



Adapting to Climate Change

Liverpool City Council Adaptation Action Plan

Liverpool City Council

Adapting to Climate Change: Liverpool City Council Adaptation Action Plan

A report by **CAG Consultants**

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Executive Summary

Liverpool City Council is leading efforts to transform the city to withstand the predicted impacts of climate change to protect and enhance the city for its people, the environment, and the economy.

Liverpool City Council has provided exceptional leadership on climate change, through the agreement of one of the UK's first Climate Change Strategic Frameworks, a comprehensive Adaptation Framework and detailed adaptation action reviews. This document is Liverpool City Council's Adaptation Action Plan, which outlines its on-going programme of engagement, and includes the adaptation action reviews that have been undertaken by six groups of business units to date. This Action Plan sets out the high priority risks which are very likely and could have a major impact on the City, and the actions that the Council and its partners will take in response to these risks. Further Business Group action reviews will continue to be developed in line with this Action Plan.

The City Council has made great progress in building its own capacity to adapt to climate change, and is now working with partners to start implementing actions.

Adapting to climate change is a corporate priority for the City Council. Climate change risks and adaptation are considered at a strategic level, within the Corporate Plan, Board papers and the Corporate Risk Register. It is embedded within a range of council and city-wide strategies, such as the Procurement Strategy and the draft Green Infrastructure Framework, and will be addressed at a delivery level through all business plans, risk registers and business continuity plans. The Council also provides leadership and support to Liverpool First, and works with other local authorities in the North West region (through the Climate Change Local Area Support Programme) and with the Core Cities Group.

Practical measures are also being taken to protect and enhance the city. For example, the Council is working with partners such as the Primary Care Trust, the Health Protection Agency and the Environment Agency to plan for, and prepare for extreme weather events, by providing advice to residents on coping in the event of severe weather and improving the condition of social and private homes and major new developments are being required to consider long term climate adaptation measures.

There has been an excellent level of engagement of senior Council officers and representatives of partner organisations at the workshops organised by the Council. Assistant Executive Directors have taken the lead in developing their adaptation action plans. To ensure that climate change is fully embedded within the Council's and Liverpool First's decision-making, **it will be important that the Executive Management Team and CEO-level representatives of partner**

organisations continue to lead the work, particular within high profile areas such as Building Schools for the Future and Children's Services.

Liverpool City Council has been actively working with its Liverpool First partners to identify and deliver actions to adapt to climate change. In 2010, the Environment & Sustainability Task Group, which has been leading this work, will be elevated to become a Strategic Issue Partnership, which provides an ideal opportunity to **continue to promote tackling climate change as a key priority for Liverpool First**. It will be important that all Strategic Issue Partnerships take ownership of the delivery of the Adaptation Framework and are involved in its delivery.

During 2010-11, Liverpool City Council will continue to work actively with its partners, through Liverpool First and its Strategic Issues Partnerships to roll out further development workshops and to put in place systems for regular and continual monitoring and reporting progress. A vision for a well adapted Liverpool, fully engaging Liverpool First partners to take forward and integrate Adaptation into all aspects of normal business processes, will lead the city towards a new objective to achieve Level 4 by March 2011.

1. The context for action

1.1 The purpose of this Plan

This document is the Climate Change Adaptation Action Plan for Liverpool City Council. It builds on the City of Liverpool's Climate Change Strategic Framework (published in September 2009) and the Climate Impacts and Vulnerabilities ['Adaptation'] Framework for Liverpool City, prepared for Liverpool City Council (and published in September 2009).

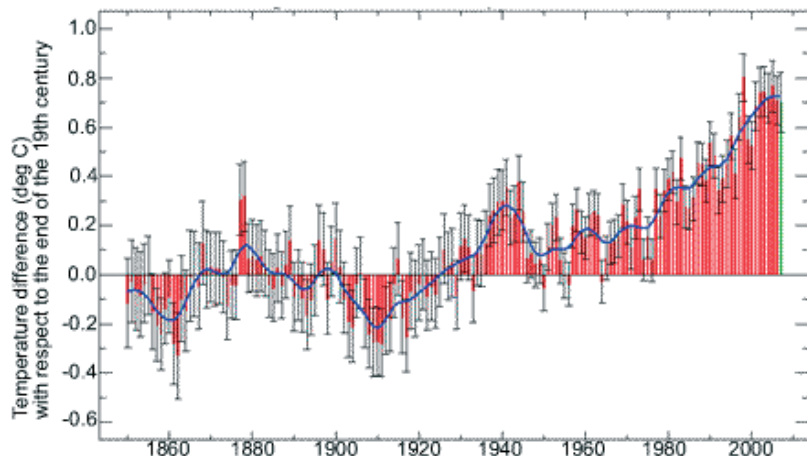
This Adaptation Action Plan sets out the detailed actions agreed by Liverpool City Council's business units and services that are likely to be most affected by climate change. These priorities and actions will be monitored and reviewed as part of the normal risk management and business planning processes. As such, this remains a working document and is intended for publication and use by the City Council's staff, partners and stakeholders. Further detailed adaptation actions will be identified by other City Council Business Groups during 2010/11. This is seen as an ongoing process of organisational change and will remain a live document.

1.2 The climate challenge

Climate change is happening. Despite historical fluctuations in global temperatures, we are experiencing unprecedented increases in the rate of global warming. According to the Intergovernmental Panel on Climate Change, average global temperatures have risen by nearly 0.8°C over the last 100 years and have risen at about 0.2°C/decade over the last 25 years.

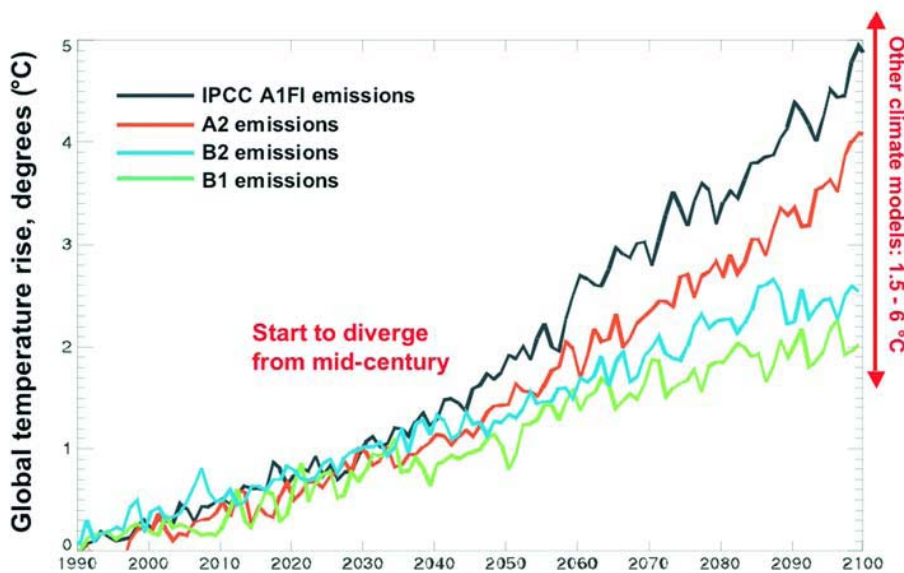
Figure 1: Temperature difference (degrees Celsius) since 1850 (Met Office)

The 17 warmest years (globally) have all occurred in the last 20 years. 2009 is expected to have been the fifth warmest year since records began in 1850, and 2010 is expected to average 14.58°C – the warmest on record. Note: The cold snap in early 2010 was a short term 'weather' event, rather than a long-term climatic trend, and the Met Office predict that as the weather becomes warmer, there may be more heavy snow episodes.



The IPCC have concluded that it is very likely that global warming is caused by human activities and the emissions of greenhouse gases. Even if we reduce emissions of greenhouse gases, we are still likely to see changes in our global climate, as a result of past emissions, see figure 2.

