

A Local Climate Impacts Profile Of Aylesbury Vale



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**Cover photographs of Buckingham town centre (Image 1: 1998, Image 2: 2007)
Courtesy of Buckingham and Winslow Advertiser.**

1 Executive Summary

1.1 Background

The weather has the potential to impact local authorities in many different aspects of service, some in a positive way however more commonly a negative fashion. With the climate changing, the influence the weather has on a local authority in the 21st century will become more prevalent. From a strategic standpoint, it is essential that local authorities start to engage in the prospect of future proofing service delivery.

Adapting to a climate that is changing is not another environmental crusade which can alienate the less informed, it is an economic and societal issue that must be addressed. At a strategic level, it must be embedded to mitigate against the potentially damaging consequences the weather can have on local authorities' service delivery, staff resources, finances and reputation.

Sir Nicholas Stern stated in his 2007 report, 'Economics of Climate Change' that adapting to the changing climate is "crucial in reducing vulnerability to climate change and is the only way to cope with the impacts that are inevitable over the next few decades"

The growing realisation that local authorities must prepare for the future climate has recently been acknowledged by the inclusion of 'Adapting to climate change' NI188 in the new national indicators (NI's).

In addition to this, the author has identified that there are a number of other NI's influenced by severe weather. These are listed in Addendum1 at the end of this report.

Aylesbury Vale is a growth area under the Government's 'Sustainable Communities Plan. Over 20,000 homes are planned to be built by 2026, together with a similar number of jobs and related business, community and transport infrastructure. This scale of development is potentially a unique opportunity to develop and implement innovative solutions to tackle the challenges presented by climate change. To both minimise the impact on the environment of the development, and ensure that it is resilient and able to adapt to changing climate.

The climate we will experience in the next 30 years will be driven largely by historical emissions, we cannot change this. It will be necessary for local authorities to adapt to the opportunities and threats it faces, regardless of any mitigation measures taken. Local authorities must become more resilient to the effects of extreme weather.

Organisations cannot attempt to adapt to climate change unless the true impact of the weather on its staff and services is measured and assessed. The goal of this climate profile was an initial attempt to identify and quantify the impact the weather has on the local authorities.

1.2 Summary of Results

The local climate impact profile has provided clear evidence that extreme weather has many impacts to both district and county services. However, the degree of impacts is impossible to quantify under current reporting mechanisms. Most financial costs are not quantified and staff time dealing with the impacts from the weather is in general not recorded

A summary of the weather events identified from the study from 2001 to 2007 is included in section 4, detailing the type of weather event and the impact it had on the local authority and community.

Section's 4 and 5 detail the impacts from the weather specific to AVDC and BCC's service areas.

Service areas that have historically been impacted by extreme weather have started to adapt, however this generally occurs after the incident. Strategically, a more proactive approach towards managing the impacts of the weather will be required.

The Impacts of the weather it should be noted are not exclusively negative. Hot summers appear to have a positive effect on leisure activities and tourism; potentially milder winters may reduce what were traditional health (fuel poverty), transport infrastructure and waste collection issues. With the climate changing, potential opportunities exist within local authorities to enhance revenue and customer satisfaction.

1.3 Identified Costs

Given the limited data available, the financial and operational (staff time) costs identified from this project are detailed below as annual costs and potential savings:-

AVDC

- **Insurance Claims**
 - £21,000 from flooding.
 - £187,000 from subsidence.
 - £67,000 from storm damage.

- **Design Services**
 - £80,000 in land drainage.
 - £10,000 from the July 2007 flood.
 - £30,000 in new resources (additional staff).

- **Housing & Communities**
 - 140 hours of staff time for July 2007 flood, £500 additional costs.

- **Leisure – Green Spaces**
 - £21,000 in tree work costs (storm damage).
 - £1500 in additional water for tree watering (Summer 2006).
 - £50,000 and 450 hours of staff time resolving the Fairford Leys football pitches (Summer 2006).

- **Building Maintenance (Facilities)**
 - No figures provided.

BCC

- **Building Maintenance**
 - £74,000 in weather related damage (County total £122,000).
- **Insurance**
 - £58,000 in tree root and subsidence damage (County total £127,000).
- **Schools**
 - £55,000 weather related damage (County total £138,000).
- **Transportation Infrastructure**
 - No figures provided.

The financial costs identified may not be seen as significant when compared to the overall operating capital of the authorities. However due to current reporting mechanisms the impact is largely unknown and is therefore an undefined risk. Most service departments treat the impact from the weather as a cost which is absorbed within operating budgets. An example of which can be seen for BCC Waste Services. When questioned regarding the impact of the weather, no formal costs were identified. Subsequent information appears to suggest a cost of over £12,000 in one week transporting excess rain water from an In Vessel Composting (IVC) site. Clearly additional costs would be uncovered with better reporting practices.

The impact and costs, extreme weather has had on the local economy has not been identified in this study.

Extreme weather has the potential to paralyze the delivery of local authority services and significantly impact finances. These alone have sufficient standing to put extreme weather and a changing climate as a strategic issue and risk which will require monitoring and addressing.

