



# CLASP

Climate Change  
Local Area  
Support  
Programme

# Adaptation Resource Pack

Step-by-step guidance for  
Local Authorities with case studies  
from around the North West of England.

Climate Change Adaptation Risk Assessment in Detail  
Service Area: **Highways and Transport**  
Example: **Cheshire West and Chester Council**



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February 2011



## Highways and Transport - Cheshire West and Chester Council

### Background

In this CLASP Climate Change Adaptation support project a consultant worked with the local authority to prepare a risk assessment workshop for the key service areas. This short document details the process, key lessons and outcomes for Cheshire West and Chester Council's (CWAC) work on understanding how well prepared it is in terms of risk assessments and business continuity plans for changes in climate on its Highways and Transport service area (covering infrastructure, service provision and street lighting).

### Timeframe

- May 2010 – NI188 self assessment for 2009/10 submitted – achieved Level 1 but many Level 2 objectives already achieved
- July - CWAC application to CLASP for support
- July – Consultant meeting with CWAC to establish position with regard to NI 188 and agree next steps
- August – September – Data gathering/review
- October– Workshop preparation involving key staff in Highways and Street Lighting Meetings with Audit and Risk Manager to understand council procedures on risk reporting
- November – Risk Assessment workshop held
- December - presentation on climate change adaptation to Management Group
- January 2011 - Findings from the workshop to reported to the Departmental Management Team and Director

### Challenges Before Workshop & How They Were Tackled

<i>Securing senior officer buy in</i>	Highway maintenance and street lighting are key areas of interest to senior officers and Council Members, being high on the agenda and involving the Authority's largest assets.
<i>Risk management buy in</i>	The LCLIP identified the main threats and past impacts to services of weather events. The Sustainability Manager worked with the Risk Managers to identify a priority list that need risk assessing in order to develop adaptation plans for these areas.
<i>Attendance at workshop</i>	Prior work with Service Heads on service implications to our changing climate plus links to Cheshire Resilience Forum and Emergency Planning Teams meant that there was good understanding of the importance of climate change adaptation and buy in from senior officers to send staff to the workshop.



## Highways and Transport - Cheshire West and Chester Council

### Initial Questions Asked and Documents Reviewed

- *What is the aim of the process?* As a new unitary authority, CWAC had drawn together all functions from the previous two tier authorities, including Highways and Street Lighting. They were working on standardising reporting and data collection for a range of major roads to housing estates and from large urban centres to remote rural areas. CWAC were also developing a Highways Asset Management Plan, a Sustainability Facilities Management Plan and already had in place a replacement programme for Street Lighting stock. In response to the Flood and Water Management Act they were also looking at strategies for flood risk management. So it was timely in light of so much change and new strategy development to carry out risk assessment of Highways and Transport in order to build adaptation into new strategies and workstreams.
- *How does CWAC work with neighbouring authorities?* CWAC are working with Cheshire East and Warrington Councils and other partners through the newly created Climate Change and Sustainability Commission and Adaptation is one of the commission's three priorities.
- *What are the biggest risks from weather/climate?* In collaboration with the University of Chester, Cheshire West & Chester Council completed a Local Climate Impact Profile for the borough. This found that the North West is experiencing the type of generic changes in the climate that are being witnessed across the rest of the UK. Past impacts on service delivery have included:
  - Diversion of staff from other responsibilities to deal with weather events.
  - Loss of infrastructure.
  - Reduced and/or failure of service delivery.
  - Unforeseen revenue and capital costs.
- *What plans are in place now?* CWAC collated existing plans, such as the Transport Asset Management Plan and the Local Transport Plan.
- *What risk assessment process is used?* In CWAC, a Risk Control Form is used with a '4x4' risk impact/likelihood matrix.

### Transport Planning Society – Local Transport: Adapting to Climate Change (September 2009)

This useful report outlines an approach for local authorities and partners in understanding their network vulnerability, how to strengthen resilience in a number of ways including managing severe weather and disruption, taking low to medium cost measures, looking at major schemes and supporting climate change mitigation.

