

## **Adaptation Plan – Case Studies**

### **Executive Summary**

At the March 2012 Environment Select Committee, the Wiltshire Council Adaptation Plan was presented for comment to the Committee. The Committee requested that the Adaptation Plan be amended to include some case studies illustrating the types of climate changes impacts on the council's services.

This report presents four case studies and recommends their inclusion in the soon to be published Wiltshire Council Adaptation Plan.

### **Proposal**

That the four case studies in this report be noted by the Committee and be included for illustrative purposes in the Wiltshire Council Adaptation Plan.

### **Reason for Proposal**

To provide greater clarity to the Wiltshire Council Adaptation Plan, following comments received from the Environment Select Committee.

**Carlton Brand**  
Corporate Director

**Presentation of Case Studies for inclusion in the Wiltshire Council Climate Change Adaptation Plan**

**Purpose of Report**

1. At the March 2012 Environment Select Committee, the Wiltshire Council Adaptation Plan was presented for comment to the Committee. The Committee requested that the Adaptation Plan be amended to include some case studies illustrating the types of climate changes impacts on the council's services.

**Background**

2. In the summer of 2010 work was undertaken to complete 1:1 risk assessments with council officers to identify which council services might be vulnerable to changes in our climate. In total 113 interviews were carried out to assess vulnerabilities and opportunities associated with predicted changes in our climate. For the purpose of these assessments mid range climate change estimates, as highlighted by the United Kingdom Climate Impact Programme ([UKCIP](#)), were used.
3. Arising from these interviews, a total of 63 risks to council services were identified, of which 29 had a high risk score. Where possible, ways to reduce the risk scores have been agreed and these should be implemented during the term of the plan (2011 – 2016).
4. To communicate this issue more effectively, a summary document outlining in general terms the risks faced by the council has been produced and was presented to the Environment Select Committee in March.
5. Work to mitigate against the 29 risks identified will be long term, as the council progresses through a cycle of renewing contracts and evolving services. Instead of formally registering departmental risks, a yearly assessment of how each of the teams are preparing for Climate Change Adaptation issues will be undertaken by the ECO Team. Findings will be reported to the Risk and Assurance Team with conclusions drawn on the council's performance.
6. If it is felt that more needs to be done, the Risk and Assurance Team will seek high level engagement for stronger commitment to mitigating issues.
7. The completion of the Climate Change Adaptation Action Plan marks the end of the information gathering phase that sets a baseline for how the council is

currently performing. It is now essential that progress is made by each of the officers responsible for individual actions, supported by the ECO Team, to mitigate the risks faced by the council.

8. Feedback on performance on reducing Climate Change Adaptation risks will be reported on an annual basis to the ECO Board, with the first report due to June 2012.

### **Main Considerations for the Committee**

9. At the last Environment Select Committee meeting, it was agreed that the inclusion of some examples would help to illustrate the range of risks faced by the council resulting from unavoidable climate change.
10. It is proposed that the case studies presented in Appendix A to this report be included in the final Wiltshire Council Adaptation Plan.

### **Environmental and Climate Change Considerations**

11. The Climate Change Adaptation Plan forms the council's response to preparing for unavoidable climate change.

### **Equality and Diversity Impact of the Proposal**

12. Addressing climate change adaptation will help protect vulnerable groups across the county by increasing their resilience to the unavoidable consequences of climate change.

### **Financial Implications**

13. There are no financial implications relating to this paper.

### **Legal Implications**

14. There are no legal implications to this paper.

### **Conclusion**

15. Following the inclusion of these case studies, the Wiltshire Council Adaptation Plan will be ready for publication and on-going monitoring.

### **CARLTON BRAND**

Corporate Director

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### **Appendix A: Climate Change Adaptation Plan – Case Studies**

## Climate Change Adaptation Plan – Case Studies

Changes to Wiltshire's climate arising from the effects of CO<sub>2</sub> in our atmosphere are expected to include:

- Hotter drier summers:
  - Average increase of 1.1 – 5.4°C
  - Hottest summer days +9.5°C
- Rainfall:
  - Total annual rainfall unlikely to change
  - Summer rainfall -20% / Winter rainfall +15%
- Warmer, wetter winters
- More extreme weather events

These changes will impact on our environment, infrastructure and people and will affect the demand for and the way we provide our services. The following examples are provided to illustrate some high risk impacts of weather changes on our services.