Figure 2: Global temperature rises according to IPCC scenarios (AR4)



The IPCC Scenarios – in brief: A1FI - very rapid economic growth, a global population that peaks in mid-century and rapid introduction of new and more efficient fossil-intensive technologies; A2 – high population growth but slow economic development and slow technological change; B2 – intermediate population and economic growth, with local solutions to economic, social and environmental sustainability; B1 – the same global population as A1FI but with more rapid changes in economic structures towards a service and information economy.

Past emissions mean that some climate change is inevitable. The latest UK Climate Projections (UKCIP, 2009) show that Liverpool will experience warmer, drier summers, milder wetter winters, rising sea levels and stormier weather, see figure 3.

Figure 3: Climate projections for Liverpool (2020s, 2050s and 2080s)

Climatic variable	2020s (2010-2039)	2050s (2040-2069)	2080s (2070-2099)
Change in mean annual average temperature	+1.3°C	+2.3°C	+3.2°C
Change in daily maximum summer temperature	+1.6°C	+2.9°C	+4.1°C
Change in temperature of the warmest day in summer	+1.3°C	+2.3°C	+3.0°C
Change in summer average precipitation	-6.0%	-15.1%	-18.6%
Change in winter average precipitation	+6.2%	+12.9%	+17.5%
Relative sea level rise	+ 0.086m	0.194m	0.326m

Source and notes: UK Climate Projections 2009. Based on the 'Central Estimate' (range from 10% to 90% probability), Medium Emissions scenario, which equates to scenario 'A1B' of the IPCC (i.e. an average global warming of 2°C by 2080s for grid square 1233).

Overall, Liverpool is likely to experience similar changes in climate to other parts of the United Kingdom; hotter, drier summers and warmer, wetter winters. But these changes are likely to be less dramatic than the North West region as a whole, and other UK regions. Liverpool is likely to get less hot in summer than the North West and other regions like the South East, with summer mean daily maximum temperatures only rising by 1.6°C in comparison to 1.9°C and 2.1°C by the 2020s; and is likely to become less drier in summer, but slightly more wetter in winter than the North West.

Annex 1 presents more detailed results of the UK Climate Projections 2009 for Liverpool city. These and more detailed graphical results of the UKCP09 will be available in the guidance materials for LCC staff and will be made available for Liverpool First partners and should be used to inform risk assessments and decision-making.

While warmer daily temperatures can make it more pleasant to go outside, such increases in global average temperatures will have significant impacts globally and locally. If annual global temperatures increased by:

- 2-3°C – summer heatwaves, like the one in 2003 which killed around 35,000 people across Europe, could become annual events;
- 3-4°C – glaciers and snow in the world's highest mountain chains would deplete freshwater flows to downstream cities and agricultural land, while drought would affect food production in the breadbaskets of Europe, Asia and the United States;
- 5-6°C – the entire Arctic would be ice free, while most of the tropics, sub-tropics and even lower mid-latitudes would become too hot and uninhabitable. Sea level rise will mean that coastal cities will be largely abandoned.
- 6°C and above – dangerous 'runaway warming' could mean that 90% of species become extinct and the human population is drastically reduced.

Because of its coastal location Liverpool is particularly vulnerable to high winds and tidal, river-related and rain-related flooding, although less so than other parts of Merseyside. At the same time, Liverpool is well-located for future water supplies, and is likely to provide a pleasant climate for people moving from hotter areas of the UK, and provide opportunities for tourism and renewable energy.

However, the UKCP09 data has many limitations and cannot provide a clear picture of the future micro-climate of Liverpool. **Liverpool City Council has started to, and should continue to work with the Proudman Oceanographical Laboratory and the University of Liverpool to develop more locally-specific climate data,** particularly in relation to coastal projections, heat and wind to guide decision-making and development in Liverpool.

Liverpool has already seen the impacts on extreme weather in recent years:

- The heatwave in 2003 caused many excess deaths of many elderly and vulnerable people, and in July 2006 resulted in school closures in Liverpool;

- High winds caused the cancellation of fireworks and football matches, power cuts, trees being blow down and the collapse of a high crane resulting in 1 death;
- Prolonged damp, heavy rains and high winds have caused the collapse of poorly maintained buildings – resulting in 4 incidents over 4 years and 1 death;
- Storm damage to school buildings and other LCC premises in early 2007 resulting in insurance claims of around £155,000;
- Summer floods flooded local homes, businesses and John Lennon airport (in May 2008); and
- Heavy snow in early 2010, which could, ironically occur more frequently with global warming, caused school closures and disruptions to services.

1.3 Policy drivers

Action on climate change is mandated across national, regional and local policy frameworks.

National

Climate Change Act 2008
 Adapting to Climate Change in England: A framework for action
 Comprehensive Area Assessment
 National Indicator 188: Planning to Adapt to Climate Change
 National Planning Policy
 Civil Contingencies Act 2004
 Pitt Review
 National Heatwave Plan

Regional

Regional Strategy: RS2010
 Northwest Climate Change Action Plan
 Regional Adaptation Framework

Sub-regional and local

[Liverpool City Region Multi-Area Agreement](#)
 Sustainable Communities Strategy: Liverpool 2024: a thriving international city
 Local Area Agreement
 Liverpool Climate Change Strategic Framework
 Liverpool Climate Impacts and Vulnerabilities Framework ('Adaptation Framework')

The **Climate Change Act 2008** gives the Secretary of State the power to ask reporting authorities, including LCC and many of our partners to report on their risks of climate change and the actions that they are taking to address them.

The **Comprehensive Area Assessment** includes an assessment of the Council's use of natural resources (Key Line of Enquiry 3.1), and whether it is managing its performance to reduce our impact on the environment and the environmental risks we face.

The **Multi- and Local Area Agreements** for the City Region and City and the **Climate Change Strategic Framework for Liverpool** include commitments to adapt to climate change. Liverpool First – the city's Local Strategic Partnership are committed to adapt to climate change, making progress, year on year to:

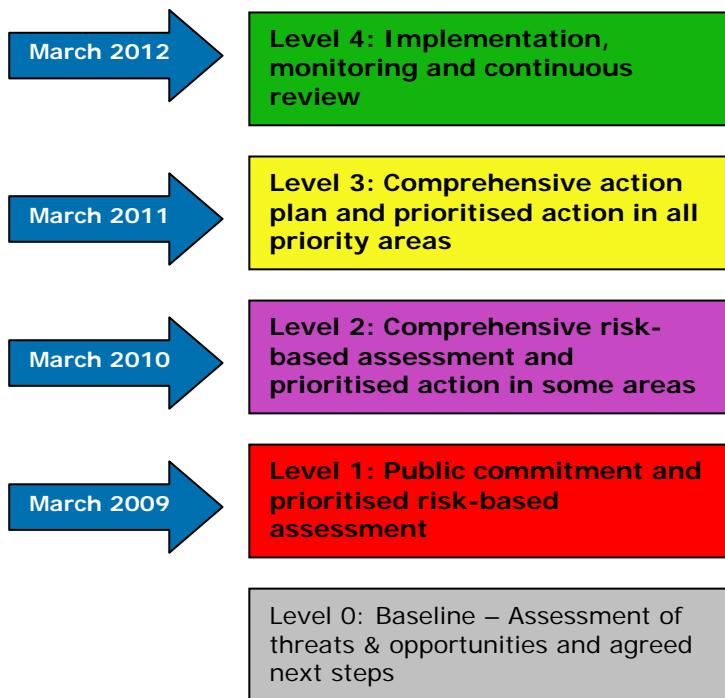
- develop detailed adaptation action plans within priority business areas;
- lead in the development of a well adapted city, introducing adaptation measures and supporting the roll out of awareness training and actions across all partners;
- report back annually on progress against NI188 targets;

- introduce a city wide awareness raising and behavioural change programme.

The City of Liverpool has committed to ‘plan to adapt to climate change’ and in doing so, make progress against the five levels of **National Indicator 188** (NI 188) – see figure 4. By March 2009, Liverpool had reached Level 1: by declaring its public commitment to adapt to climate change and producing a prioritised risk assessment¹.