[http://www.climatesoutheast.org.uk/images/uploads/Local\\_transport\\_adapting\\_to\\_climate\\_change\\_briefing.pdf](http://www.climatesoutheast.org.uk/images/uploads/Local_transport_adapting_to_climate_change_briefing.pdf)

## Highways and Transport - Cheshire West and Chester Council

### The Risk Assessment Workshop

The workshop was attended by 20 people with representation from Highways, Street Lighting, Local Transport Plan team, Emergency Planning and Risk Management. In addition, external representation was provided by the Environment Agency and the Highways Agency.

The aims of the workshop were:

- To increase understanding of climate change risks, the risk management process and the adaptation actions required for Highways & Transport.
- To have worked through the process to reach a detailed risk assessment and management plan for the most significant risks.

The workshop was structured into 3 sessions: -

- Session 1: Identifying and quantifying the risks
- Session 2: Assessing Existing Risk Management Plans
- Session 3: Identifying Risk Management Options.

Staff were invited to mix up into smaller break-out groups to ensure a cross-fertilisation of ideas.

Mixing up people from different service areas in workshop groups is very useful because it shows how services inter-relate and rely on each other. It also shows up cross-cutting issues and policies such as communications, IT and Human Resources.



## Highways and Transport - Cheshire West and Chester Council

## Session 1: Identifying &amp; Quantifying the Risks

The first session aimed to consider the impact of each of the main climate change risks on Highways & Transport for CWAC, using a Risk Assessment matrix.

### Risks for Highways & Transport

- **Increase in average/max. daily temperatures**
  - Damage to road surface/asset deterioration
  - Driver/passenger discomfort
  - Changes in traffic flows/patterns linked to tourism
  - Increased verge/embankment maintenance associated with longer growing seasons
  - Ground shrinkage, subsidence, landslides etc caused by drought and lower water tables
  - Expansion of rails leading to buckling




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### Risks for Highways & Transport

- **Increase in winter precipitation/more extreme events**
  - Flooding of roads, rail lines, tunnels and stations
  - Localised flooding caused by inadequate gullies/drainage
  - Increased accident potential owing to reduced visibility/aquaplaning
  - Flash flooding has potential for network failure and diversions
  - Erosion/scour of structures caused by increased river flows



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### Risks for Highways & Transport

- **Increase in high winds and storms**
  - Road closures/operational constraints and diversions
  - Fallen trees and associated debris
  - Potential for damage to structures, gantries, power lines/utilities
  - Vulnerability of exposed structures/bridges

**DISRUPTION and SAFETY IMPLICATIONS**



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### Risks for Highways & Transport

- **Sea Level rise/coastal erosion and storm surges**
  - Periodic flooding of infrastructure
  - Permanent asset loss
  - Road closures/diversions
  - Realignment of routes
  - Severance



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These were logged onto an adapted matrix, which uses a '4x4' matrix, with scores for 'likelihood' and 'impact'.

Some of the higher risks identified included:

- Enhanced deterioration of highway/footway asset from extreme temperatures and hot-cold cycles
- Snow/ ice resulting in road closures causing impact on general service delivery and access to essential goods and services
- Increased risk of surface flooding affecting infrastructure, impact on all transport movements and access to services
- Increased river flows resulting in accelerated scour/erosion of bridges/embankments
- Risk of river and tidal flooding in low-lying areas causing flooding /severance of critical infrastructure (e.g. roads/rail)
- Impact on service delivery during extended 'cold weather' events
- Erosion of coast causing a loss of infrastructure/amenity
- Increased impact of interacting events, such as dry summer coupled with wet winter causing cumulative stress (ice/heat weakening road surfaces for example).

### **Session 2: Assessing Existing Risk Management Plans**

Following identification of the major risks, the groups were then asked to identify how well existing plans and activities addressed the risks identified in the first session. The purpose of this exercise was to identify gaps in coverage of existing plans and help to assess what actions are required going forward.

### **Session 3: Identifying Risk Management Options**

The final stage of the workshop was to develop an action plan for taking forward the key gaps in coverage, with named responsibilities and a timescale for implementation.

A number of required actions were identified:

- mapping assets against existing geotechnical maps to identify subsidence risks
- including a performance specification in maintenance regimes for urban areas
- mapping flood areas on assets
- mapping drains/culverts on GIS
- Surface Water Management Plan will be required by 2011 with the new responsibilities of Flood and Water Management Act.