### **Case Study 1: Biodiversity**

Hotter, drier summers, droughts and water shortages, annual temperature increase, excessive rainfall and flooding, warmer wetter winters are likely to lead to a changing number and distribution of native plant and animal species in Wiltshire, changes to Wiltshire's landscape characteristics and increased agricultural pests.

This risk will affect Spatial Planning, Countryside Service, County Wildlife Sites, Rural Estates, and AONBs.

Control measures currently in place include:

- Wildlife and Countryside Act Schedule 9.
- River Avon Invasive Species Forum.
- North Wiltshire Invasive Plants Projects.
- Wiltshire Biodiversity Plan.
- Control of invasive non-natives when known/reported on Wiltshire Council owned/ controlled land.
- Production of Green Infrastructure Plan (GIP) which includes identification of potential framework for Green Infrastructure which will benefit existing and new biodiversity.

The initial risk level has been assessed as High (impact 3 x likelihood 4 = total score 12).

Actions for the short term include:

- Increasing awareness among countryside staff.

- Rapid response/ action plan for remedial action.
- Consult GB Non-native species secretariat.
- Set-up management regimes for parks, green spaces and semi-natural habitats to maintain biodiversity and manage the spread of invasive and undesirable species.
- Protect & enhance green open space, habitats, ecological corridors via landscape scale projects & SUDS.
- At countryside sites: develop control measures necessary on site to protect vulnerable areas.

In the longer term, the council will:

- Encourage adaptation of habitats and natural colonisation by species suited to changing climatic conditions through the Wiltshire Biodiversity Action Plan.
- Monitor populations of disease-bearing vermin and pests in the face of rising temperatures and review resource requirements to manage them.
- Review and revise the Wiltshire Biodiversity Action Plan and the various Habitat Action Plans based on increased understanding of the impacts of climate change and guidance from the England Biodiversity Strategy. This may include accepting loss of some habitats where this cannot be avoided in the face of climate change (e.g. accept loss of some land to flood zones) and providing alternative habitats elsewhere. Increase irrigation in parks & green areas during the drier months.

These actions will reduce the risk level to Medium (impact 2 x likelihood 4 = total score 8).

## **Case Study 2: Drainage / Flooding**

Excessive rainfall and flooding and warmer wetter winters are likely to lead to drainage systems being unable to cope causing flooding to homes and buildings. This in turn could lead to public liability due to premises needing to be evacuated, issues of health and safety, loss of equipment or goods, impacts on mental health, cost of repairs.

The Services that may be affected by this risk include Spatial Planning, Emergency Planning including Business Continuity, Highways, Flood Risk Management Team, Facilities Management, Environmental Protection - Public Health and Wellbeing and the Environment Agency.

To control this risk, the council is developing the following plans:

- Surface Water Management Plans.
- Strategic Flood Risk Assessments (SFRAs).
- Joint Emergency Response Guide.
- Wiltshire Recovery Plan.
- Local Resilience Forum Flood Response Plan.

- Major Incident Communication Plan.
- Transport Asset Management Plan.
- Gully emptying programme.
- Catchment Flood Management Plans.
- River Basement Management Plans.
- Water Company Investment/Asset Management Plans.

The council has also committed to engage and influence operational emergency plans and actively participate in Local Resilience Forums (LRFs) and will identify resources and demands prior to any situation arising.

The initial risk level has been assessed as High (impact 4 x likelihood 2 = total score 12).

