies, culverts and the drainage network and amend as necessary to cope with changing climate. This can only take place once the citywide drainage assests have been mapped and flood hotspots identified (See 1.1.5 and 1.1.6)	Highway Management (Alan Adcock and Bob Holt)	01/09/2009 This is dependent upon 1.1.5 being completed	Existing. This information will update the existing Maintenance regime. Mapping of drainage assets will begin Apr-08. Once complete, a fully automated rolling maintenance programme, using GIS equipment to identify and record work completed, will be established based on areas of greatest flood risk	This is a No Regret measure. The mapping technology has already been purchased and a more effective maintenance regime for existing staff will be developed once all gullies are mapped to reduce flood risk
1.1.2	High	Ensure 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 the LCC	Emergency Management and Planning and City Highways (Alan Adcock)	Sep-08	New. Alan Adcock is drafting a procedure for risk management June-08	This is a No Regret measure. Key officer time. Mark Fortune to liaise with Alan Adcock, Risk Management and Emergency Planning to deliver the action

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1.1.3	High	Develop a Supplementary Planning Document relating to Climate Change and Sustainable Design and Construction. This will include advice on conserving energy and water resources, minimising flood risk, sustainable construction methods to minimise carbon emissions to help create a built environment which can adapt to the effects of future climate change	Planning Policy and Design, Urban Design, Environment Team	Dec-09	New. Work has started on a Planning Advice Note on SUDs and Green Roofs. Further Advice notes will be developed on other sustainable design elements and then drawn together with any changes in national policy in an SPD	This is a No Regret measure. This work will be co-ordinated by the Planning Policy and Design Team with assistance from the Environment Team and Urban Design. The SPD will be developed by existing LCC officers and published in 2009

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1.1.4	High	Seek improvements where possible to the existing storm sewer network to increase capacity to accommodate higher flow rates	Planning and Policy, Highway Management (Alan Adcock & Bob Holt)	Ongoing	New. Work yet to be started on this action	This is a Low Regret measure. This work will be informed by the data gathered in 1.1.2 and from the recommendations of the Pitt Report published later this year
1.1.5	Medium	Create a citywide map of all drainage assets (culverts, gullies etc) Once complete this will allow a more effective review of the drainage maintenance regime (See 1.1.1)	Highway Management (Alan Adcock & Bob Holt)	May-09	New. A Flood Risk Strategy is currently being developed to improve LCC management of flood risk. Work will start to map all gullies using GPS equipment from Apr-08	This is a No Regret measure. Existing vehicles will be fitted with equipment to map the all the gullies and 1 officer will be used to create the database (Staff resource is already in place to undertake this work)
1.1.6	Medium	Identify and map all flash flood hotspots within Leicester and identify the causes of flooding such as lack of capacity, poor maintenance etc. This in conjunction with 1.1.5 will result in a more effective maintenance regime (see 1.1.1)	Highway Management (Alan Adcock & Bob Holt)	Ongoing	New. Flood events will be recorded on the database described in 1.1.1	This is a No Regret measure. This work will be undertaken by existing staff as flood events are reported
1.1.7	Medium	<p>1. Research the design of highway infrastructure to reduce the impact of future climate change. (This may include the use of porous road surfaces and pavements, reviewing the use of Local Environmental Works Programmes to slow stormwater runoff, implementing new drainage methods)</p> <p>2. Identify and cost pilot schemes as part of the Transport Asset Management Plan</p> <p>3. Local Environmental Works Programme to reflect the trial findings for new highway infrastructure design</p>	Regeneration, Highways and Transportation (Alan Adcock, Mark Wills, Mike Pepper)	<p>Action 1. Jul-2009</p> <p>Action 2. Jul-2010</p> <p>Action 3. Oct-2008</p>	New. Establish a project management team from Regeneration, Highways & Transportation. Local Environmental Works Programme will be reviewed in summer 08 and will include consideration of the need to adapt to the changing climate.	This is a No Regret measure. Key officers to collect data on innovative highway design from existing research and specialists. Use this information to create a Best Practice programme. Develop a small scale pilot scheme within existing programme

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1.1.8	Medium	Pending the completion of action 1.1.2, identify projects or pilot schemes to help reduce the impact of localised flooding in flood hotspots. (Identify council owned open space that could be used for temporary floodwater storage during extreme flash flood events. Parks, Sports grounds etc)	Parks and Green Space and Property Services, Highway Management, Emergency Planning	Ongoing	Existing. Some schemes to reduce the impact of fluvial flooding are in place. Where applicable schemes to reduce pluvial flooding will be developed following 1.1.2	This is a No Regret measure. The resource requirements are unknown at this stage until suitable data from Action 1.1.2 has been collected
1.1.9	Medium	Identify and cost potential opportunities to retrofit green roofs, Suds, and stormwater attenuation systems to existing public buildings and developments as part of existing Renewal/Refurbishment programmes to be showcased as best practice examples.	Property, Risk Management, Environment Team (Mark Fortune)	May-10	New. Work yet to be started on this action	This is a Win Win measure. Mark Fortune to liaise with Property and Risk Management to develop possible Best Practice/Case Study examples
1.1.10	Low	Set up a forum for the management of surface water flood management in partnership with the EA, water companies and other utilities and the highways agency.	Highway Management (Alan Adcock)	Ongoing	Existing. The Local Resilience Forum have a Flood Group chaired by the EA which currently meets quarterly (Bob Holt attends)	This is a No Regret measure. Key officer time to attend meetings to co-ordinate co-operation between different agencies. Strategy and workload will be informed by the findings and recommendations of the Pitt Report

