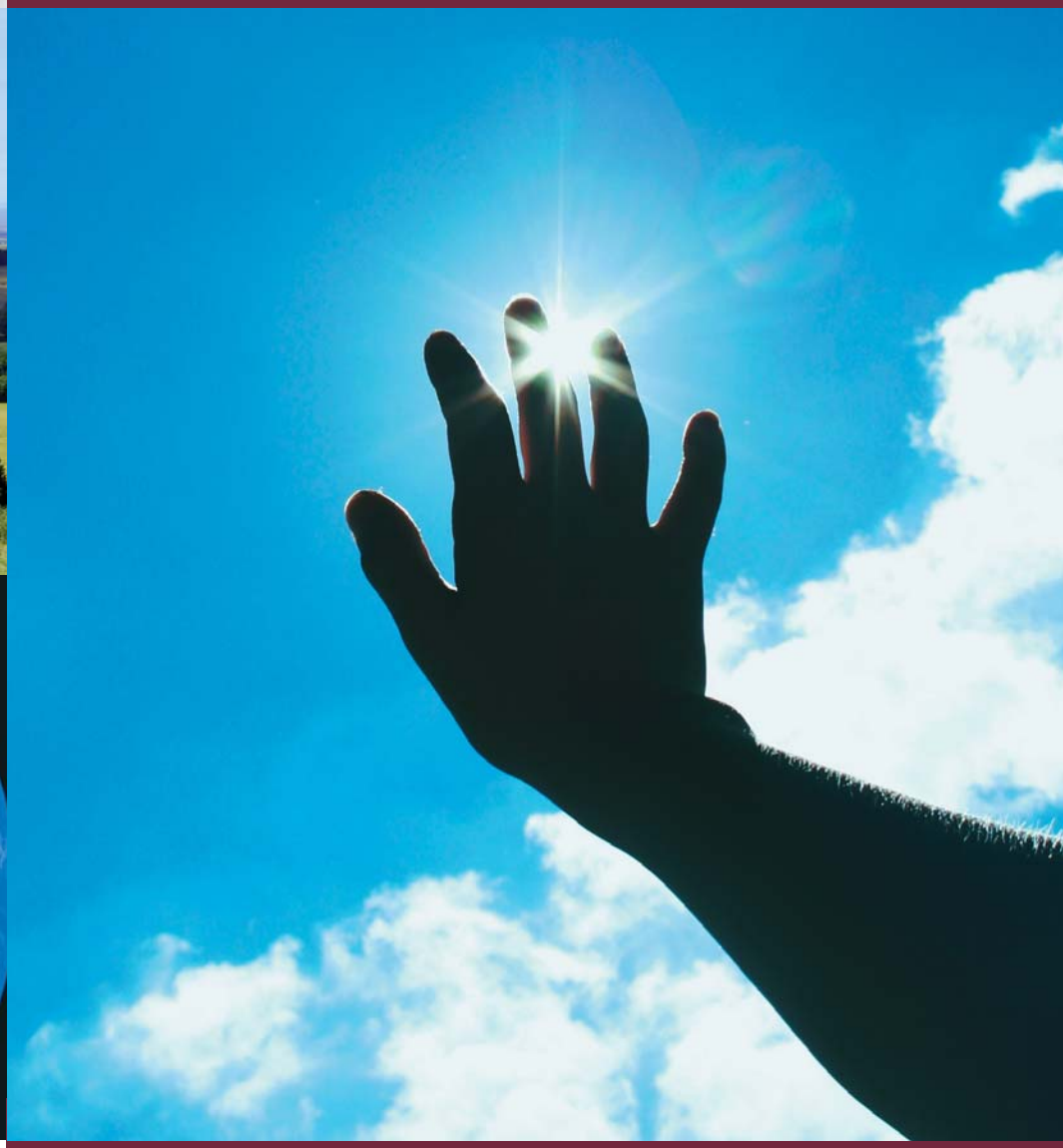
CLIMATE CHANGE ADAPTATION PLAN 2008-09

SOMERSET COUNTY COUNCIL



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CLIMATE CHANGE
ADAPTATION ACTION PLAN 2008-9

REPORT AND SUMMARY
APRIL 2009

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TABLE OF CONTENTS

1 Climate Change and the Need for Adaptation

The main facts about climate change are now well known and accepted by most of the scientific community:

- Climate change is happening and human beings are contributing to it
- Global temperatures are continuing to rise
- The current climate change is not part of the natural cycle - recent warming cannot be explained by the sun or natural factors alone
- If we continue to emit greenhouse gases, warming will continue and could lead to irreversible climate change
- Whatever we do to reduce emissions we are committed to at least several decades of climate change due to inertia in the climate system
- Ensuring that people, communities, infrastructure, and wildlife are resilient to the unavoidable impacts of these changes is termed climate change **adaptation**
- To avoid dangerous climate change will require a 60-80 % cut in greenhouse gas emissions by 2050 (termed climate change **mitigation**)

SCC is adopting a combination of mitigation and adaptation measures to deal with the challenge of climate change.

This report deals with adaptation actions planned by the Authority to prepare for the impacts of climate change, produced by individual services for the first time. It is not yet comprehensive but represents the first stage in the production of a comprehensive climate change adaptation action plan, which will be reviewed and updated annually.

2 Somerset County Council's Climate Change Strategy

The Council adopted its first Climate Change Strategy in 2008, 'Responding to Climate Change in Somerset' (referred to as "the Strategy").

The Strategy contains an introduction to the science of climate change and provides a summary of the information available on the anticipated local impacts of climate change in Somerset.

The document sets out a framework for action on climate change through engaging with partners and in the wider community of Somerset, and by taking action in service delivery.

Action will be achieved through the implementation of five commitments covering the causes and effects of climate change (mitigation and adaptation) within and outside the authority, and community leadership and engagement with communities, partners and business.

3 Climate Change and Impacts for Somerset

Possible climate change scenarios and impacts for Somerset and the South West are discussed and summarised in the Strategy, using data and information from a range of sources.

As discussed in the Strategy, UKCIP has released a new package of climate information (UKCP09) using recent advances in climate science to quantify better some of the uncertainties associated with climate modelling, and reflects the Met Office scientists' latest understanding of the climate system. This can provide users with climate projections, weather generator projections, marine projections and observed climate information.

While UKCP09 will enable better assessment of future flood risk at a local level, the headline weather and climate scenarios for Somerset and the South West as a result of global temperature rise are unlikely to change and are predicted to give rise to:

- Milder, wetter, winters
- Warmer, drier summers
- Increase in frequency of heavy rainfall events especially in winter
- Increase in stormy conditions particularly in winter

The impacts of these temperature and weather changes are summarised as increased incidence of:

- Flooding
- Heatwaves
- Drought

Flooding (coastal and riverine) remains the single greatest challenge posed by climate change to Somerset caused by:

- Sea level rise
- Increase in storms and gales
- Increase in winter precipitation
- Increase in frequency of heavy rainfall events affecting river catchments and surface water systems.

Using data from the Environment Agency, summary maps are presented in the Strategy which show land at risk of coastal and fluvial (river) flooding in Somerset, with the potential for approximately 6200 sq km of land under water as a result of the worst flooding event.

In addition, maps for the county of possible predicted temperature increases and precipitation are also shown for Somerset.

This information was used as the basis for identifying service level climate change impacts.

4 Legislative Framework

4.1 Climate Change Act 2008

The Climate Change Act 2008 creates a framework for building the UK's ability to adapt to climate change by establishing the following: the Government must report on the risks climate change poses to the UK every five years and publish a programme setting out how these impacts will be addressed. The Act also introduces powers to the Government to require public bodies and statutory undertakers to report on how they are assessing and addressing risks of climate change on their work, and set out what action they need to take in response. As part of this the Government will provide statutory guidance on how to undertake a risk assessment and draw up an adaptation action plan.

4.2 Local Area Agreement

The new Local Government Performance Framework devolves more power to local authorities with 198 National Indicators to assess progress, of which 35 are selected by each Local Authority for inclusion within a 'Local Area Agreement'. This then acts as the basis for a 3 year 'improvement programme'. One of these, 'Adapting to Climate Change' (NI 188), takes Local Authorities through a five stage process of assessing climate risks, developing an action plan to address those risks, through to implementation and monitoring (see later section on NI 188).

4.3 Planning Policy Statement 1 (Climate Change) and the Planning Act

Planning policy has a key role to play in delivering resilient communities and reducing vulnerability to climate change. The PPS1 Supplement now contains significant climate change adaptation elements, putting climate risk and vulnerability at the heart of the planning system. The Planning Act now contains a new duty on local authorities to ensure Local Development Frameworks take account of climate change adaptation.

4.4 Planning Policy Statement 25 (PPS25): Development and Flood Risk

PPS25 was published in December 2006 with the key aims to: "ensure that flood risk is taken into account at all stages in the planning process, to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk. Where new development is, exceptionally, necessary in such areas, the policy aims to make it safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk overall." A requirement of PPS25 is that Local Authorities prepare Strategic Flood Risk Assessments.