By March 2010, the City aimed to reach Level 2 by undertaking a comprehensive risk assessment and develop detailed adaptation actions for those business areas which are most vulnerable to climate change. The City Council also needed to start embedding climate change adaptation across our corporate and risk management processes – ensuring that we consider climate change issues throughout our decision-making, implementing adaptation actions, and encourage our partners to do likewise.

Figure 4: NI 188 - Planning to Adapt to Climate Change assessment levels and targets for Liverpool



¹ Adaptation Framework.

http://www.liverpoolfirst.org.uk/sites/liverpoolfirst/files/liverpool_adaption_framework_report.pdf

2. Vision

2.1 How climate change adaptation fits with Liverpool City Council's vision for Liverpool

Liverpool City Council shares the Liverpool First's vision for a **well adapted city for the future**, and its commitment to ensuring that climate change and environmental sustainability are core goals in our contribution to Liverpool's vision for the future. Liverpool First's vision for Thriving Neighbourhoods is that:

'by 2024 Liverpool will be Thriving, with a dynamic third sector and neighbourhoods that are clean, safe and sustainable and that embrace the global challenge of climate change' (Liverpool 2024: A thriving international city, 2009).

'We will transform our city to withstand the predicted impacts of climate change to protect and enhance the city for our people, our environment, and our economy'

(Climate Change Strategic Framework, 2009)

The City's response to climate change underpins the City Council's three corporate aims, as explained below.

Growing the City's economy

Adapting to climate change makes good business sense. Warmer temperatures provide opportunities to attract visitors and workers and diversify employment opportunities in tourism as well as waste, energy and renewable energy management². At the same time we need to ensure that our economy and critical transport and urban infrastructure are resilient to the impacts of flooding, storms and extreme heat will protect our local businesses. Climate change is expected to cost the Northwest region a cumulative opportunity cost in excess of £70billion. Preparing for climate change now could cost the UK 1% of GDP, or much more if we wait until later to address the major disruption that climate change is expected to cause to our economy, society and environment (Stern Review, 2006).

Develop our communities

Liverpool City Council's second corporate aim is to develop Liverpool's communities. Preparing them for extreme weather conditions and helping them to adapt will enable them to be more resilient to future changes. For example, by improving the resilience of social housing and private homes, we can reduce people's vulnerability to hotter summers and wetter winters and plan for healthier and less deprived communities.

² The Economic Impact of EU and UK Climate Change legislation on Liverpool and the Liverpool City Region. A draft report by Regeneris Consulting and Quantum Strategy & Technology, June 2009.

Empower our communities

Empowering our residents to adapt their lifestyles to a low carbon economy, and helping them to get ready for a changing climate is key to achieving LCC's goals. Climate change will affect the most vulnerable in our communities, and it will be important to ensure that LCC works together with partners in the public, private and voluntary sectors to protect the most vulnerable whilst providing opportunities to lead healthier, safer lifestyles.

2.2 Developing a vision for a well-adapted city

The City Council is working with its partners to develop this joint vision of a 'well adapted city'. At a workshop on 8th March 2010, Council staff and partners identified key elements of a well adapted Liverpool, see figure 5. Annex 2 presents the detailed findings of this workshop. **Figure 5: A vision for a well adapted Liverpool**



2.3 The City Council's role

The City Council has committed to, and is playing, a leadership role in adapting to climate change. Liverpool City Council has led the production of the Climate Change Strategic Framework for the city and the development of an Adaptation Framework for the city. As the reporting authority for NI 188, LCC and the Environment and Sustainability Strategic Issues Partnership will continue to play a lead role in co-ordinating and delivering climate change adaptation, but other Strategic Issue Partnerships and partners will also take a lead on many of the themes.

Figure 6: Links between the themes for a well adapted Liverpool, and the work of the Strategic Issues Partnerships and key partners

Vision theme	Link to SIP	Key partners
Leadership and vision	Environment & Sustainability	Liverpool City Council (LCC), Liverpool First, GoNW, NWDA, Merseyside Authorities
Governance and decision-making	Environment & Sustainability Safer & Stronger Communities	LCC, Liverpool First, GoNW, NWDA, Merseyside authorities
Green and blue infrastructure	Environment & Sustainability Health & Wellbeing	LCC, Environment Agency, Mersey Forest, PCT, Glendale Liverpool, Groundwork, Merseyside Environment Trust, Mersey Basin Campaign, Natural England, English Heritage
Fit for purpose transport	Economic Growth	LCC, Merseytravel, Merseyrail, Merseyside Transport Partnership, Peel Ports Ltd, Mersey Ferries, Mersey Tunnel
Resilient communities	Safer & Strong Communities Children & Younger People	LCC, LCEN, LCVS, Liverpool Direct, Local Involvement Network, Liverpool Community Network, CitySafe Partnership, PCT, Merseyside Fire and Rescue Service, Merseyside Police Authority
Urban environment	Housing Economic Growth	LCC, Enterprise Liverpool, United Utilities, MWDA, Environment Agency, Liverpool Mutual Homes, Registered Social Landlords, Liverpool Vision
Natural resources	Environment & Sustainability	LCC, MWDA, Glendale Liverpool, NHS, PCT, Merseytravel, Environment Agency, Mersey Forest, United Utilities, energy companies, Chambers of Commerce
Resilient economy	Economic Growth Children & Young People	LCC, Liverpool Vision, Groundwork, Liverpool Chamber of Commerce and Industry, Skills Funding Agency (formerly LSC), The Mersey Partnership

A list of all the people and organisations who have been involved in the Adaptation work to date is included in Annex 9.

3. Prioritising the risks of climate change

3.1 Priority risks and opportunities for Liverpool

Climate change will directly affect Liverpool’s residents and the services provided by Liverpool City Council. The Adaptation Framework outlined the priority risks and opportunities of climate change, as summarised in figure 7.

Figure 7: Priority climate change risks and opportunities for LCC and partners

Risks	Opportunities
<ul style="list-style-type: none"> • Damage to property and infrastructure • Disruption to services • Increased running costs of maintenance, insurance premia and claims, summer cooling • Restrictions to, and higher costs of, development • Risks for parks and greenspaces • Health risks (of infectious diseases, contamination, UV exposure, dehydration) • Risks for staff (health, comfort and travel to work) • Risks for vulnerable groups (particularly those in poor housing, older people and those suffering from long-term illness) • Risk of civil unrest (through global shortages of food, energy and water) 	<ul style="list-style-type: none"> • Economic opportunities for tourism, increased revenue from parks/outdoor leisure and a low carbon economy • Healthier lifestyles and diets and a reduction in ‘excess winter deaths’ • Reduce costs of heating and gritting during winter • Opportunities for increased use of, and less intensive maintenance of, parks and greenspaces

3.2 Priority risks for LCC business units

The Adaptation Framework (Appendix 8) presents a prioritised risk assessment for each key weather event, indicating which Council services were affected. This assessment was used to produce prioritised risk matrices for a number of priority Task Groups, each consisting of several business units. Consultant support was provided to six key

Task Groups to help them prioritise their risks and develop detailed adaptation actions during 2009/10 (see figure 8).

LCC Task Groups	2008/09	2009/10	2010/11	2011/12
1. Corporate Services	Red	Red	Yellow	Green
2. Risk Management, Procurement & Fleet Management	Red	Red	Yellow	Green
3. Communications	Red	Red	Yellow	Green
4. Planning & Transportation	Red	Red	Yellow	Green
5. Parks, Green spaces & Public Protection	Red	Red	Yellow	Green
6. Neighbourhoods, Housing & Community Resilience	Red	Red	Yellow	Green
7. Older people and vulnerable adults	Red	White	Red	Yellow
8. Estate management and capital projects	Red	White	Red	Yellow
9. Children's services	Red	White	Red	Yellow
10. Tourism, culture and sports	Red	White	Red	Yellow
11. Business and economy	Red	White	Red	Yellow

Key:

- Develop prioritised risk assessment
- Develop business group level adaptation action review
- Implement action review, monitor, report and review

Figure 8: Schedule for developing LCC Task Business Group' adaptation action reviews

Adaptation actions will be implemented for the remaining Task Groups during 2010/11.