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2		Summer Heatwaves and Prolonged Periods of Increased Average Temperatures				
2.1		Objective: Future development of the built environment to be 'climate proofed'				
2.1.1	High	New LCC developments and major projects to include a risk assessment of the impacts of future climate change at the design stage	Property Services and Environment Team	May-09	New. Work yet to be started on this action	This is a No Regret measure. Maurice Brice and the Environment Team to develop a pro-forma to assess the risks from future climate change to allow project managers to make informed decisions as to what design modifications may be required
2.1.2	High	Develop a Supplementary Planning Document relating to Climate Change and Sustainable Design and Construction.	Planning Policy and Design, Urban Design, Environment Team	See action 1.1.3	New. See action 1.1.3	This is a No Regret measure. See action 1.1.3

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2.2		Reduce the impact of the Urban Heat Island (UHI) Effect				
2.2.1	High	Develop a Supplementary Planning Document relating to Climate Change and Sustainable Design and Construction.	Planning Policy and Design, Urban Design, Environment Team	See action 1.1.3	New. See action 1.1.3	This is a No Regret measure. See action 1.1.3
2.2.2	High	Ensure that a heatwave recovery plan forms part of the council's emergency plan. (air pollution incidents etc)	Emergency Management and Planning	May-09	Existing. A Current National Heatwave Plan produced by the NHS is available on the Intranet	This is a No Regret measure. Mark Fortune to liaise with Emergency Planning to ensure Key officers are aware of best practice guidance
2.2.3	Medium	Review opportunity for the provision of trees to shade and cool the urban areas through evapotranspiration as part of the LCC Tree Strategy	Parks and Green Space, Urban Design, Trees and Woodland, Highway Management	May-09	Existing. Manifesto commitments require planting of up to 10,000 trees. Barbara Barnes (Urban Design) will commence work on a tree strategy for LCC summer 2008	This is a Low Regret Measure Street trees cost around £440 per tree to plant and maintain. Careful consideration is needed to find suitable locations within available urban space for new trees. Other avenues are currently being explored as described in a report which went to political cabinet in 2008
2.2.4	Medium	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 UHI effect	Property Development, Property Management and Planning and Policy and Design, Environment Team	Ongoing	New. Currently not included in any refurbishment programme	This is a Low Regret Measure. Environment Team to work with Property Services to investigate potential opportunities. Resource implications not know at this time

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3		Reduced Summer Water Availability				
3.1		Objective: Reduce subsidence risk to the councils property portfolio and infrastructure				
3.1.1	High	Identify buildings and infrastructure susceptible to subsidence risk and introduce regular maintenance checks to check for damage. Carry out preventative work where required to reduce damage	Property Management, Housing improvement and Repairs Service, Housing Renewal	Ongoing	New. Work yet to be started on this action	This is a No Regret measure. Property Services to produce a Guidance Note relating to building subsidence for all Building Responsible Officers and Managers with instruction to conduct an annual inspection of their building and inform Property Services if they suspect any subsidence. Property services will also include subsidence checks in their regular inspection regime
3.1.2	High	Investigate and cost best practice examples of suitable foundation design to cope with the increased likelihood and extent of subsidence and heave resulting from warmer wetter winters and hotter summers with reduced rainfall expected as a result of climate change	Planning, Policy and Design and Property Development, Development Control, Environment Team	Ongoing	New. Work yet to be started on this action	This is a Low Regret Measure. Project managers of major LCC projects will need to consider the implications of subsidence risk at the design stage. This will be included in Action 2.1.1 Maurice Brice and Mark Fortune to investigate best practice examples to inform guidance

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3.1.3	Medium	Specialist advice sought 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	Parks and Green Space, Urban Design & Trees and Woodland (Alan d'Albe)	Ongoing	Existing. Advice given by Alan d'Albe for the suitability of trees within a limited no. of LCC developments.	This is a Low Regret measure. Develop a method to ensure that any major project or development which includes landscaping gives due consideration to the suitability of trees and shrubs to reduce subsistence risk (Mark Fortune and Alan d'Albe). This is also well tied into the 10,000 trees programme.
3.2		Objective: Reduce the risk of damage to private property through subsidence caused or exacerbated by LCC owned trees				
3.2.1	High	Regular inspection and maintenance to be carried out on the existing tree stock to reduce the risk of damage to private property from subsidence	Parks and Green Space, Trees and Woodland, Highway Management, Adults and Housing (Alan d'Albe)	Ongoing	Existing. The Trees and Woodland team currently have 4 full time and 2 part time agency staff inspecting the Highways, Adults and housing and CYPS tree stock. Parks and Green space and Property's tree population are not reviewed as part of a regular maintenance programme.	This is a No Regret Measure. Trees within the curtilage of council dwellings are the landlords responsibility, Adults and Housing. The management of tree's on land owned by Property fall within their own remit.

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May-09 The database will be updated continuously from latest flood events

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