4.5 Civil Contingencies Act and Emergency Planning

The Civil Contingencies Act requires local authorities to undertake Local Risk Assessments taking a multi-agency approach through the Local Resilience Forum, which for this area covers Avon and Somerset.

From these risk assessments the Community Risk Register is produced which informs the risk response planning process and is reviewed annually to take into account changing risks.

Several of the risk categories considered are appropriate to climate change impacts: storms and gales, heat wave, drought and flooding. There are other indirect risk categories eg building collapse, failure of water infrastructure, failure of electricity supply, telecommunications etc.

This information can be used across the authority to help inform the production of prioritised risk assessments of vulnerabilities required under National Indicator NI 188.

4.6 Business Continuity Planning

Delivering Business Continuity plans by Local Authorities is also a key part of the Civil Contingencies Act.

Internal Business Continuity has been recognised as a Strategic Risk in the SCC Strategic Corporate Risk Register. SCC is committed to a process of business continuity management in the event of severe disruption to its services.

A Business Continuity Project is underway to incorporate business continuity planning into the service planning process and to include a template and guidance so that each group will produce business continuity plan. A rigorous reporting system is in place to monitor progress on this project.

Business continuity plans deal with a response to the consequence of the disruption (eg loss of premises, loss of utilities etc) from a range of disruptions, not limited to climate and weather (eg fire, flood etc).

The process of delivering Business Continuity Plans covers climate change adaptation through the requirement of the Civil Contingencies Unit themselves to contribute to a climate change adaptation plan for their Group.

5 The Role of Local Authorities in Climate Change Adaptation

Local Authorities play a key role in addressing climate change impacts, for a number of reasons recently identified during workshops with UKCIP:

- Maintaining service delivery
- Supporting vulnerable members of the community
- Exploiting business opportunities
- Managing risk
- Managing strategic assets
- Maintaining business continuity
- Avoiding unnecessary expenditure

The Nottingham Declaration website recommends Councils to take responsibility for adaptation from several viewpoints: as estate manager (own operations, buildings staff etc), as a service provider (effect on services to external customers), and community leader (external partnerships and projects).

Climate change is increasingly being addressed through conventional risk assessment methodologies and can be summarised across these areas as political risk, business risk, reputation at risk, financial risk, community risk (LGA publication: Be Aware, Be Prepared, Take Action 2008).

The financial risk of failure to adapt to climate change can be costly: Oxfordshire County Council recently carried out a Local Climate Impacts Profile and found that 36 severe weather events caused 260 incidents over 10 years adding a minimum of around £16m in additional unplanned expense to the county council. The summer floods of 2007 are estimated to have cost over £3bn nationally (Source: LGA publication above).

6 Adapting to Climate Change – What is Adaptation?

In the context of Local Authorities, climate change adaptation can be defined as the planned response to predicted impacts of unavoidable climate change. Effective adaptation involves the ongoing management of climate risks, as a continuous process.

The climate has always shown a degree of variation. There is a critical threshold for a given climate variable such as temperature or rainfall. When this threshold is exceeded an organisation or service is vulnerable to unacceptable impacts (eg heatwaves, widespread flooding) beyond the organisation's ability to cope. Responses to these extreme weather events on a widespread scale are planned for through the emergency planning process and business continuity planning. Some more localised or small scale extreme weather events, which can also have significant impacts eg on services, infrastructure and individuals, are also covered by this process.

As the climate changes and the climate variables reach extreme levels more often, the critical threshold is crossed more frequently, the ability of the organisation to cope is reduced, and emergency responses are required more frequently.

Emergency Planning and Business Continuity planning are continually reviewed in light of changes to weather patterns and predicted climate changes using updated risk information.

Emergency Planning deals with the response to an extreme weather event that is classed as an emergency: at the other end of the spectrum, a range of planned adaptation responses aim to put in place mechanisms to increase resilience and reduce vulnerability to climate change impacts, as well as examining opportunities and planning to exploit these. Using the example of flooding, mechanisms could include improving flood defences, avoiding siting development in a flood plain etc.

When considering climate change impacts it is important to recognise that the same hazard can have an impact at various levels eg flooding of a care home can impact on the building, on residents, and on management.

In addition, the impact of weather and climate are all dependent on time - adaptive responses need to be considered over different timescales. The likelihood of an event with a given probability will be greater the longer the time period considered. Climate change scenarios will affect the probability of many weather events.

For example a decision will be taken one year to build new premises, or let a new contract, which has long term implications: the specification, design and construction of a new building must therefore take into account projected impacts of climate change over its planned lifetime and in that particular location.

The ideal approach to adaptation consists of:

- Identifying current local vulnerabilities to climate and weather events
- Developing an understanding of how projected climate changes are likely to affect Somerset
- Identifying the threats and opportunities these represent
- Undertaking a risk assessment in order to prioritise responses
- Identifying preferred adaptation options
- Developing an Action Plan to implement the preferred options
- Monitoring performance of the Plan

A comprehensive adaptation action plan will consist of an assessment of all risks and impacts at all levels, and at different timescales, associated with all activities across the authority and a plan of actions detailing how these risks will be met.

7 Local Government Performance Framework: National Indicator NI 188 – Planning to adapt to climate change

The particular vulnerability of much of Somerset to flooding was recognised during 2008 when Somerset Strategic Partnership signed up to National Performance Indicator NI 188 – Planning to adapt to climate change – as one the designated indicators, in common with nine out of 16 upper tier authorities in the South West.

This is a ‘process based indicator’ which aims ‘to ensure local authorities are sufficiently prepared to manage risks to service delivery, the public, local communities, local infrastructure, businesses and the natural environment from a changing climate, and to make the most of new opportunities.’

The national guidance states that the overall aim of NI 188 is to embed the management of climate risks and opportunities across the local authority and partners services, plans and estates, and to take appropriate adaptive actions where required.

Progress on achieving this is measured against levels of performance graded 0-4. The targets set by the delivery plan for the Local Area Agreement in Somerset are to reach

Level 1 by the end of Year 1 (2008-9) with year on year improvement expected ie to reach Level 3 by the end of the LAA period in March 2011.

The guidance recognises that adapting to climate change is a continuous process in an uncertain world and continual risk assessment is key to progress. Through this it is intended that by 2011 Local Authorities will have an understanding of how climate risks affect service delivery, infrastructure, assets and the wider community

Somerset County Council is working with the District Councils and other LAA partners so that together we can help to embed the management of climate risks and opportunities across the whole area, and to take appropriate adaptive actions where required.

The annual service level climate change adaptation plans will provide the means for assessment of SCC performance in this indicator. This action plan – a collation of all service delivery plans - goes beyond the requirements for NI 188 Level 1 and demonstrates SCC's leadership in taking a service based approach to climate change adaptation.

In order to fulfil the requirements of the higher levels of indicator NI 188, plans need to be both comprehensive (in terms of identifying vulnerabilities, opportunities and risks) but also include an adequate system of performance management in place. This will both monitor progress with the actions planned each year, and to evaluate their effectiveness in adapting to the impacts of climate change.

Running concurrently with the process for preparing service level adaptation plans, a stocktake of key existing policies and plans is being undertaken (recommended for Level 0). This will establish how far adaptation is already being considered across the county, identify any gaps and inform the next steps.

8 Somerset County Council's Commitment to Adaptation

The third of the five commitments in the Strategy is a challenging commitment regarding climate change adaptation:

Commitment 3: All Somerset County Council service areas will assess potential impacts and opportunities of climate change on service delivery and prepare appropriate action plans.

The commitment aims to build on the work already being undertaken by key service areas in developing actions to tackle climate change impacts, and to extend this across the Council.

In requiring all service areas to produce an annual climate change adaptation plan at Group level, this approach recognises that it is the staff in the different service areas that have the necessary knowledge and expertise. They are therefore best placed to assess the risks & impacts of climate change, and to identify the appropriate responses and actions to prepare for or minimise these impacts.

In this way, it is intended that adaptation becomes embedded across the authority in all its work.

9 The Process and Methodology

The adoption of the Climate Change Strategy and the commitments in February 2008 led to a new corporate requirement for each group manager or service area to produce a climate change adaptation plan as part of the annual service planning process. Guidance to group managers on preparation of climate change adaptation action plans, which included a standard template, was issued in March 2008. Group managers were asked to append the action plans to their service plan or appropriate Strategic Service Plan. From 2009-10 onwards, plans will be integrated with service delivery plans.

In order to prepare service level action plans, a five step procedure was developed for group managers as follows:

1. Identify potential impacts of climate change of service delivery expressed as risk or opportunity
2. Assess the level of risk or opportunity expressed as a product of the magnitude of the identified impact (on a scale of 1-3 where 1 is low) and the likelihood of it occurring (on a scale of 1-3).
3. Specify appropriate actions to be taken during the service plan year by each service area, to alleviate the risk or exploit the opportunity posed by climate change
4. Set SMART targets to outline how actions will be measured ie how each service area will measure both whether the actions have been achieved, and an evaluation of their effectiveness
5. Report their performance to Directorate Management teams through the Council's existing performance management arrangements.