Guidance has been produced for those Task Groups which have yet to review adaptation actions. The guidance is in the form of a PowerPoint training package, and is summarised in Figure 9 and Annex 3.

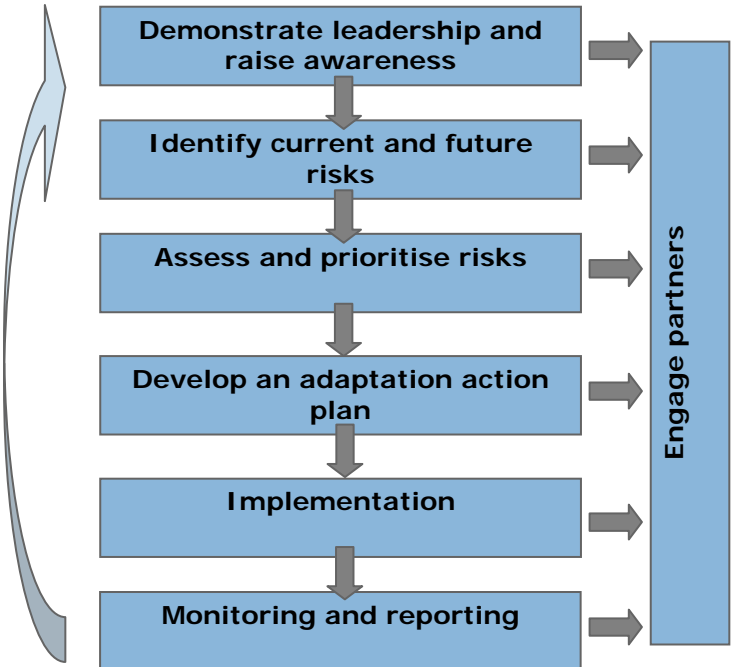


Figure 9: Process for developing and implementing business group level adaptation actions

A matrix showing all the priority risks and their relevance to Liverpool City Council's different business units and Task Groups is presented in Annex 4.

Representatives from business unit teams within each priority Task Group met for a series of meetings. They followed a process, modelled on the City Council's own Risk Management Business Unit Toolkit (version 5, February 2009). Each Task Group reviewed the likelihood and impact of the priority risks identified for their service, according to the Risk Management Business Unit Toolkit guidance; see Annex 5 for a summary of this guidance. They then selected the highest scoring risks and those on which they could most effectively manage as a group. Each Task Group then identified the appropriate control measures or 'adaptation actions' which would reduce the probability of the risk, or its impact.

The strategic priorities coming out of these are presented in section 4, while the full business group level action reviews are presented in Annex 6.

4. Adaptation Action Plan

4.1 The City Council's approach

The Climate Impacts and Vulnerabilities Framework recommended that the Council should:

- Continue to **show leadership** on reducing the risks of climate change;
- **Work in partnership** with its partners and neighbouring authorities;
- **Link climate change adaptation and mitigation** efforts;
- **Raise awareness of climate change** through the development of a joint communication and behaviour change strategy;
- **Develop community resilience** through work with the Primary Care Trust and partners;
- **Embed climate change adaptation into corporate management, decision-making**, major projects, contracts and policies - particularly risk registers and business plans.
- **Build capacity** amongst LCC staff and contractors through training on risk assessment and adaptation actions;
- **Emphasise the opportunities** presented by climate change;
- **Ensure sustainability** and consistency with between the council's decisions on climate change and sustainable development;
- **Where possible go for 'no regrets' actions**, balancing the financial/time costs of actions with the seriousness of the impacts;
- **Monitor and review** climate change risks, vulnerabilities and priorities for action.

4.2 Types of adaptation responses

During 2009/10, Liverpool City Council has been developing detailed Business Group adaptation action reviews for six key groups of business units affected by the risks of climate change:

- Corporate Services
- Risk Management, Treasury, Procurement & Fleet Management

- Communications
- Planning & Transportation
- Parks, Greenspaces & Public Protection
- Housing, Neighbourhoods and Community Resilience

This section summarises the strategic priorities that these priority units and their partners have identified. Adaptation action reviews for other groups of business units will continue to be developed during 2010/11 in parallel with the development of more detailed monitoring tools and procedures

Figure 10: Types of adaptation responses

Building Adaptive Capacity (BAC)
1: Understanding risks and vulnerabilities
2: Changing or developing policies
3: Awareness raising
4: Working in partnership

Delivering Adaptation Actions (DAA)
1: Avoiding risks
2: Reducing risks
3: Reducing vulnerability
4: Bearing unavoidable costs
5: Exploiting opportunities

Source: Adapted from UK Climate Impacts Programme

There are common types of actions being taken by the business units, which involve:

- Building Adaptive Capacity and
- Delivering Adaptation Actions

Building Adaptive Capacity describes the types of systems and capacity that needs to be put in place, such as data on future climate, staff training and development.

Delivering Adaptation Actions describes the types of actions that will manage the risks and opportunities of climate change, such as flood risk management, shading and ventilation, or making changes to services, such as the school calendar to reduce the exposure of children to heatwaves or installing early warning systems.

These types of actions are differentiated by colour as shown in figure 10.

4.3 Corporate Services

The impact of climate change and the business unit's role

Hotter drier summers, warmer wetter winters and more extreme weather such as heat waves, flooding and storms will have a significant impact on the City Council, its assets, services, staff and customers. Changing conditions and extreme weather could cause damage and increase the costs of repair, developing more resilient buildings and services and insurance costs. Essential services such as waste and recycling collections could be disrupted by damage to roads and buildings, while there is a need to protect the Council's workforce from the risks of climate change.

Corporate Services provides the strategic framework for the Council and manages its property, people and partnerships with strategic partners.

Progress to date

Corporate Services have started to embed climate change adaptation within key corporate documents, which should affect wider decision-making and planning within the Council and the delivery of its services.

- Climate change is now a priority within Aim 2 of the Council's Corporate Plan 2010-2013 and the accompanying CAPdoc.
- Climate change and NI188 features within the Use of Resources Key Line of Enquiry (KLOE) 3.1.
- All Council business plans are now required to consider the Use of Natural Resources and climate change.

Strategic priorities for the future

1. Embedding climate change into its strategic documents, such as the Corporate Plan and the Corporate Improvement Programme to plan for developing a well adapted city.
2. Reducing the risks of, and our vulnerability to, climate change by ensuring that our people and assets are prepared for, and are resilient to, extreme weather.
3. Working with our Joint Venture partners to ensure that our key services, such as highways maintenance, waste management and parks maintenance manage the risks of climate change and exploit opportunities for a more sustainable city.

4.4 Risk Management, Treasury, Procurement & Fleet Management

The impact of climate change and the business unit's role

Climate change is expected to increase the risk of extreme weather events affecting service delivery by Liverpool City Council. These events may include fluvial, pluvial and coastal flooding, periods of extreme heat, drought and storms. If the Council does not take action to minimize and manage these risks, consequences may include increased costs for the Council, service disruption and hazards for members of staff, contractors and the public.

The trend towards hotter, drier summers and warmer, wetter winters will present opportunities for cost and carbon savings, but may also bring some increased financial and carbon costs (e.g. from increased demand for air conditioning). These opportunities and risks need to be taken into account in the Council's service planning, including fleet management plans. It will be particularly important to embed climate change considerations into procurement and partnership procedures, to avoid unnecessary costs and missed opportunities associated with supply contracts and joint ventures.

The Risk Management, Treasury, Procurement and Fleet Services business units can contribute to embedding climate change adaptation into the Council's systems and procedures. This will help to ensure that the Council benefits from the financial and carbon saving opportunities presented by climate change impacts, while minimising the risks they present. These business units will focus on the following priorities:

Progress to date

- The (Merseyside-wide) Community Risk Register (prepared in 2009) by the Merseyside Local Resilience Forum considers the risks of severe weather events including river and coastal flooding, heatwaves, storms/gales and drought.
- The Corporate Risk Register refers to climate change risks. At a service level, each business unit should be assessing climate change risks as part of their risk registers and Business Continuity Plans, and will be supported by new software in 2010.
- The Emergency Planning Unit is planning to carry out a 'severe weather' mock exercise in October 2010.
- Sustainability is part of the Council's Procurement Strategy.
- The Council already plans for the costs associated with climate change through its insurance policies and daily management of risk on the financial markets.