To reduce this risk further, the council will:

- Under the Flood and Water Management Act, Wiltshire Council and the EA will put in place protocols to establish flood risk, flooding prevention and improve recovery after any event. This will be an ongoing process over the next 5 years with regular meetings throughout the country. Preliminary Flood Risk Assessment (PFRA) will identify areas at risk and considers cost implications. This requires close partnership working with water companies.
- Implement Surface Water Management Plans for high risk locations in the county - identifying and mapping flood 'hotspots' and identifying causes of flooding in each case.
- Investigate opportunities for installing sustainable drainage systems (SuDS) and all methods of securing long term management and maintenance of SuDS. Review maintenance regimes for drains and establish whether more frequent clearing of drains is required. Plan to improve drains and culverts where SuDS cannot be adopted.
- Reduce surface water run-off by minimising loss of green urban space including roadside verges and maintain a network of natural drainage systems (watercourses).
- Compile Surface Water Management Plans for high risk locations.
- Use LDF policy to require that drainage systems in new developments have the capacity to cope with heavier rainfall events and use LDF to secure long-term commitment to the management and maintenance of SuDs e.g. require green roofs etc in targeted flash flood 'hotspots'.
- Identify Council-owned spaces in urban areas that can be used/manipulated for additional temporary flood water storage at times of flood.
- Increase resilience to Council properties at risk of flooding by:
  - Using one-way valves in drainage pipes to prevent back-up of water into buildings,
  - Using de-mountable flood barriers,

- Using flood-resilient materials,
- Locating electrical services and boilers above likely maximum flood level,
- Increasing capacity of drainage systems (e.g. guttering),
- Installing damp courses.

In addition, the council should consider:

- Working in partnership with others to improve flood resilience.
- Developing a Highways gully emptying programme.
- Using Sustainable Drainage Systems (SuDS) when replacing traditional drainage systems.
- Enhancing a network of urban green space and tree cover to reduce surface run-off.
- Integrating weather vulnerability and risk management into roads/highways project planning.
- Transforming Council-owned spaces in urban areas into additional temporary flood water storage at times of flood.
- Introducing incentives to encourage sustainable drainage systems and green roofs in LA area.
- Installing permeable surfaces or green roofs on Council-owned buildings and car parks.
- Creating spaces for additional temporary flood water storage in Council-owned large open spaces.

By putting in place these measures, the risk will reduce to Medium (impact 3 x likelihood 3 = total score 9).

### **Case Study 3: Schools buildings**

Extreme weather such as storms and gales, periods of intense precipitation or heatwaves may result in an increasing need for capital funding to retrofit adapt schools to the changing climate.

This risk affects the Schools Department and Property Services, and in the short term, the council will need to identify low cost 'quick-wins' to existing buildings programmes.

The initial risk level has been assessed as High (impact 3 x likelihood 4 = total score 12).

To reduce the risk further, the council will analyse budgets and plan to prioritise spending on adaptation measures. In the longer term as weather impacts increase, more integrated budget planning will be necessary to reallocate spend and resources into adaptation measures. This may be mitigated to an extent through more commissioning and less direct service delivery.

This will reduce the risk to Medium (impact 2 x likelihood 4 = total score 8).

## Case Study 4: Water shortages

Drought may occur as a result of decreased rainfall in summer or from changes to our rainfall patterns during the rest of the year whereby intense rainfall may lead to surface water flooding, but not replenishment of the water table. Water shortages will lead to a range of different impacts, including:

- Increased hospital admissions to treat dehydration, especially among the vulnerable.
- Crisis in industries highly dependent on water, such as agriculture and could be particularly acute where businesses with an abstraction license
- Fire and rescue services unable to respond when threatened as water is important resource.

Council services particularly affected will be Public Health and Wellbeing, Environmental Protection, Emergency Planning, and Social Services for both adult and child care.

Control measures currently in place for the council include:

- Including climate change as an issue in responses to Development Control consultations
- Risk assessment of private water supplies should have regard to drought conditions.
- Water Distribution Plan.
- Vulnerable People plan.
- Crisis Communications Plan and Handbook.
- Heat Wave Plan.

The initial risk level has been assessed as High (impact 3 x likelihood 4 = total score 12).

To reduce this risk further, the council could in the short term:

- Monitor and review its business continuity plan with regard to climate change.
- Address water efficiency at its own buildings.
- Reduce evaporative losses from surface water stores.
- Investigate the possibility of working with water companies to jointly-fund rebate scheme for residents to purchase and install water-saving devices.

In the longer term, the council should consider:

- Undertaking a co-ordinated and sustained awareness raising campaign aimed at businesses, property developers and residents regarding water.
- Set-up local water reservoirs to collect water during periods of extreme rainfall.

These measures would reduce the risk to Medium (impact 2 x likelihood 4 = total score 8).