To guide them through this process, 1-1 meetings with Group Managers or Heads of Service were held in most cases. For step 1, information from the Climate Change Strategy and a summary of SWCCIP "Warming to the Idea" was used as a basis for discussion about possible impacts on the service concerned.

Groups were also supplied with a summary of the BACLIAT (Business Areas Climate Impacts Assessment Tool), originally developed by UKCIP to assist private businesses - a simple checklist for assessing potential impacts of climate change under the following headings: logistics, finance, markets, process, people, premises and management implications. It provides a useful framework for public sector organisations to identify potential impacts on their operations and objectives.

In the first year(2008-9), all service areas were asked to begin the process of risk and opportunity assessment (step 2) using a basic qualitative risk analysis at the simplest level using a 3x3 system where magnitude and likelihood are each assigned one of three values – Low, Medium and High. These are then converted to numbers 1, 2 or 3 to give a numerical value for risk (the product of magnitude and likelihood) of between 1 (very low) and 9 (very high).

Following this, service areas were asked to decide which impacts – short or long term - were significant and would require an adaptive response during this year (2008-9), and overall to include at least one action to reduce the risk identified (step 3). The same approach was also used to identify potential opportunities.

Where service areas assessed that there would be little or no current risk to delivery of their service arising from the impacts of climate change, they were asked to identify a leadership action or opportunities to support wider action by the council or within the county to adapt to climate change.

The method and guidelines were intentionally simple in this early stage, to aid understanding across the authority, and to introduce the concept of climate change adaptation, an area which was new to many.

Each service area was asked to produce a concise action plan – to be used for publication, but this would be underpinned by more detailed plans, in which the methods of monitoring and assessing the effectiveness of the plan and any resource requirements (staff, costs etc) identified.

In future years, all service areas will move towards a comprehensive adaptation plan as part of the requirements for year on year improvement for national indicator NI 188, comprising comprehensive risk based assessments across the Local Authority area and a system for monitoring performance.

10 The Adaptation Action Plan

By mid March 2009 most service areas, had prepared some form of initial adaptation plan, ranging from very simple plans with one impact and action to comprehensive plans with detailed risk assessments and actions. Because of the time involved in obtaining these plans for the first time, some of the action plans produced at the end of this time period are for 2009-10, but have been included in the 2008-9 plan. In future years the plans will be collated during June/July to allow collation of the adaptation plans from the service plans.

For some services it was more appropriate to combine Groups together where there were generic responses: for example in social care, one plan has been produced overall for Children's Social Care, and for CYPD Partnerships Service. The Adult Social Care adaptation plan covers Adult Social Care, part of the Learning Disabilities Services and Mental Health commissioning Service.

All the individual adaptation plans have been entered into a spreadsheet, organised by Directorate and Service. Actions that were clearly covering only mitigation of climate change (ie reducing energy use or carbon emissions) were mostly removed from the plans. The level of risk (or opportunity) was colour coded as follows: 1, 2 – Low (Green), 3, 4 – Medium (Amber), 6 – High, 9 – Very High (both Red).

This database forms the Somerset County Council's complete Climate Change Adaptation Action Plan for 2008-9. The data and information will be published in full to

allow sharing of information across different service areas, and will be available on the intranet.

For this report, the data has been edited so that only the significant threats or opportunities are highlighted (medium and high risk).

Appendix 1 contains this edited information, showing medium and high risk impacts and associated actions by service area.

11 Overview and Summary of Action Plan

To demonstrate the level of preparedness by Somerset County Council in dealing with the risks and opportunities of climate change, this information has been summarised according to the various issues in Table 1 below as follows: Business Continuity, flooding, coastal, water resources, health and social care, waste disposal, natural environment and agriculture, critical infrastructure, planning and built environment, roads and transport, economy, tourism and awareness.

All the key service areas which will be affected by climate change have begun to put in place measures to adapt to climate change in response to the key issues: highways, traffic management, transport, water & coastal, biodiversity & landscape, scientific services, planning, waste services, emergency planning, social care, education and the schools building programme.

As reported in the Strategy, several key service areas have been engaged in developing actions to tackle climate change impacts for some time, but this plan draws the information together for the first time and has extended this work to cover all service areas. This is a significant step forward in the Council's commitment to develop resilience to the effects of climate change.

TABLE 1 Summary of climate change issues with actions planned in 2008-9 for medium and high risk impacts

ISSUE	SERVICE AREA	ACTION
Business Continuity	Civil Contingencies Unit	A Business Continuity Project is underway to incorporate business continuity planning into the service planning process and to include a template and guidance so that each group will produce a service level business continuity plan. A rigorous reporting system is in place to monitor progress on this project. Plans are generic and include response to business disruption as a result of flooding, heatwaves and storms.
Flooding - general	Civil Contingencies Unit – Emergency Planning	Revision of Local Resilience Framework flood plan and Somerset Flood Plan. Hold Gold level major flooding exercise. Increase activity to boost community resilience to flooding through flood fairs, parish emergency plans. Business continuity project (see above).
	Business Development and Transformation (Environment, Community, Children & Young People) Transporting Somerset Somerset Waste Partnership Adult Social Care Learning Disability Service Children's Social Care and related children's services Somerset Skills & Learning SCS – Somerset Catering Service Consultation & Customer Planning Schools – planning & admissions	As part of their adaptation plan, several service areas specifically refer to plans in place or proposed, for using alternative routes and contingency planning in the event of disruption to service as a result of flooding.
	Environmental Resources Countryside Management	Continue to actively participate in Somerset Water Management Partnership, and European WAVE (Water Adaptation is Valuable for Everyone) partnership project. Develop Water Management Strategy and actions. Advise District Councils on Strategic Flood Risk Assessments.
	Social Care	Detailed plans are in place to minimise and respond to the impact of flooding on

ISSUE	SERVICE AREA	ACTION
		adult and children's social care services.
	Adult Social Care	Adult Social Care is carrying out work to prioritise categories for service users in the event of bad weather, and is identifying a single lead for emergency planning. They will continue to work with partners including the NHS to coordinate the response to extreme weather events.
	Heritage	Flood protection measures in place to reduce likelihood of flooding of and protection of collections at key sites and projects including Museum of Somerset, and Timestream.
Flooding – inland river flooding, urban flooding and drainage	Strategic Planning	Work with regeneration partners on a design code for more sustainable developments and strategic flood risk management, specifically for Project Taunton (including Sustainable Urban Drainage Systems. Participate in flood risk management studies with Project Taunton, Bridgwater Challenge and Yeovil Vision. Discuss and agree prioritisation of funding for flood risk mitigation infrastructure as part of regeneration projects.
	Highways	Identify and record roads subject to regular flooding and determine regular drainage maintenance regime. Work with FWAG to advise landowners on appropriate farming practices where flooded roads are due to run-off of silt or water from adjoining farmland. Provide training for designers to avoid flood areas, to consider elevating road level and training in sustainable drainage techniques to minimise risk of surface water run-off during intense rainfall.
	Highways – response to Pitt Review	Identify suitable cross-party working group and consider the proactive management of flooding. The gully emptying regime should be reviewed for operational robustness within the current service standards (a working group has been set up to do this). The surface water drainage regime has been reviewed and risks identified in the current service standards. Promotion of highway service standards and capability at every appropriate opportunity. Arrangements for collection of data on main flood risk management and drainage assets need to be strengthened. This will also facilitate the sharing of information to highway surface water drainage enquiries.

ISSUE	SERVICE AREA	ACTION
		Consider enhancing Highways technical capabilities to deliver a wide range of responsibilities in relation to local flood risk management by incorporating this in the Project Manager role within the Highways Group.
	Traffic Management	Where possible design electrical traffic control or other equipment above predicted flood levels, otherwise waterproof the installations, and ensure access to replacement equipment where feasible.
	Transport Development	Increase use of sustainable drainage solutions to minimise amounts of surface water run-off from new developments and its contribution to flooding.
Coastal flooding and coastal issues	Environmental Resources Countryside Management	Continue to contribute to coastal partnerships and develop the Coastal Management Strategy and actions.
Water resources and quality, drought	Heritage	Redevelopment of Taunton Castle includes measures to conserve water in toilet areas.
Health and social care	Civil Contingencies - heatwaves	Write a heat-wave plan and hold a briefing seminar for Adult Social care. Consider appropriate warning and informing chain for Met Office heat health watch alerts.
	Adult Social Care	Review the NHS Somerset Heat-Wave Plan and implications for Adult Social Care.
	Learning Disability Service Children's Service	Plan to increase awareness throughout these services of current advice to keep vulnerable adults, children and young people hydrated and cool in hot weather, and to adjust service delivery in these circumstances. This might include closure of a unit/centre if appropriate. Where relevant, managers of units will maintain sufficient stores of bottled water and electric fans.
	Organisational Development – Human Resources	Assess HR implications of service level climate change adaptation plans. Introduce flexibility for services to revise working hours requirements during periods of exceptional weather, to best meet customer/client and staff needs.
Waste disposal	Somerset Waste Partnership	Promote alternatives to new landfill, and undertake vulnerability survey of existing sites by October 2010. This will help minimise impact of raised groundwater levels on leachate from landfills, and pollution from breaching of closed landfill sites, and will identify sites at risk. Design for more use of Sustainable Urban Drainage Systems that can cope with