- The Council is monitoring its energy consumption as part of the Carbon Management Programme, and will look at its resilience to water consumption patterns in 2011/12.
- Fleet Management are already observing increased journey times, and are planning for the impacts of climate change through vehicle replacement and are trialing electric fleet vehicles.

Strategic priorities for the future

1. Working with other corporate services to ensure that climate change risks are incorporated into risk registers, business continuity plans and emergency planning, at all relevant levels, both for the Council and for its contractual partners.
2. Ensuring that the Council's insurance cover for extreme weather events takes account of the evolving risks from climate change impacts.
3. Working with other corporate services to ensure that potential cost increases and decreases associated with climate change impacts are reflected in the Council's long and medium-term financial plans.
4. Ensuring that responses to the opportunities and risks arising from climate change impacts are fully incorporated into procurement and fleet management procedures, particularly for long-term contracts.
5. Developing the capacity of Council staff and partners to take forward these priorities.

Using the Council's purchasing power to adapt to climate change

Liverpool City Council promotes sustainable procurement. Its Procurement Strategy 2007-2010 outlines the Council's commitment to achieve value for money on a whole life basis, alongside generating benefits for society, the economy and minimising damage to the environment. The Council is also using its purchasing power to promote local sustainability and the social, economic and environmental wellbeing of the City.

The Procurement Strategy will support the Council's corporate aims to reduce greenhouse gases and adapt to climate change. The Procurement team will support Council staff in delivering this by incorporating guidance on climate change risks and opportunities for supply contracts into the Strategy, and providing training for staff and contractors. Procurement will also be working with Corporate Services and the Council's joint venture partners such as Liverpool Direct, Enterprise-Liverpool, 20/20 Liverpool and Glendale Liverpool to ensure that existing and future contracts address climate change risks.

Procurement Strategy 2007-2010: <http://www.liverpool.gov.uk/Images/tcm21-129148.pdf>

4.5 Communications

The impacts of climate change and the role of the business unit

Communications plays an essential role in adapting to climate change, but will also be directly affected by the impacts of extreme weather events.

Council staff involved in communicating messages to internal staff, partner organisations and the public, may be themselves at risk from flooding, high winds or the health effects of heat. Extreme weather events are likely to affect essential services, such as schools, waste collections and transport services, where the Council will have a key role in communicating information about service disruptions and alternative arrangements. While buildings and infrastructure such as the Liverpool Direct One Stop Shops, telephone lines and internet connections could be damaged or temporarily disrupted.

Progress to date

- The Communications team works closely with the Emergency Planning Unit to agree clear processes for receiving and disseminating information during and after extreme events.
- Communications produce information and advice such as the 'Lets Get Ready Liverpool' booklet and are working with the EPU to improve and disseminate it more widely and include more detailed information on climate risks.
- The Communications team are learning from the disruption to services from recent events, such as the heavy snow in early 2010, to plan for future events.
- Liverpool City Council is working with Liverpool First Communications team and partners to develop a city-wide climate change communications plan (see Section 5).

Strategic priorities for the future

1. Prepare for extreme events by reviewing the risks to communication infrastructure.
2. Continue to prepare the public for extreme weather events by improving the quality and dissemination of information and advice, such as the Lets Get Ready Liverpool booklet and by extending existing and introducing new ways, such as the community warden schemes, and those used by the Environment Agency and Fire Service.
3. Build the capacity of communications staff to communicate effectively before, during and after extreme events, by providing them with training, Grab and Go packs.
4. Provide improved forecasting, warning and communication systems.

Lets Get Ready Liverpool

'Lets Get Ready Liverpool' is Liverpool City Council's emergency planning warning and information campaign. It provides advice and guidance on the things people can do to prepare themselves and their family for unexpected events. The advice is contained in a booklet which has been distributed to vulnerable groups and is promoted on the Council's website and is available in 17 languages.

The booklet highlights the risk of severe weather, flooding, storms, snow and ice and heat waves, and that events such as flash floods may become more common as a result of climate change. It includes checklists of items that every household should have, such as bottled water, a first aid kit and a battery powered or wind-up radio, and a 'Grab n Go bag'.

The Public Protection team are now working on incorporating wider advice about extreme weather and future climate change into a future reprint of the booklet, and wider distribution.

Lets Get Ready Liverpool booklet:

<http://www.liverpool.gov.uk/Images/tcm21-170803.pdf>



4.6 Planning & Transportation

The impact of climate change and the business unit's role

Climate change is expected to increase the risk of fluvial, pluvial and coastal flooding, periods of extreme heat, drought and storms. Such events are likely to have a significant impact on Liverpool's transport network, buildings and utilities, affecting residents and businesses and causing damage and disruption to services. For example rising groundwater levels could affect the Mersey Tunnel and underground network, while high winds could make highways dangerous for high sided vehicles and pedestrians.

Liverpool City Council's Planning and Building Control teams are responsible for shaping the policies and plans which can help us plan for our changing climate. Our Transportation teams work with partners Merseyrail, Merseytravel and Enterprise Liverpool to improve the city's streets and highways and make them safer.

Progress to date

- Planning and Transportation have been working with partners, such as the Environment Agency, United Utilities, Merseyrail, Merseytravel and Enterprise to assess the city's current and future vulnerability to different types of flooding, for example through the Strategic Flood Risk Assessment, the Catchment Flood Management Plan, the Culverted Watercourse Study, the Groundwater Study and the Shoreline Management Plan.
- The Council is also working with the Environment Agency, United Utilities and other organisations to develop a Surface Water Management Plan.
- The Council is currently developing the Core Strategy as part of the Local Development Framework, which will include high level policies (2011) and more detailed policies (2012/13) for sites and development management with regard to climate change adaptation.
- Sustainable Urban Drainage Systems are being built into new developments, such as in the Speke area, and in a business park close to the River Alt.
- A Green Infrastructure Strategy for Liverpool is being drafted with MerseyForest, and recognises the role that green infrastructure plays in adapting to climate change, Liverpool was the selected 2010 launch site for the CABI Grey to Green initiative.
- A sub-regional renewable energy study is being undertaken to provide evidence of feasibility for renewable technologies and build the resilience to changes in further energy supply.

- The Transportation team is compiling inventories of assets at risk and is prioritising costs of works.
- Cold weather plans are in place to manage the impact of snow and ice on the highway and rail network.

Strategic priorities for the future

1. Identify the risks and vulnerabilities to Liverpool's transportation and utilities networks by working with our partners – including Merseytravel, Merseyrail, the Environment Agency and United Utilities through e.g. the Catchment Flood Management Plan, the Culverted Watercourse Study, the Groundwater Study and the Shoreline Management Plan.
2. Review, revise and develop planning policies and strategies which support adaptation to climate change, for example through the Local Development Framework, the Green Infrastructure Strategy and Supplementary Planning Documents.
3. Review and improve our systems for forecasting, monitoring and warning people of weather-related risks.
4. Work with Mersey Forest, the Environment Agency and others to promote the benefits of green infrastructure.
5. Review and revise out maintenance regimes to reduce our vulnerability to climate change, for example through gully clearing, tree maintenance, traffic and track maintenance.
6. Build the capacity of the Council's staff, partner organisations, developers and the public to understand how they can adapt to climate change, e.g. through information provision, communication and training.

4.6 Parks, Greenspaces & Public Protection

The impacts of climate change and the business unit's role

As our summers get hotter and drier and our winters get wetter and warmer, Liverpool's parks and green spaces will help us adapt to climate change. They provide essential shade, help reduce flood risk and manage surface water flooding, and provide spaces for people to enjoy and species to move between habitats.