The group achieved a lot in the short time period of the workshop, gaining a better understanding of likely risk from climate change events now and in the future. They also improved their understanding of the risk assessment process used in CWAC and identified the biggest risks to Highways and Transport. Even where plans are fit for purpose in relation to climate change, such as the Transport Asset Management Plan (TAMP) they will need scrutinising. The group also identified people to lead on action for areas where there were gaps in coverage.

### **Next Steps**

A case study from the workshop was used for a member training session on Risk Management in December.

Following the Risk Assessment workshop, a 'mini-workshop' was held with key staff from Climate Change/Sustainability, Highways and Street Lighting. The purpose of this session was to complete the gaps in the risk register and identify ownership of the key actions identified.

The next steps are as follows:

- Analysis of existing plans for their 'fitness for purpose' in relation to climate change adaptation.
- Identification and consideration of good practice from other authorities.
- Integration of climate change adaptation risk management into service planning for 2011/12.
- Identification of current and future budget implications.



- Preparation of business cases for short/medium/long-term investment that takes into account long-term changes in climate.
- Review of process during Autumn 2011 and planning for 2012/13.
- Establishment of a 'Task and Finish' group to oversee this work.

A summary report was produced for consideration by the Departmental Management Team, with a view to recommending that Adaptation to Climate Change is considered as a corporate risk.

With the withdrawal of the National Indicator set (NI188) there is a danger of this work not being seen as important. However, working with Risk Management and Business Continuity colleagues, CWAC is ensuring that this work is taken forward.

With the current local authority budget situation, this work will need to focus on the strong business case for early preventative actions, rather than reactive (and thereby more expensive) actions.

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### **Useful Resources:**

#### **Publications**

- The Resilience of England's Transport Systems in December 2010 - An Independent Audit by David Quarmby CBE, December 2010 (DfT).
- Local Transport: Adapting to Climate Change, September 2009 (Transport Planning Society).
- Guidance on Local Transport Plans, July 2009 (DfT).
- Climate Change section of the Local Transport Plan Policies and Good Practice Handbook, (DfT).



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- Climate Change Adaptation Strategy and Framework, November 2009 (Highways Agency).
- DfT Local and Regional Climate Change Research, Final Report, May 2010 (Atkins).
- Building Resilience to Climate Change: An Adaptation Plan for Transport 2010-2012, March 2010 (DfT).
- Maintaining pavements in a changing climate, 2008, TRL.
- The Effects of Climate Change on Highway Pavements and How to Minimise Them: Technical Report, 2008, TRL.

### Websites

- Highways Term Maintenance Association - [www.htma.co.uk](http://www.htma.co.uk)
- Nottingham Declaration – [www.nottinghamdeclaration.org.uk](http://www.nottinghamdeclaration.org.uk)
- UK Climate Impacts Programme (UKCIP) – [www.ukcip.org.uk](http://www.ukcip.org.uk)
- Defra reports on Climate Risks identified by national authorities including the Highways Agency, Network Rail, Water Authorities etc - [ww2.defra.gov.uk/environment/climate/sectors/reporting-authorities/](http://ww2.defra.gov.uk/environment/climate/sectors/reporting-authorities/)

### Reports

- Resilience of Transport Infrastructure in the North West: Stage 1 Report – Evidence Base, Working Draft, June 2010 (Atkins).

### Example Strategies/Risk Assessment

- The Draft Climate Change Adaptation Strategy for London, Public Consultation Draft, February 2010.
- Derbyshire, Leicestershire and Nottinghamshire County Councils (3 Counties Alliance Partnership) – Climate Change Adaptation Plan. The 3 CAP project is looking at the current and likely future impact on climate change on the Highway Network Policies and Standards for the three counties.





## Highways and Transport - Cheshire West and Chester Council

For more information on what to do to manage climate change adaptation please see the accompanying documents produced for the CLASP Climate Change Adaptation Support Project.



**Why bother to do Climate Change Adaptation without NI 188?**



**Getting Started on Climate Change Adaptation**



**Accelerator Pack – Embedding Climate Change Adaptation into LA Processes**

Climate Change Adaptation Risk Assessment for:



**Planning & Development**      Rossendale Borough Council



**Highways & Transport**      Cheshire West and Chester Council



**Business Continuity**      Pendle Borough Council



**Capital Assets**      Wigan Council



**Emergency Services**      Liverpool City Council