ISSUE	SERVICE AREA	ACTION
		more frequent high rainfall events to give a higher standard of surface water drainage in new and existing infrastructure projects.
Natural environment, biodiversity, landscape, agriculture	Environmental Resources Countryside Management	Continue to assist with delivery of actions to conserve or enhance biodiversity (including habitat and species action plans) as given in the Somerset Biodiversity Strategy produced by Somerset Biodiversity Partnership. Revise AONB management plans in the Quantock and Mendip Hills to include adaptation to climate change, support habitat and species surveys and monitoring. Produce joint wildlife management plan for Quantocks with Fire Service, and investigate adoption of landscape scale conservation methodologies.
	Civil Contingencies Unit	Keep the animal health plan under review to enable response to increased risk of exotic diseases as climate warms and frequency of mild winters is increased.
	Scientific Services	Keep ahead of changes in demand for service, and allocate a budget to develop tests on new products and offer greater range of services, as a result of increased demand for services as the climate changes (eg different crops).
Critical Infrastructure (that is under local authority control)	Strategic Planning	Participate in and provide appropriate information to the regional infrastructure resilience project
	Schools Planning & Admissions	Identify schools within Environment Agency High Risk areas, and identify measures to mitigate risks and/or put in place Flood Contingency Plan. Ensure proposed new school sites are outside high risk areas or if this is unavoidable, identify need for mitigation measures and take action at an early stage. For Queen Camel Countess Gytha Primary School, undertake feasibility study into options and prepare Flood Contingency Plan. Include measures to minimise adverse impact of solar radiation on school premises and effects of heat.
	Building Schools For the Future	Design measures to alleviate flood risk will be incorporated into the programme for buildings within Bridgwater's Flood Zones, that will consider the potential of 1:200 yrs flood. These include: consideration of ground floor levels, sacrificial zones, routes of services, materials, Sustainable Urban Drainage Systems. Evacuation policies will be developed as part of the Flood Risk Assessment and school management process. New schools to have appropriate design measures in place to encourage natural ventilation to reduce degree of uncomfortable learning conditions during heatwaves, and shading systems built in, using mechanical ventilation systems

ISSUE	SERVICE AREA	ACTION
		only where necessary. Landscaping will incorporate sheltered and shaded external areas.
Planning and built environment	Strategic Planning	Use leadership role to work with District Councils and developers to ensure master plans for new urban extensions reflect climate change adaptation needs and are resilient to future flooding threats and hotter summer temperatures
	Environmental Resources Sustainable Development	Work with Property Services to ensure new buildings are designed with consideration of future climate change adaptation issues
	Community Directorate - Business Development Learning Disability Service Youth Offending Service Schools – planning and admissions, Building Schools for the Future Programme Somerset Skills and Learning	Ensure new buildings are not developed in areas of high flood risk
Roads and transport	Highways	Ensure that the new 10 year Highways Maintenance Contract takes into account sustainability issues, specifically Climate Change and including adaptation. Identify roads prone to extensive cracking during high temperatures and determine suitable maintenance regime. Provide training for designers on choice of materials for road surfaces and landscaping to minimise adverse effect of high temperatures on road surfaces. See also section on flooding
	Transport Development	Continue to liaise with Environment Agency to ensure appropriate levels are used in design and construction of new development/transport schemes to minimise flood risk. In landscaping schemes, use species appropriate to changed or anticipated climatic conditions (eg schemes fail due to drought or waterlogging).
Economy	Economy & Europe	Hold a dialogue with the Regional Development Agency about the economic policy implications of climate change. Ensure that climate change issues are considered in the development of Sedgemoor Economic Strategy. Exploit the commercial opportunities for the environmental technologies and sustainable energy business sector: develop a sector action plan; promote and explore European funding opportunities; develop a programme for promoting low-

ISSUE	SERVICE AREA	ACTION
		carbon economic growth in West Somerset through the Local Action for Rural Communities Fund. Ensure that future capital schemes financed by the service are resilient to the risks of climate change by aiming for an excellent/very good BREEAM rating of sustainable construction for future workspace schemes, and ensuring that the village halls investment programme is climate proofed.
	Legal Services	Request county solicitor to provide indication of the potential liability for the Authority arising from the lack of preparedness for the effects of climate change and provide information to service areas as appropriate.
Tourism	Economy & Europe	Develop sustainable tourism products
	Heritage	Increase virtual service delivery, outreach and touring exhibitions,and promote free admission to compensate for lower disposable income leading to fewer visitors. Review and improve marketing to exploit potential increase in visitors due to longer season and more reliable summers, as climate warms.
Awareness	Communications	Take a lead role in communicating issues, strategies, warnings and messages to the public. Ensure a communications plan is attached to all climate sections within service delivery plans. Appoint team climate “champion” to liaise with media and internal publications. All campaigns, PR plans to include climate section
	Civil Contingencies Unit	Inform people about emergency procedures to improve preparedness and increase community resilience through community briefings, parish emergency stores
	Consultation and Customer Planning	Raise awareness of planning related to climate induced emergencies with hard to hear communities, and link with Civil Contingencies Unit and Community Cohesion Forum to ensure information is more widely accessible.
	Building Schools for the Future	Use the resources used in the design of sustainable schools to act as an educational tool that can be easily accessed as part of the curriculum. Bridgwater BSF schools will be used as flagships within the community to aid understanding of sustainability in its wider context, providing opportunities to influence current behaviours and attitudes towards sustainability.

12 Issues and Problems

There are a number of issues which affected our ability to produce the Council's first adaptation plan in the timescale required as part of our commitment in the Climate Change Strategy:

- **Staff time:** with around 55 groups in 18 separate services, the task of producing an initial service level adaptation plan across the authority for 2008-9 required considerable input of staff time from the Sustainable Development Team from August 2008 onwards, and could only be progressed more quickly when the Climate Change Officer was appointed in December 2008.
- **Lack of resources** in some service areas to complete the task to the depth desired including resources to implement and monitor the actions
- **Other priorities:** other urgent priorities in some service areas especially due to period of cold weather Jan/Feb 09 when impacts on service delivery had to be given higher priority. In some service areas the issue was generally seen as a low priority despite the Council's adoption of the Climate Change Strategy.
- **Unfamiliarity with adaptation:** the concepts were new to many and there was some lack of understanding of the underlying principles of adaptation – initially confused with climate change mitigation (measures to reduce carbon emissions).
- **Uncertainty** of the climate data & predictions, and timescale under consideration, making risk assessment difficult.
- **Need for generic plan at higher service level:** it was felt that some impacts were generic and required generic responses by other service areas – for example overheating in buildings causing staff discomfort needs consideration by Facilities Management, as well as each service area.
- **Subjectivity of risk assessments: t**he risk assessments should be robust and repeatable to ensure consistency across the authority. Because the assessment is necessarily being carried out by each service some subjectivity remains and can lead to some inconsistency in risk level.
- **Timescale:** Some service areas did not produce a plan within the timescale either because of restructuring during the year, or due to Group Manager vacancies, or because they were already working on service plans for 2009-10.
- **South West One**, incorporating some of the Council's key service areas with implications for climate change adaptation (Facilities Management, Property Services, ICT) was not able to produce any adaptation plans for 2008-9 although plans are under way for these to be prepared for 2009-10

13 Future Actions for 2009-10

Of crucial importance is to ensure that the planned actions are actually carried out, and that a monitoring system is put in place to ensure that this happens.

During 2009-10 improvements will be made in terms of identifying vulnerabilities to a changing climate, the action planning process, and embedding climate change adaptation across the local authority area. This will help further improve our resilience

to the effects of climate change and to ensure compliance with the requirements of National Indicator NI 188. The following actions have been identified:

13.1 Identifying vulnerabilities

- When the new climate predictions are published (UKCP09), obtain an interpretation and digest for the South West, through SWCCIP, and for Somerset if possible.
- Through this and working with partners such as the Environment Agency, update information on current vulnerabilities and communicate these to SCC service areas and across the Local Authority area.
- Investigate the possibility of setting up a weather and climate database for monitoring the impacts of extreme weather events on Council services, in order to help inform the action plan and assess its effectiveness.

13.2 The Action Planning Process

- Ensure that an adaptation plan is received from every service area and continue to provide advice and guidance where required
- Revise the guidelines and template supplied to service areas to ensure clarity, to assist in the identification of vulnerabilities to climate change, and to comply with the requirements for NI 188 Level 2.
- Work with South West One to ensure that adaptation plans are prepared for those services they now deliver, and in particular Facilities Management, Property Services and Human Resources.
- Work with the service planning teams to set up systems for monitoring and reviewing the actions in the plan on an annual basis, particularly in order to evaluate the effectiveness of adaptation actions in the light of the changing climate.