However, more extreme heat, rain and wind may result in heatwaves, droughts, flooding and storms which could affect trees, buildings and infrastructure, causing damage and disruption.

Warmer weather could provide greater opportunities for more outdoor life, tourism and a diverse range of opportunities for our low carbon economy. But we will also need to be prepared for an increased risk in flooding, heat waves and storms which could affect our health and quality of life, particularly amongst our most vulnerable communities.

Progress to date

- The Council is working with Mersey Forests, the Environment Agency, the Primary Care Trust and its Joint Venture partners to promote the contribution of green infrastructure in adapting to climate change, a role which is recognised within the draft Green Infrastructure Strategy for Liverpool, and within the Parks and Greenspaces business plan.
- All Parks and Greenspaces business units have completed Business Continuity Plans and adaptations have been included within Park Whole Place Assessments.
- Key Parks and Greenspaces operational staff received climate change awareness training in March 2010, at which an officer was nominated to champion the issue of climate change adaptation.
- Public Protection work with the Emergency Planning Unit and partners such as the Primary Care Trust, the Health Protection Agency and the Environment Agency to plan for, and prepare people for extreme weather events. In 2010, the Lets Get Ready Liverpool publication will be revised and more widely disseminated, and is supported by severe weather warnings and a pollution alert system.

The role of green infrastructure in adapting to climate change

Liverpool City Council is working with partners such as Mersey Forest, Glendale Parks and the Primary Care Trust to promote the role that green infrastructure has in adapting to climate change. As our climate gets hotter and drier in summer and warmer and wetter in winter, green infrastructure can help moderate urban temperatures, reduce flood risk and manage surface water, allow species to move to new spaces, and provide opportunities for recreation and tourism. The draft Green Infrastructure Framework for Liverpool City Region, which is due to be published in June 2010, highlights the importance of adapting to climate change.

The emerging Local Development Framework will also provide a framework to support climate change adaptation through green infrastructure within the urban environment, such as the installation of green roofs, like the one installed by students at Liverpool University, which provides a place to grow herbs, keep two beehives, encourage birds nests and a base for educational projects.



Green Infrastructure North West:
<http://www.greeninfrastructurewn.co.uk>

Strategic priorities for the future

1. Build the capacity of our staff, contractors, partners and the public to adapt to climate change by raising awareness of the risks through co-ordinated communication e.g. Emergency Planning's Lets Get Ready Liverpool campaign etc.
2. Identify the risks to, and actions to build the resilience of our parks, green spaces, cemeteries and waste management sites through our risk management processes, such as our Business Continuity Plans, ISO 14001 management systems and Whole Park Assessments.
3. Ensure that the value of green spaces in tackling climate change, climate change risks, opportunities and adaptation actions is recognised within the Council's and our partners' strategies and plans, such as the Parks Strategy, Lakes Strategy, the Green Infrastructure Framework, Local Transport Plan and Heat Wave and Cold Snap plans.
4. Work in partnership with organisations like Glendale Parks, Mersey Forest, the Environment Agency and Liverpool Primary Care Trust to improve the quality, connectivity, value and use of our greenspaces.
5. Identify the risks to, and actions to build the resilience of the City Council's statutory public health/ emergency planning services to respond to predicted increases in the demand for interventions arising from severe weather events, infectious disease outbreaks etc.

4.5 Housing, Neighbourhoods & Community Resilience

The impacts of climate change and the business unit's role

Climate change is likely to increase the risks from extreme weather events for people living and working in Liverpool. These events may include fluvial, pluvial and coastal flooding, as well as periods of extreme heat, drought and storms. The city's residents, workforce and visitors will potentially face risks in terms of health, disruption, property damage and cost. Extreme weather events may also increase the risks of crime and disorder. Those at risk are not just those employed by the Council, or those receiving Council services, but the wider community within the City.

Vulnerable and disadvantaged people in the community are likely to be particularly at risk. For example, older people, young children and those with disabilities or health problems may be particularly at risk from dehydration and heat exposure during heat waves, or from infection, lack of food, clean water or medical supplies in the event of serious floods. Those in living in poor quality housing are likely to be particularly at risk from heatwaves and flooding. Isolated or socially excluded people in the community are likely to face more difficulty accessing information about how to prepare for climate change risks, and are likely to have fewer support mechanisms during an extreme weather event.

In the longer term, climate change impacts may cause significant migration, both within and beyond the UK. This may be reflected in increasing demand for housing in Liverpool, which is relatively well protected from climate change risks. Longer term trends, including hotter, drier summers and warmer, wetter winters, may also present opportunities for the wider community, in terms of health, lifestyles and job opportunities.

Progress to date

- The Healthy Homes Programme promotes affordable warmth and energy efficiency and provides measures and advice to help improve the efficiency and comfort of homes.
- A checklist of adaptation measures is being developed for new build, refurbishment and private home owners.
- New social housing is built to lifetime homes and sustainable standards.
- 'Lets Get Ready Liverpool' – a booklet designed to prepare people for extreme weather is distributed to vulnerable groups.
- Economic opportunities presented by our changing climate, such as the potential growth of outdoor activities, local food production and low and zero-carbon energy are being planned for, as part of the City Employment and Skills Strategy.

Strategic priorities for the future

1. Encourage the integration of adaptation measures into new and existing residential communities, particularly for social housing and the private rented sector, and ensure that long-term migration trends are considered within housing demand predictions.
2. Identify vulnerable areas, buildings and people, and develop systems to help increase their preparedness for climate change risks, communicate extreme weather warnings, and provide support during and after extreme weather events.
3. Increase the resilience of communities in Liverpool to climate change impacts, including food security and fuel security.
4. Identify and pursue opportunities to mobilise community action on climate change issues, covering both adaptation and mitigation.
5. Ensure that the risks and opportunities arising from climate change are incorporated into local community initiatives (e.g. job opportunities relating to energy efficiency or renewables, healthy living programmes and local food projects).

The Healthy Homes Programme

In 2006, around 15% of Liverpool's private sector rented houses were 'unfit', and almost half of the 48,000 vulnerable households were living in properties that were not decent. Liverpool City Council works with the Primary Care Trust, Merseyside Fire and Rescue Service and the voluntary sector on the Healthy Homes Programme to reduce health inequalities and winter deaths, and increase life expectancy through improving, mainly private rented housing. Over three years, the Healthy Homes Programme will visit 15,000 homes in vulnerable areas and inspect potential hazards, such as excess heat and cold in 2,750 homes, as well as providing residents with advice on healthy eating, home safety, fuel poverty and income. In the future, the Programme will also include advice and support on climate change-related risks, such as water efficiency and flood risk when appropriate

Healthy Homes Programme:
http://www.liverpool.gov.uk/Environment/Environmental_health/healthyhomes/index.asp

Liverpool
**Healthy
Homes**
Healthier homes,
Healthier lives



5. Awareness raising and behaviour change

5.1 Progress in developing a communications plan

Communicating the risks of climate change and the actions that people can take to prepare for and adapt to climate change is critical to all areas of the Council's and its partners work.

Liverpool City Council is committed to leading the development of a city-wide awareness raising and behaviour change programme. This will be developed in partnership with Liverpool First and key partners during 2010/11. As a starting point, the City Council's Communications Business Unit has started to develop a plan to communicate climate change to the Council's key audiences. The draft plan is presented in Annex 7.

5.2 Principles and starting points

The draft plan sets out a proposal to focus on co-ordinating and building on the extensive climate change communications already happening within Liverpool, and from local, regional and national partners,:

- Building on the success of the Year of the Environment;
- Working with other business units to ensure that messages are clear and consistent;
- Enabling quality communications across the City Council;
- Linking communications to key targets such as waste and enable underachieving targets to move towards those being achieved; and
- Embedding climate change communications within the City Council's on-going adaptation action planning process.