13.3 Embedding adaptation across the Local Authority area

- Set up the Climate Change Partnership as a working sub group of the Environment Leaders Group, as part of the Somerset Strategic Partnership to provide leadership, to consider adaptation across the Local Authority area and to include Districts and other key partners.
- Complete the stocktake of policies and plans and assess the extent to which climate change adaptation is being incorporated at high level across all strategies, plans, and policies; identify next steps to improve adaptation planning.
- Explore ways of working with businesses and community groups on adaptation issues and provide guidance in adaptation planning

14 Sources of Guidance and Information

LRAP National Guidance on NI 188
http://www.oursouthwest.com/climate/registry/081219-NI188-guidance-notes-v1.6.doc

South West Climate Change Impacts Partnership: Scoping Study "Warming to the Idea"
http://www.oursouthwest.com/climate/scopingstudy.htm

UKCIP02 climate projections – summarised in SWCCIP above

Environment Agency Guidance on NI 188
http://www.oursouthwest.com/climate/registry/081128-EA-SW-NI188-Guidance.pdf

SWCCIP Guidance on NI 188
http://www.oursouthwest.com/climate/registry/081128-SWCCIP-NI188-Guidance.pdf

Nottingham Declaration website – adaptation guidance
http://www.energysavingtrust.org.uk/nottingham/Nottingham-Declaration/Resources-events-links/Additional-adaptation-guidance

UK Climate Impacts Programme (UKCIP) website & publications
http://www.ukcip.org.uk/

BACLIAT tool – UKCIP publication "A changing climate for business"
http://www.ukcip.org.uk/images/stories/Pub_pdfs/Georgette.pdf

LGA publication "Be Aware Be Prepared Take Action"
http://www.lga.gov.uk/lga/aio/566302

APPENDIX 1: 2008-9 Action Plan For Medium And High Risk Impacts

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
Highways	High	Flooding and high temperatures are becoming more common. Highways and associated features will require new design, construction, maintenance and decommissioning techniques to ensure that the highways are kept in a safe condition at the optimum environmental / cost benefit ratios. The service is about to embark on a potential 10 year contract	1 Ensure that the new Highway Maintenance Contract which is due to commence April 2010 takes into account Sustainability issues specifically Climate Change. 2 Review current and proposed Corporate documents, and national initiatives, to ensure that Somerset's Aims and Objectives are set out accurately. 3 Ensure the contract will require the contractor to deliver the commitments in the Climate Change Strategy and the actions in the Highways Adaptation Action plan, as well as reduce any adverse effects of service delivery on the environment.
	Medium	Flooding due to prolonged periods of adverse weather: 1 Regular flooding to parts of the highway network requires some roads to be closed	1 Identify those roads that are subject to regular flooding and ensure they are plotted and saved on the Group's highways information system. 2 Determine a regular drainage maintenance regime for those areas.
	Medium	2 Flooding of highways due to the run-off of silt or water from adjoining land resulting in road closures.	With FWAG record those roads that have been flooded and advise landowners on appropriate farming practices.
	Medium	3 Flooding of highways due to the run-off of silt or water from adjoining land resulting in highway damage and traffic delays	Provide training for designers to avoid flood area and consider elevating road level.
	Medium	Road surfaces can be damaged by scour due to rapid runoff during intense rainfall	1 Provide training for designers in sustainable drainage techniques to

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			minimise risk of surface water runoff during intense rainfall. 2 Ensure drainage systems are adequately maintained and free from debris
	Medium	Prolonged periods of hot (dry) weather can cause extensive shrinking and cracking of the road surfaces on the moor roads in the county which could lead to the need to close roads.	Identify those roads that have historically been prone to extensive cracking and determine a suitable maintenance regime to reduce the effect of cracking
	Medium	High temperatures can destabilise and melt road surfaces resulting in costly damage and traffic disruption	Provide training for designers to minimise risks through choice of: viscosity of binding materials, chipping size, colour and reflectivity of surface, consider shading by planting of trees and hedges
	Medium	High winds and storms destabilise trees and temporary signs and barriers	Ensure emergency response gangs are trained to deal with these situations and are available to attend wind blown hazards promptly
Traffic Management	Very High	Risk of electrical equipment eg traffic controllers being affected by flood water or storms (eg lightning) resulting in failure to control road traffic	1 Where possible design features above predicted flood levels or waterproof installations 2 Ensure access to replacement equipment where feasible.
	High	**Opportunity** to develop early warning of floods through flood activated signs.	Trial of flood activated signs
Transporting Somerset	High	Increased incidence of flooding will lead to increase in occasions when staff unable to get to work resulting in higher dependency on emergency procedures	Continue process of setting emergency action plan in place through group service plan
	Medium	Increased incidence of flooding will increase the incidence of school route and	Minimise risk through monitoring of emergency procedures

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
		social care route diversions, leading to increased costs.	
Environmental Resources	Very High	**Water & Coastal** 1 The increase in the probability of flooding is the most serious of the many challenges posed by climate change to Somerset. Approximately 6,200 sq km of land would be under water from a major flood and some 32,500 properties are at risk (source:EA; SCC climate change strategy). The impact of climate change on water management will be substantial, severe and potentially life-threatening. 2 In particular, the risk of flooding and coastal erosion in Somerset is increased through: sea level rise; increase in intensity, severity and frequency of coastal storms; increase in winter precipitation; increase in frequency of severe rainfall events affecting river catchments and urban surface water systems. 3 Sea levels rose by about 150mm in the 20th C and are predicted to rise by about 86cm by around the year 2080. This will further threaten sea defences and block rivers' flow. 4 There is increased likelihood of summer drought.	1 Continue to participate in Somerset Water Management Partnership: stakeholders meet to consider how water matters can affect the communities, landscape, economy and ecology in the catchment of the Parrett, Brue, Axe and their tributaries, and aim to reach consensus on the best way of addressing these issues. 2 Continue to participate in European WAVE (Water Adaptation is Valuable for Everyone) partnership project. The aim of this project is to create a more 'climate-resistant' water system, in which the region's land uses are integrated in a way that equips it to offset the impacts of climate change. 3 Develop Water Management Strategy and determine future actions 4 Advise District Councils on preparation of Strategic Flood Risk Assessments, that will take into account likely impacts of climate change 5 Continue to contribute to coastal partnerships and develop the Coastal Management Strategy to determine future actions

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	Medium/High	**Biodiversity and Landscape**: The impact of climate change on Biodiversity within Somerset is a threat to many habitats and species and is particularly at risk in the Mendip & Quantock Hills	1 Continue to assist with delivery of actions to conserve or enhance biodiversity (including habitat and species action plans) as given in the Somerset Biodiversity Strategy produced by Somerset Biodiversity Partnership. 2 In the Mendips – revise AONB management plan to include adaptation to climate change, support habitat & species surveys, and continue fixed point monitoring 3 In the Quantocks – revise the AONB management plan as above, initiate or continue landscape or habitat surveys and monitoring, produce a joint wildfire management plan with Fire Service, investigate adoption of landscape scale conservation methodologies.
	Medium/High	**Implementation of Climate Change Strategy** Increase in support and guidance on climate change issues required by internal service areas and external sectors. Impact of climate change on ICT and web based communications	Review resources required to meet demand. Work with Property Services to ensure new buildings are designed with consideration of future climate change adaptation issues. Web based data used within the team's working area is stored and backed up by the service provided e.g. TEAM software
Environmental Management	High	Increase flooding could cause maintenance and route availability issues on rights of way	Limited direct action. May result in orders to divert route or extinguish routes affected.

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	Medium	Climate change adaptation may result in more planning issues (wind turbines, photo-voltaics, flood impact considerations)	Increase understanding of climate change and the issues faced by planners/developers through training and sourcing of information
Scientific Services	High	Increase in demand for services due to: more product ranges, different crops, or increase in air quality issues resulting from impact of warmer temperatures on growing season of crops; contamination of water supply sources from flooding.	Keep ahead of changes in demand for service, allocate a budget to develop new tests on new products and to offer greater range of services to SCC and local businesses
	Medium	Loss of income due to: problems with samples and associated issues as a result of flooding; decrease in samples because of change to crops/food/diet due to warmer temperatures and longer growing season.	
	Medium	Higher temperatures require additional cold storage for samples and air conditioned labs for samples testing	Review laboratory capability to store samples and cost of air conditioning for equipment or consider moving out of County Hall to purpose built labs with modern internal environmental control capabilities that would not increase in greenhouse gases.
	Medium	Disturbances to electricity supply disrupt ability to deliver service	All new equipment to have surge protection built in.
	Medium	Threat to working conditions of staff including physical conditions of working environment due to increase in temperature, flooding risks while taking samples.	Regularly review risk assessments, working conditions and personal protective equipment.

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	Medium	Greater demand on 'emergency call out team' to assist Devon and Somerset Fire and Rescue (DSFR), due to chemicals being involved in flooding or accidents due to adverse weather	Regular liaison with DSFR, regular reviews of service demands and training programme of call-out team & kit used.
Strategic planning	Very High	The impacts of climate change have major implications for planning policy and services:	
		There is a need to: 1 Consider climate change as key influence in policy development work; 2 Identify potential climate change issues within statutory responses to regional planning processes and Local Development documents; 3 Work with District Councils and developers to ensure master plans for new urban extensions reflect climate change adaptation needs; 4 Work with regeneration partners on a design code for more sustainable developments and on strategic flood risk management.	1 Climate change adaptation issues built into the following development projects for 08-09: Taunton Area Transport Strategy, Yeovil Transport Strategy, Minerals & Waste Local Development Framework. 2 Ensure officers keep up to date on the relevant knowledge and advice, and advice to be built into statutory responses. 3 Use leadership role to influence preparation of appropriate master plans and engage with/challenge developers to deliver more sustainable communities that are resilient to future flooding threats and hotter summer temperatures etc. 4.1 Participate in development of new design codes for Project Taunton (including e.g. Sustainable Urban Drainage Systems minimising contribution of run off) to influence wider adoption of design codes in Somerset Districts once established. 4.2 Participate in flood risk management studies and discussions within Project Taunton, Bridgwater Challenge and Yeovil Vision.

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			Discuss and agree prioritisation of funding for flood risk mitigation infrastructure as part of role in Governance on regeneration projects
	Medium	Need to participate in regional infrastructure resilience project	Provide appropriate information and engage with regional project
Transport Development	Medium	1 Raised flood attenuation levels requiring higher construction levels for development/transport schemes. 2 Reduced acceptable amounts of surface water run-off from new developments. 3 Landscaping schemes fail or require additional maintenance	1 Continue to liaise with Environment Agency to ensure appropriate levels used in design and construction ensuring flood risk to new development/transport schemes is minimised. 2 Continued and enhanced use of sustainable drainage solutions to minimise contribution to flooding 3 Re-visit acceptable species list and seek to implement species appropriate to revised/anticipated climatic conditions
Somerset Waste Partnership	High	**Macroclimatic effects** 1 More frequent disruption to services due to extreme weather & sea level rise (flooding, snow, tidal surges etc). 2 Raised groundwater levels on leachate from landfills. (more leachate to deal with and/or more chance of contamination of ground water supplies or watercourses)	1 Ensure Business Continuity Plans are kept up to date 2 Promote alternatives to new landfill; undertake a vulnerability Survey of existing sites by October 2010
	High	**Micro-level climatic effects on sites & services** 1 Flooding, ice etc may affect depots, HWRCs, vehicles etc 2 Landfills (particularly the closed ones) at risk of being breached, with associated local leaching and pollution problems.	1 Ensure SWP Business Continuity Plan is kept up to date though regular review by risk assessment working group. 2 Undertake a vulnerability survey of existing sites by October 2010.

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	Medium	3 Higher rainfall intensity could lead to demand for a higher standard of surface water drainage in new and existing infrastructure projects	3 Design for more frequent high rainfall events and more use of Sustainable Urban Drainage Schemes in appropriate locations
	Medium	**Micro-level climatic effects on householders** More frequent / extensive instances of flood damaged property to dispose of.	SWP to investigate how Gloucestershire Councils coped in floods of 2007 and lessons learned. Action for Risk assessment group by May 2009
	Medium	**General climatic effects on work practices and behaviour** 1 Increased risk of skin exposure to collection crews and site staff from excess exposure to sun/rain and increased demand for covered work areas. 2 More demanding public as temperature rises with adverse impact on sleep etc	1 Ensure advice is given regarding adequate protection in heat waves; Health & Safety Advisory Group to consider additional advice. 2 Ensure advice is given regarding customer care during heat waves
	High	**Impacts on society, and suppliers of goods & services** 1 Changes in waste composition due to higher temperatures and longer growing season affecting amount of packaging and garden waste.	Keep waste composition under review if resources are available. Maintain active role in debate about packaging producer responsibility.
	Medium	2 Increased tourism in the County could increase demand for seasonal refuse and recycling collections which could impact on collection vehicle capacity and round sizes in season.	No action required at present

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	High	**Opportunity for** raised public awareness and greater commitment to waste prevention	Promote waste prevention through press releases and other literature and stress the link between individual behaviour and global impacts.
	Medium	**Opportunity:** increased energy demand – to provide air conditioning/heating and /or rise in energy prices (as supplies squeezed) – could make Energy from Waste a more cost effective and publicly supported option.	Promote alternatives to new landfill which recover energy
Environment Service Improvement: Business Transformation	Medium	Vulnerability of supplies via delivery systems due to disruption in transport from increasing risks of flooding and landslides	Ensure all delivery companies and suppliers know of alternate routes for delivery to County Hall which are less likely to be affected by flooding.
Civil Contingencies Unit		Increase in activity in response to increasing frequency of severe weather events and climate change	
	Medium	1 Extreme Heat	0809 1 Write a heatwave plan 0809 2 Hold briefing seminar for Adult Social Care 0910 Consider appropriate warning and informing chain for Met Office heat health watch alerts.
	Very High	2 Severe Rainfall -– leads to flooding (urban, fluvial, coastal, extreme flash) 3 Coastal sea level rise	0809: 1 Revise Local Resilience Framework flood plan. 0809: 2 Hold Gold level major flooding exercise 0910: 1 Revise Somerset Flood Plan 0910: 2 Increase activity to boost community resilience to flooding eg flood fairs, parish emergency plans etc

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			Revise Somerset Flood plan
	High	Business Continuity – increased disruption to working conditions	0809: Ensure robust business continuity plans at corporate and service level. 0809 & ongoing: Regular exercises 0910 Build into post incident review template: (i) Identification of lessons learnt for more efficient ways of working (ii) Monitor trends to see if planning needs to be increased
	High	Increased disruptions to community life as a result of generalised direct extreme weather events eg Heat, flooding and indirect impacts	Inform people about emergency procedures to improve emergency preparedness and increase community resilience eg community briefings, parish emergency stores
	Very High	Impact on animal health. Increased risk of exotic animal diseases as climate warms – increase in frequency of mild winters	Keep under review the animal health plan
Adult Social Care	Medium	Increased frequency of extreme weather events – flooding, heatwaves have increased impact of vulnerable adults	1 Work re the prioritising categories for service users in the event of bad weather 2 Identify single ASC lead for emergency planning 3 Work in partnership with providers, including NHS to coordinate response to

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			extreme weather events
	Medium	1 Increased summer temperatures and frequency of heatwaves. 2 Higher rainfall changing weather patterns leads to increased chance of flooding	1 Annual review of NHS Somerset Heat Wave Plan and implications for ASC 2.1 Annual review of the NHS Somerset Winter Plan and its implication for ASC 2.2 Commission a Significant Event Audit of the recent Snow and Flooding and the learning from this for commissioned services and care management.
Adult Social Care – Taunton & Somerset Coast, S Somerset	Medium	Flooding both sea and river	1 Ensure that domiciliary care providers hold lists of service users outlining their level of need on a five point scale with one being the most urgent. When details of likely flood areas become available these lists can be used to inform decisions about those needing urgent attention. 2 Domiciliary care providers to “Map” their care staff on geographical map, to identify local carers who can support service users if areas are cut off by floods.
Learning Disability Service	High	Flooding of Residential homes, 24hr Supported Living homes	1 Ensure that all new buildings are not developed on flood plains 2 Staff are made aware of and check the flood warning from the environment agency 3 Teams to hold Crisis Response Strategy 4 Teams to develop/update Team Crisis Plan. Day Centres to be utilised as part of the emergency contingency plan 5. LD Senior Managers to hold a central list of existing accommodation at risk
	Medium	Day/work prep centres, residential homes and domiciliary services (including	1 Staff to be aware of the advice to keep vulnerable adults hydrated and cool in hot

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
		supported living) - Heatwaves	weather from the UK Climate Impacts Programme 2 Staff to make adjustments to the delivery of services, access to activities and pace at which services are undertaken
	Medium	Day/work prep centres, interruption/loss of electricity supply - Extreme events/storms	1 Centres to be closed 2 Staff to be re-deployed to other key LD services in the area
	High	Residential and supported living homes - loss of electricity supply - Extreme events/storms	1 Staff to check warnings as issued via the Environment Agency 2 High risk homes issued with alternative energy supplies 3 Local manager to make contingency plans to include utilising local alternative LD accommodation, and redeployment of staff
Heritage	Medium	Risk of flooding: 1 Potential for damage to premises and collections. 2 Closure of premises/ restricted access - compromise quality of visitor experience, resulting in loss of reputation, lower visitor numbers and, ultimately, viability of services	1 Full flood protection measures included in project development plans for Museum of Somerset and Timestream, including landscaping and internal design/spatial allocation. No collections will be accommodated in Wyndham Galleries in Museum of Somerset due to flood danger. 2 Review flood protection measures as required to reduce likelihood. Extend insurance cover to include burst pipes and flooding 3 Maintenance cover included in revenue projections once defects period over for Museum of Somerset and Timestream projects. Servicing costs covered automatically in SCC Property Services R&M programme