5.3 Audiences and strategy

The campaign will focus on 4 audiences:

- a. Liverpool City Council staff - through three quarterly campaigns focusing on waste, energy, fuel and paper;
- b. The public – through website campaigns;
- c. Partners – by working with the through the Year of Health and Wellbeing to pick up climate change-related messages; and
- d. Other authorities – by promoting Liverpool City Council's work.

6. Progress in delivering Climate Change Adaptation as measured against National Indicator (NI) 188

The table below (Figure 11) summarises the requirements of the five Levels of NI 188, and the City of Liverpool's achievements in meeting them. More detail is provided in the Self-Assessment Matrix that local authorities are required to complete, shown in Annex 8.

Figure 11: Liverpool's progress in meeting the requirements of National indicator 188 - Planning to Adapt to Climate Change

NI 188 requirements	Target ✓done
Level 0: Baseline Assessment of threats and opportunities across estate and services and agreed next steps to build on assessment in a systematic and co-ordinated way.	November 2008
a. The Authority has begun the process of assessing the potential threats and opportunities across its estate and services b. The Authority has identified and agreed on the next steps to build on that assessment in a co-ordinated way	✓ ✓
Level 1: Public commitment and prioritised risk-based assessment	March 2009
a. Made a public commitment to identify and manage climate related risk b. Undertaken local risk-based assessment of significant vulnerabilities and opportunities to weather and climate, both now and in the future. c. Has a sound understanding of significant vulnerabilities and opportunities not yet address in existing strategies and actions. d. Has communicated significant vulnerabilities and opportunities to department/service heads and other local partners than have an influence on these. e. Set out the next steps in addressing significant vulnerabilities and opportunities	✓ ✓ ✓ ✓ ✓
Level 2: Comprehensive risk-based assessment and prioritised action in some areas.	March 2010
a. Undertaken a comprehensive risk-based assessment of vulnerabilities to weather and climate, both now and in the future. b. Identified priority risks for council services. c. Identified the most effective adaptive responses. d. Started to incorporate adaptive responses into council strategies, plans, partnerships and operations. e. Begun implementing appropriate adaptive responses in some priority areas. f. Encouraged the LSP to identify major weather and climate vulnerabilities and opportunities that affect the delivery of the LSP's objectives.	✓ ✓ ✓ ✓ ✓ ✓
Level 3: Comprehensive action plan and prioritised action in all priority areas.	March

	2010
a. Embedded climate impacts and risks across council decision making. b. Developed a comprehensive adaptation action plan. c. Implementing appropriate adaptive responses in all priority areas. d. Providing leadership and support for LSPs to take a risk based approach to managing major weather and climate vulnerabilities/opportunities across the wider local authority area.	✓ ✓ ✓ ✓
Level 4: Implementation, monitoring and continuous review.	March 2011/12 and ongoing
a. The Authority and LSP are implementing the comprehensive adaptation action plan across the local authority area. b. There is a robust process for regular and continual monitoring and review of the action plan. c. The Authority and LSP are taking appropriate adaptive responses.	

6.1 Achieving Level 4 by March 2011

Developing a comprehensive adaptation action plan for Liverpool

To meet the requirements of Level 4 by March 2011, the City of Liverpool will need to work with partners to develop a comprehensive adaptation action plan for the whole local authority area and also to develop effective monitoring and reporting systems

To date, key Joint Venture partners, strategic partners and statutory agencies have been closely involved in developing the Adaptation Framework; this Adaptation Action Plan and also the more detailed adaptation action reviews for each of the City Council's priority business units. This Action Plan focuses on the Council's work, and therefore a wider-reaching action plan is needed for the future which focuses on priorities agreed by Liverpool First. This work has started and at the workshop on the 8th March 2010, many Liverpool First members were involved in developing a vision for a 'well adapted Liverpool', and in fleshing out what is needed to deliver the key aspects of this vision, summarised in section 2. The outputs of the workshop are presented in Annex 2.

This vision and area-wide adaptation action plan will be further developed by the former Environment & Sustainability Strategic Issue Partnership. From April 2010, the former Environment and Sustainability Task group (ESTG) will be promoted to become a Strategic Issues Partnership (SIPs), alongside Health & Wellbeing, Housing, Safer & Strong Communities, Children & Young People and Economic Growth. Developing and co-ordinating the delivery of this vision, will provide a stronger focus for this group.

It will be important to continue to involve other SIPs in the process, in order to secure support across the Liverpool First partnership.

The City Council will also continue to develop opportunities for building on the existing liaison with neighbouring authorities, such as Knowsley and Sefton to develop closer co-ordination of climate change adaptation *and* mitigation activities.

Implementing adaptive responses across Liverpool

The City Council and its LSP partners are already taking appropriate adaptive responses to address the priority risks identified within the Adaptation Framework and the action plans. The Council's progress in implementing actions is highlighted in Section 4. It also highlights some of the actions taken by Liverpool First partners, for example:

- The Environment Agency is protecting homes and businesses from flooding through its flood risk management work;
- Liverpool Primary Care Trust provide advice and warnings to vulnerable people in the event of heatwaves and extreme weather;
- Merseytravel are working with the Council and the Environment Agency to review and respond to the risks of extreme weather to transport infrastructure;
- Merseyside Waste Disposal Authority are monitoring and responding to the risks of flooding and storm damage to Household Waste Recycling Centres and Transfer Stations and supporting infrastructure, and the risks of high temperatures to waste operative staff;
- Merseyside Fire and Rescue Service and Merseyside Police have Business Continuity Plans in place to deal with the effects of extreme weather;
- Mersey Forest promotes the network of woodlands and trees which help Liverpool City adapt to climate change.
- The Mersey Partnership is working to address the economic impacts of Climate Change policy and legislation.

During 2010/11, Liverpool City Council will continue to work closely with wider partners through the ESSIP and Liverpool First to ensure that adaptation actions are being delivered and deliver wider sustainability benefits.

Putting in place a robust process for monitoring and review

Regular and continual monitoring and review is essential in effective delivery of adaptation action plans. Section 8 of this document sets out recommendations for monitoring and reviewing of the Adaptation Framework; and of the individual business units' adaptation action plans.

If, as intended, business units are incorporating climate change risks and adaptation responses into their Risk Registers and Business Plans, then normal procedures apply.

Business units, led by AEDs with their teams, should be monitoring, reviewing and reporting progress on climate change adaptation (and mitigation) actions on a quarterly and annual basis.



7. Implementation

7.1 Strategic issues for 2010/11

The process of developing the Adaptation Framework and the adaptation action plans, and the challenges of delivering them and meeting Level 4 of NI 188 raise a number of strategic issues for future implementation of adaptation responses. In particular, the effectiveness of the implementation of adaptation actions depends on the various sources of leadership on climate change adaptation and mitigation; the extent to which climate change issues are embedded within decision-making and delivery; and the continued need to build the adaptive capacity of the City. Finally, the resources with which actions will be delivered are an important issue and are considered in section 7.2.

Leadership

- (i) Liverpool City Council has provided exceptional leadership on climate change, through the agreement of one of the UK's first Climate Change Strategic Frameworks, a comprehensive Adaptation Framework and detailed adaptation action plans. The promotion of the ESTG to SIP-status provides an ideal opportunity to continue to **promote tackling climate change as a key priority for Liverpool First**. It will be important that all Strategic Issue Partnerships take ownership of the delivery of the Adaptation Framework and are involved in its delivery.
- (ii) There has been an excellent level of engagement of senior Council officers and representatives of partner organisations at the workshops organised by the Council. Assistant Executive Directors have taken the lead in developing their adaptation action plans. To ensure that climate change is fully embedded within the Council's and Liverpool First's decision-making, it will be **important that the Executive Management Team and CEO-level representatives of partner organisations continue to lead the work**, particular within high profile areas such as Building Schools for the Future and Children's Services.
- (iii) Several partners, as highlighted in Section 6.2 continue to support and challenge the Council in its efforts, while also playing a lead role in climate change adaptation. While the Council, in its role as reporting authority for NI 188 should continue to provide leadership on climate change, it should also **acknowledge where other key partners and natural advocates lead on key aspects of climate change adaptation at a local level**, such as the PCT, the Environment Agency, the MWDA and Mersey Forest.
- (iv) **Internal champions** provide an obvious, but effective mechanism for reminding Council staff of their commitments to climate change adaptation. Natural advocates are already starting to emerge from senior managers involved

in the Adaptation Task Groups. Champions at a team leader level, such as the appointment of a champion within Parks & Greenspaces, can also help to raise awareness of adaptation issues at an operational level. There are also opportunities to join up internal campaigns on adaptation and mitigation with the Carbon Reduction Group and with the help of the Communications team.