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	High	Audiences have less disposable income due to higher fuel costs = fewer visitor numbers, resulting in reduced financial support/income generation and ultimately, viability of services.	1 Increase virtual service delivery (web), increase outreach and touring exhibitions to take services to localities, review and improve marketing, promote free admission. 2 Promote sustainable travel in visitor information e.g. Park & Ride. Develop links with Community Transport. Look at possible incentives for visitors travelling other than by car and who travel between Museum of Somerset and Timestream sites by public transport
	High	Reduced heating demand, increased sunlight, increased demand for water.	Redevelopment of Taunton Castle includes installation of efficient (controllable) heating to take advantage of climate change, roof and wall installation, toilets fitted with water saving flushing devices, basins fitted with spray taps to conserve water. Also possible PV installation.
	Medium	**Opportunity:** Longer, more reliable summer season and warmer winters may result in increased tourism and visitor numbers.	Review and improve marketing to exploit this market, promote free admission
Economy & Europe	Medium	Climate change has implications for Somerset's economic policy, strategy & priorities.	Need to provide strategic leadership by the following: 1 Hold dialogue with SWRDA about the economic policy implications. 2 Ensure that Delivery Plans for LAA economic targets are 'climate change proofed. 3 Ensure that climate change issues are considered in development of Sedgemoor

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			Economic Strategy. 4 **Opportunity.** Develop a programme for promoting 'low carbon' economic growth in West Somerset through Local Action for Rural Communities (LARC) fund.
	Medium	Climate change impacts on: 1 Businesses 2 Tourism 3 Capital schemes	1 Need to promote environmental efficiency amongst Somerset businesses: Actions relating to Somerset start-up programme, and 'greening' tourism business. 2 Develop sustainable tourism products 3 Need to ensure that future capital schemes financed by the service are resilient to risks created by climate change: (i) Aim for excellent/very good BREEAM rating of sustainable construction for future workspace schemes. (ii) Ensure that village halls investment programme is 'climate change proofed - Village Halls Committee to be asked to review this issue for 2009/10 investment programme
	High	**Opportunity** to develop Somerset's environmental technologies and sustainable energy sector as driver of economic growth in the county	1 Develop sector action plan. 2 Promote and explore financial support opportunities through Cross Border Co-operation and other European programmes
Community Directorate - Business Development	Medium	Flood risk	1 With new developments e.g. Beckery, ensure chosen site is not situated in a flood plain. 2 Encourage Property Services to look at the feasibility of sustainable water drainage systems, where appropriate, for new

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			developments to help manage risk of changing rainfall patterns. 3 Identify alternative routes to offices that avoid flood risk areas.
Community Development	High	Failure to deliver the Climate Change Strategy. There is an expectation for the Somerset Strategic Partnership, in coordination with each of the Local Authorities and the District Local Strategic Partnerships to effectively develop and deliver Climate Change Strategies.	Identified resources to participate in overarching strategy and policy development, through to the detail of local implementation. Includes continued coordination of SCC input into District LSPs and working with LSP partners to implement the LAA and key strategies
	High	**Opportunity** for the County Council to demonstrate strategic leadership on climate change issues through coordinating a countywide response in partnership with key agencies, other local authorities and commercial business sector, local communities and stakeholders.	Develop the role of the Area Working Panels role in community engagement and empowerment work aimed at increasing the influence of local people on services.
Children's Social Care	Medium	Impact of flooding, heat or storms on electricity supply	The Emergency Duty Team have a list of the current Child Protection Plans for use, by day teams, should there be a power failure due to flooding, heat or storms
	High	Residential Units and Foster Care for Children with Disabilities - dependent on electrical supply for essential equipment	1 Managers to ensure that alternative energy supplies are available to these children. 2 Staff and foster carers are made aware of, and check flood warnings from the Environment Agency.
	Medium	Residential Units Heat waves - children and staff feeling effects of heat.	1. Unit managers to have sufficient stores of bottled water, electric fans, and awareness of the effects of heat on children

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			and young people 2. Managers to be aware of and access the UK Climate Impacts Programme advice
	Medium	Foster Carers – flooding, storms & heat waves	Foster Carers are made aware of the need to consider: Adequate home insurance; being aware of the flood warnings from the Environment Agency; contingency planning; being aware of the storm advice via the Met Office; the need to keep children and young people hydrated and cool in hot weather; access the UK Climate Impacts Programme advice.
	Medium	Social Work Service/Teams Flooding - Offices without electricity and unable to use Protocol recording system.	1 Teams to have sufficient paper copies of assessments and recording forms 2.Senior Managers to check flood warning from the Environment Agency
	Medium	Social Work Service/Teams Storms - Staff unable to travel to the office.	1. Mobile working project to increase variety of working methods 2. Managers make themselves aware of severe weather advice via the Met Office
	Medium	Social Work Service/Teams Heat waves - Staff discomfort, ability to concentrate and performance lowered.	1 Area Managers and facilities management to ensure there are sufficient supplies of water and fans for offices 2 Managers access the UK Climate Impacts Programme advice 3 Reduce travel and meetings where possible
Youth Offending Service	Medium	Increased risk of seasonal flooding of staff bases leading to operational difficulties	“New Prospects” build is already elevated 50cm to protect from flood
	Medium	Increased storms cause travel difficulties	Ops managers to monitor travel difficulties

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
		and/or interruptions to electricity supplies	and re-allocate staff as appropriate YOT business continuity plans include response to loss of electricity supply.
Education Services – Special Needs & Inclusion	High	Registered Pupil Referral Units/Alternative Provision Centres/SEN Resource Bases 1 Dependent upon electrical supply for essential equipment	1 Heads of Centres and Resource Base Managers to ensure that alternative energy supplies are available to staff and pupils 2 Staff are made aware of and check the flood warnings from the Environment Agency 3 Centres to follow school closure guidance if appropriate
	Medium	2 Pupils and staff feeling effects of heat	1 Heads of Centres and Resource Base Managers to ensure that there are sufficient stores of bottled water, electric fans and awareness of the effects on pupils 2 Heads of Centres and Resource Base Managers to be aware of and access the UK Climate Impacts Programme advice 3 Centres to follow school closure guidance if appropriate.
	Medium	Area Multiprofessional Teams/Central Education & Individual Services staff: 1 Offices without electricity and unable to use ICT support systems 2 Staff unable to travel to the office due to severe weather 3 Heatwaves: Staff discomfort, ability to concentrate and performance lowered. 4 Flooding/Storms/Offices without electricity	1 Mobile working project to increase variety of working methods. Support Services to have access to mobile working devices and able to work in other settings 2 Senior Managers to check flood warnings from the Environment Agency, severe weather advice via the Met Office and access the UK Climate Impacts Programme advice. 3 Staff to work to agreed protocols in the event of office closure 4 Area Managers and facilities

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			management to ensure there are sufficient supplies of water and fans for offices 5 Reduction in travel and meetings where possible 6 Staff follow extreme weather conditions guidance 7 Emergency contact numbers(home landlines/mobiles) to be held by Senior Managers
Education Development Service	Medium	**Opportunity** for leadership action around collection of data from schools on weather impacts	Facilitate engagement of Sustainable Development Team with schools to enable collection of data and information on impact of extreme weather events eg on school closures
Schools Planning & Admissions	Medium	Adverse impact of increased solar radiation on school premises	1 Include PV panels as standard on all south facing roofs of new school buildings 2 Include shading to classrooms and outside play areas for all new schools 3 Encourage existing schools to create shaded play areas by including comment on Capital Improvements Programme response process 4 Include passive ventilation in all new school buildings
	High	Adverse impact of flooding on school premises	1 Identify those schools within Environment Agency High Risk areas; where necessary identify mitigation measures and/or; put in place Flood Contingency Plan 2 Ensure any proposed new school sites are either outside High Risk Areas or, where this is unavoidable, identify need for

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			mitigation measures at an early stage and take appropriate action 3 For Queen Camel Countess Gytha Primary School (flooded winter 2008/09), undertake Feasibility Study into options for ensuring primary schooling in the area; prepare Flood Contingency Plan.
E-learning & Information Management	Medium	Increased risk of flood disruption to key parts of the Wide Area Network (WAN).	WAN review being undertaken by SWOne needs to take this into account when planning main nodes of network and resilience points
Children & Young People's Directorate - Partnerships	Medium	Impact of flooding, heat or storms on electricity supply	The Emergency Duty Team have a list of the current Child Protection Plans for use, by day teams, should there be a power failure due to flooding, heat or storms
	High	Children's Centres, Extended Services or Youth Provision 1 Flooding of buildings - dependent on electrical supply for essential equipment	1 Managers to ensure that alternative energy supplies are available to these children/young people 2 Staff and day care providers are made aware of, and check flood warnings from the Environment Agency
	Medium	2 Heat waves – children, young people and staff feeling effects of heat.	1 Managers to have sufficient stores of bottled water, electric fans, and awareness of the affects of heat on children and young people. 2 Managers to be aware and access the UK Climate Impacts Programme advice
	Medium	Childminders – flooding, storms & heatwaves	Childminders are made aware of the need to consider: Adequate home insurance; being aware of the flood warnings from the Environment

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			Agency; contingency planning; being aware of the storm advice via the Met Office; the need to keep children and young people hydrated and cool in hot weather; access the UK Climate Impacts Programme advice.
	Medium	Local Service Teams: Flooding - Offices without electricity and unable to use Protocol recording system.	1 Teams to have sufficient paper copies of assessments and recording forms 2.Senior Managers to check flood warning from the Environment Agency
	Medium	Local Service Teams: Storms - Staff unable to travel to the office.	1. Mobile working project to increase variety of working methods 2. Managers make themselves aware of severe weather advice via the Met Office
	Medium	Local Service Teams:Heat waves - Staff discomfort, ability to concentrate and performance lowered.	1 Area Managers and facilities management to ensure there are sufficient supplies of water and fans for offices 2 Managers access the UK Climate Impacts Programme advice 3 Reduce travel and meetings where possible
Children & Young People's Directorate - Business Development	Medium	Flooding effects on offices and service delivery points supported by Office Management	1 Work with SW One and Environment Agency to minimise risk. 2 Regular monitoring of climate change predictions to ensure climate data, particularly flood risk, are up to date 3 Ensure plans are in place to relocate office accommodation that is in the highest risk areas in the medium term timescale.
Building Schools for the Future	High	Increased frequency of heavy rainfall events can cause flooding problems; wetter	All BSF specifications will require schools to be BREEAM very good

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
		winters may cause damp / condensation problems; drier summers increase risk of foundation subsidence	
	Medium	Increasing temperatures and frequency of heat-waves may cause uncomfortable conditions for learning	1 Buildings to be orientated in such a way as to mitigate against the increased power of the sun, whilst harnessing its energy. 2 Where possible, elevations for classroom will face north or south with appropriate design measures in place to encourage natural daylight and ventilation. Shading systems will be built in to protect elevations exposed to heat gain, using mechanical ventilation systems only where necessary.
	Medium	**Opportunity** for Leadership action with regard to education	1 Design schools which demonstrate sustainability enabling the resources to act as an educational tool that can be easily accessed as part of the curriculum. 2 Bridgwater BSF schools will be used as flagships within the community to aid understanding of sustainability in its wider context, providing opportunities to influence current behaviours and attitudes towards sustainability.
	Very High	Flood risk	1 Buildings within Bridgwater's Flood Zones will be required to incorporate design measures that consider the potential of 1:200 yrs flood. 2 Measures will require ground floor levels to be raised, sacrificial zones to be considered within the building design, including routes of services, selection of materials in order to mitigate flood damage

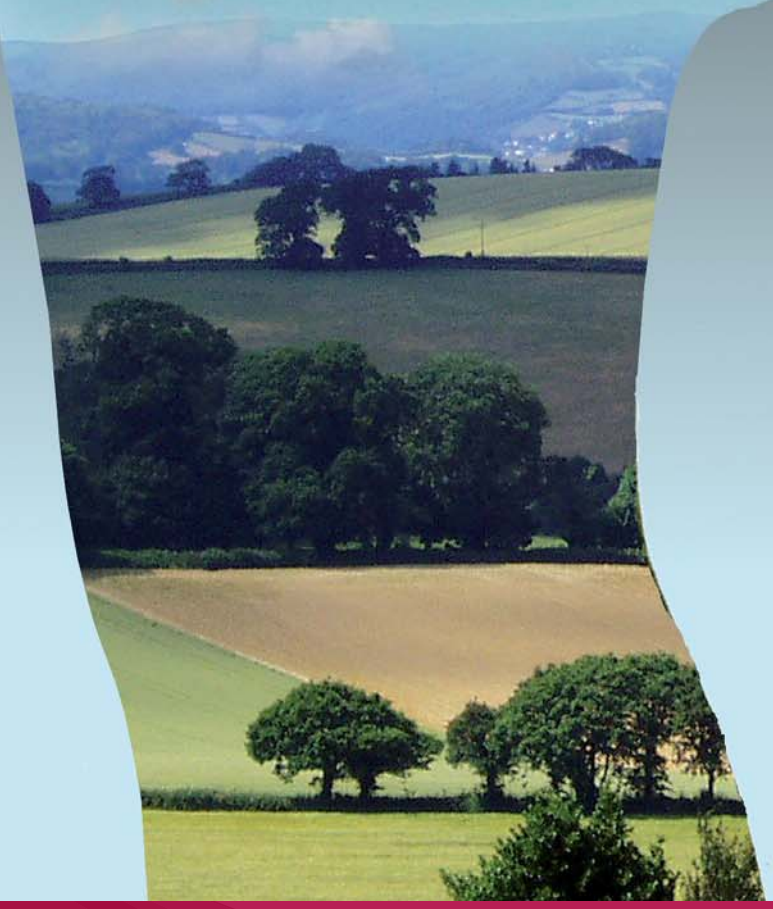
SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
			in a 1:200 yr event 3 Evacuation policies will be developed as part of the Flood Risk Assessment and school management process. 4 School, where appropriate will look to incorporate SUDS drainage systems, targeting attenuation back to green field site run-off.
	Medium	Exposed play areas – effects of heat and sun	There may be an increased need for sheltered external classroom, social and play space. Landscaping design will incorporate sheltered and shaded external areas for site users, allowing continued use of external space on hotter days.
Organisational Development		Review Service level climate change adaptation plans and assess HR implications	Develop HR climate change adaptation action plan based on the assessment of Service needs. If necessary prioritise by level of risk.
	Medium	Introduce flexibility for services to revise working hours requirements eg during periods of exceptional weather	Provide local discretion and guidance for services to change working hours to best meet customer/client and staff needs
Somerset Skills & Learning		Risk of flooding: Using the Environment Agencies assessment of risk we have analysed which of the SS&L training centres is most likely to be affected by flooding. The impact on the service will be a disruption to learners with consequences to achievement rates, loss of income, damage to reputation and potential breach of contracts with potential reduction in staffing levels.	General actions: Raise awareness of risk with staff group and premises managers Seek advice on: 1 Actions to be taken in the event of flooding 2 Contingency planning in the event of a major flooding incident 3 Plan communication strategy in the event of cancelled classes

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
	Medium	Sites at moderate risk – 1:75 1 Princess Street – Burnham 2 Blackbrook Park Avenue Taunton	1 Burnham - No specific actions – SS&L are considering relocating to new premises in the Cultural Quarter in Burnham on Sea. This would alleviate any potential flooding issues 2 Taunton - Because some recent flood prevention works have been carried out by the developers on the Blackbrook Business Park, the Environment Agency assessment is probably overstated.
	High	Site at significant risk – more than 1:75 Bridge Street – Williton	The Williton site is due for redevelopment within the next 2 years. The new plot will incorporate a balancing pool for surface water storage which will alleviate any potential flooding issues.
SCS – Somerset Catering Service	Medium	Risk – sudden and unexpected weather changes impact heavily: infrastructure breakdown of power supplies, road closures, school closures etc	Contingencies and alternatives need to be pre-established including the need for emergency power
	Medium	**Opportunity**: Bio-fuel crops. The development of crops dedicated to bio-fuels will reduce the reliance on fossil fuels stabilising transport costs	**Opportunity** – delivery of food to us and delivery of services to schools includes a significant fuel cost
Legal Services	Medium	Lack of preparedness for the impacts of climate change on SCC infrastructure, operations or service provision could result in a legal liability for the Authority.	Request County Solicitor to provide indication of potential liability for the Authority arising from lack of preparedness for the effects of climate change and provide information to service areas as appropriate.
Consultation & Customer Planning	Medium	Significant impact of communication of climate change issues on hard to hear	Link with Civil Contingencies to reach hard to hear communities and ensure that they

SERVICE AREA	RISK LEVEL	IMPACT/CHALLENGE/OPPORTUNITY	ACTIONS
		communities.	are aware of planning relating to climate induced emergencies and what to do in given situations. Arrange meeting between equality and diversity officer/s and civil contingencies officer/s to make information more widely accessible
	Medium	**Opportunity** to introduce Climate Change Adaptation into the Community Cohesion Agenda for Somerset.	Raise Climate Change Adaptation at the Community Cohesion Forum (of the SSP) and determine actions that the Forum will take as a result. Monitor, report and communicate to further raise awareness.
	Medium	**Opportunity** for leadership action in relation to customer perception of climate change adaptation	Encourage the inclusion of Climate Change Adaptation question/s in customer perception surveys, as appropriate: in 0809, include question in at least one customer perception survey to provide baseline position and publicise outcome to raise awareness.
Performance, Planning and Place	Medium	**Opportunity** for leadership action to improve resilience of the Council to climate change, by coordinating climate change adaptation plans	Set timetables for production of plans, reminders and clear deadlines
Communications	Medium	Take lead role in communicating issues, strategies, warnings and messages to public	1. Ensure relevant communications plan attached to all climate sections within service delivery plans. 2 Appoint team climate “champion” to liaise with media and internal publications – appointment will be publicised 3 Reflect leadership role through all aspects of service. All campaigns, PR plans etc to include climate section.

carbon footprint

RESPONDING TO CLIMATE CHANGE IN SOMERSET



Equal opportunities

Somerset County Council positively values 'diversity' (people's differences), and celebrates cultural and social differences. Our equal opportunities promise is to provide all services of equal quality which meet your needs and fulfil your rights. You can expect to be treated fairly, with respect, dignity and understanding, whoever you are and whatever your background.

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