Embedding

- (v) The risk-based approach to developing the adaptation action plans, the Business Planning guidance, and the guidance on Board papers, should ensure that climate change issues are considered at key stages of decision-making within the Council. **Monitoring and enforcing** this will be more challenging, but should be part of the corporate business planning and risk management process, rather than the responsibility of the Climate Change Officer and Manager.
- (vi) **Embedding climate change in key policies, plans, programmes and projects will continue to be a priority.** There are big opportunities to influence the delivery of adaptation measures across the City through the Local Development Framework, Procurement, as well as the £350 million Building Schools for the Future programme in Liverpool. Working with the Corporate Regeneration Group on the Capital Improvement Programme will be crucial in this.
- (vii) Some of the Council's **partners are already considering climate change-related risks within their risk management processes and business plans**, such as the MWDA and the 'First' and 'Second' responders involved in the Local Resilience Forum, such as Fire & Rescue and the Police. A priority during 2010/11 will be to work more closely with these and other partners to share experience, co-ordinate action and encourage other partners to follow their lead.

Building adaptive capacity

- (viii) **Developing a city-wide awareness raising and behaviour change programme** should be a priority for 2010/11. The Communications team are starting to flesh out a climate change communications plan with the help of Liverpool First (see section 5 and Annex 7). Ensuring that all business units embedding climate change messages within all appropriate communications campaigns and developing a co-ordinated programme and campaign with partner such as the PCT and Merseytravel should be the focus for 2010/11.
- (ix) Liverpool City Council has already made considerable efforts to raise awareness of climate change through the adaptation workshops. Further training and guidance is needed, and has been developed for other business units who have yet to develop their action plans. Guidance materials include template training materials for operational staff such as that provided for Parks and Greenspaces staff on 2nd March 2010. The Business Group adaptation action reviews also highlight the need for **technical guidance** and knowledge for particular

specialisms, such as procurement and planning and development control. Business units who are developing their adaptation action reviews during 2010/11 will require some **'hand-holding' support**, while those that developed their reviews during 2009/10 may require additional advice/support to embed climate change into policies and plans, or identify the opportunities for building in adaptation responses into particular projects.

- (x) The new **UK Climate Projections data** downloaded for Liverpool City Council will be of interest and of use to Council officers and partner organisations, and **will be disseminated**. At a basic level, the headline messages are useful for raising awareness of our future climatic trends. These headline messages are included in the template presentation materials which accompany the guidance for Council business units and will be made available on the Liverpool First website, as other councils like Lancashire have done³. At a more technical level, the UKCP09 data is intended, and could be used, to inform planning and development, such as the North Shore development and infrastructure planning. Technical training is already available from the UK Climate Impacts Programme⁴. Liverpool City Council through CLASP, Liverpool First and the Council's training programme, will promote the use of these tools and training packages.
- (xi) However, the UKCP09 data has many limitations and cannot provide a clear picture of the future micro-climate of Liverpool. Liverpool City Council has started to, and will **continue to work with the Proudman Oceanographical Laboratory and the University of Liverpool** to develop more locally-specific data, particularly in relation to coastal projections, heat and wind to guide decision-making and development in Liverpool.
- (xii) Other councils in Merseyside and the North West who have signed up to NI188 are going on the same journey. The City Council will **continue to share its experience and learn from the experience of other councils**, through CLASP, the Core Cities programme and working more closely with neighbouring councils such as Bury, Lancashire, Rochdale, Sefton, Warrington and Wigan.

7.2 Finance and resources

Faced with budget cuts and freezes, investing in building adaptive capacity and delivering adaptation actions is going to be challenging. There are few extra resources for climate change adaptation actions, which will need to be built into existing work programmes. But there are also big budgets such as the £350 million Building Schools for the Future which presents opportunities for building in adaptation measures to save money in the long term. The Stern report highlighted that it will be cheaper to adapt

³ Lancashire County Council's Adaptation Wizard and climate projections:
<http://www.lancashire.gov.uk/corporate/web/?siteid=4211&pageid=26920>

⁴ UKCIP training:
http://www.ukcip.org.uk/index.php?option=com_content&task=view&id=205&Itemid=320

now than be forced to later. Savings are already being made by insuring for future weather events (to save on insurance claims for pot hole-related accidents) and making services, such as the new recycling collections more efficient.

The Mid Term Financial Plan (MFTP) for 2010/11-2013/14 has started to allow for funding to approach the wider climate change agenda with specific funds allocated to cover Carbon Reduction Commitment activities. The Medium Term Financial Plan also references other service plans which identify financial and other resource implications for proposed developments in this area. This early start will be built upon as this work embeds across the City Council.

The majority of adaptation actions which involve building adaptive capacity through embedding climate change into policies and plans and raising awareness will cost very little and can be easily absorbed into existing business plans and budgets. Some actions, such as changing planting regimes to more climate-resilient species, modifying maintenance regimes, or using existing communication channels to communicate climate change messages may be no/low cost options.

Small-scale costs (under £20K) may be incurred for additional capacity building costs such as training and information provision are likely to be small scale (under £20K). Although larger-scale communications campaigns could cost significant amounts (£100K+)

Medium-scale costs are likely to be incurred for projects involving changes to insurance premia, electricity and water use (e.g. for cooling and ventilation) and changes to Joint Venture contracts.

Large scale capital and revenue investment will be needed in the long term to ensure that buildings, infrastructure and services are resilient to climate change. For example, delivering adaptation responses through the Housing Market Renewal Initiative programme may be costly, as will building more resilient schools and buildings, and improving and maintaining the condition of highways and transportation infrastructure. But it is important to remember that increased flood resilience, passive ventilation, and more resilient structures will produce substantial savings in the long term.

Liverpool is not a high flood risk and has coastal winds to and extensive open space to help reduce temperatures therefore these costs are likely to be relatively manageable when compared to other UK cities.

7.3 Governance

Climate change is now a corporate priority and is therefore owned by the City Council's Executive Management Team. All Assistant Executive Directors are responsible for ensuring that mitigation and adaptation to climate change is embedded within their risk registers and business plans.

Jan Rowley, AED for Environment leads on climate change and is supported by a new Climate Change Manager (Juliet Staples whose job starts in April 2010) and a Climate Change Officer (David Whitfield).

Climate change is also a strategic priority for Liverpool First, and is therefore owned by the Executive Board. Co-ordination and delivery is currently the responsibility of the Environment & Sustainability Task Group, which, from April 2010 will become a full Strategic Issues Partnership and to take this work forward.

8. Monitoring and reporting

Regular and continual monitoring and reporting of progress is a requirement of NI 188 and essential to effective delivery of adaptation responses. Monitoring and reporting procedures will need to be developed and agreed during 2010/11 if the City Council is aiming for Level 4 of NI 188.

At present, NI 188 is a 'process' indicator which measures local authorities' progress in putting in place the mechanisms, such as the policies, awareness and plans to ensure that the council and its partners are adapting to climate change. Reporting is done through self-assessment. There is considerable pressure on the Department for the Environment, Food and Rural Affairs (Defra) to develop a more quantitative and binding outcome-based indicator for climate change adaptation, in line with current targets for reductions in CO₂ emissions, and greater external scrutiny or feedback to ensure consistency of self-assessment and reporting⁵.

The City Council, with partners, and advised from Defra will develop an effective monitoring and reporting system during 2010/11.

⁵ National Indicator (NI) 188: Year 1 Review and Analysis. Executive Summary. Ann Davies, In House Policy Consultants, October 2009.