1.4 Recommendations

- The impacts from extreme weather to both district & county are intrinsically linked. Investigate the possibility of a partnership approach to combat and adapt to the effects of climate change. This could include the local PCT and emergency services. This may be best delivered via the Bucks Strategic Partnership, through the Local Area Agreement (LAA).
- GIS style mapping of historical weather events could provide valuable insight into the effects of the weather on services and the community. It may be possible to use in-house GIS expertise to achieve this.
- AVDC to sign-up to the Nottingham Declaration, as a strategic commitment to both adapt to and mitigate against future climate change.
- Use emerging NI188 guidance to inform LCLIP development.
- Agree a number of key “Principle Data Collectors” for reporting for NI188 and to ensure LCLIP development.
- The autonomous nature of schools and care/rest homes hinder data collection and impact analysis. Investigate the possibility of co-ordinating a reporting process. This

might be carried out whilst seeking data on National Indicators for climate change from public and private schools.

- Conduct follow up sessions with operational managers to help to extend the understanding of weather impacts. Risk Management is suggested as a suitable delivery vehicle.
- Set up systematic monitoring arrangements. All departments' should record time & cost in relation to impact from weather. Annual reviews to investigate trends and thresholds.
- Extreme weather to be included as a corporate risk.
- Risk Management awareness sessions to include LCLIP reporting, UKCIP UK08 Scenario's and consideration of the impacts and opportunities of a changing climate.
- Consider the implications of a changing climate at a strategic level. Local authorities can either plan for the potential impacts and opportunities of climate change or react to the consequences.
- Investigate the potential to identify indicative thresholds within service areas, with the potential to both reduce the impacts of extreme weather and provide a more proactive emergency response. (E.g. identify roads susceptible to flooding and heat stress, community flooding in Buckingham when 2 consecutive months of 100mm rain falls).
- Identify and engage with local weather stations to get a better picture of the weather within the county to inform the decision making process.
- Investigate the technical and financial viability of installing a weather monitoring station in high risk areas such as Buckingham.
- Investigate the impact that the 5 year weather average would have on current and future development projects.
- All current and future development's operational life in service should be assessed for the implications and resilience to future climate scenarios as detailed in Figures 1 to 3, and forthcoming climate scenarios from the UK Climate Impacts Programme (new scenarios due end 2008).
- Due to time constraints, engagement, resource and data problems, it is recommended that 'mini' climate profiles are conducted on the following service areas.
 - **AVDC:**
Property and Operational Services
 - **BCC**
Transportation Infrastructure Management
Children & Young People

In addition these would appear to be at the most risk to the weather and to a potential changing climate.

Specific recommendations to service areas are as follows: -

AVDC

Community Safety

- Investigate the relationship between out of use green spaces such as football pitches and anti-social behaviour in specific areas.

Emergency Planning - Staff H & S

- Investigate the implications of staff responding to emergency call outs. Staff working a full day then expected to conduct emergency operations late in the night could have implications to working time legislation and potential H & S risks. There may also be increased salary and OTE cost implications for the local authority.

Environmental Services

- *Investigation into the suitability of waste containers used to collect domestic waste for disposal and recycling.*
- *Review the long term suitability of high sided waste collection lorries.*
- *Record costs of service disruption to Council waste and recycling operations from severe weather incidents.*

Economic Development

- *Review the implications of current weather and climate scenarios for future developments.*

BCC

Transportation Infrastructure Management

- Formal recording of roads affected by the weather (e.g., flooding and heat stress), capturing costs of severe weather impacts. A GIS style map of roads susceptible to flooding would be a useful tool for both internal and external stakeholders. If this were to be adapted for roads susceptible to heat stress, investigations could identify influencing factors as to the cause of road melting (orientation/direction of the road, natural shading etc).
- Investigate the feasibility to adapt ice monitoring stations for high temperatures. Future plans may have to incorporate monitoring of roads for heat damage.

Emergency Planning

- Computerise all emergency response records from other services such as Adult Social Care.

Emergency Planning - Staff H & S

- Investigate the implications of staff responding to emergency call outs. Staff working a full day then expected to conduct emergency operations late in the night could have implications to working time legislation and potential H & S risks. There may also be increased salary and OTE cost implications for the local authority.

Adult Social Care

- Make provisions for risk assessment of care homes for internal temperatures and direct sunlight.

Children & Young People

- More formal recording of school closures with specific weather categories.

2 Background

2.1 Introduction to a Local Climate Impacts Profile (LCLIP)

An LCLIP is a methodology to help organisations to better understand the impact weather can have on their operations and strategic performance. Utilising local media archives to develop a historical picture of how the weather can affect the local authority.

Developed by the UK Climate Impacts Programme (UK CIP) which is funded by DEFRA, the LCLIP process was initially trialled by Oxford County Council. Their study identified extreme weather events costing the authority over a 10 year period in excess of £16 million.

The Aylesbury Vale LCLIP has been conducted in partnership with Aylesbury Vale District Council, Buckingham County Council and the Buckinghamshire Strategic Partnership.

The study is the UK's first combined district and county profile, exploring the impact historical weather has had on both the district and county council's services within the geographical boundaries of the Aylesbury Vale district.

Making use of the historical newspaper archives of two prominent local newspapers within the Aylesbury Vale locality (Buckingham & Winslow Advertiser & the Bucks Herald¹), an overview of extreme weather has been conducted from 2001 to 2007.

The study aims to identify the reported weather events and how they impact on both local authority tiers.

2.2 Extreme Weather Impacts

The impacts to local authorities from extreme weather commonly fall into four categories;

- Service delivery
- Capital and operational cost
- Employee time
- Reputation

These impacts are as a result of 4 types of weather events:

- Sun - Heat
- Rain - Flooding
- Storms – Wind, Lightning
- Snow & Ice

¹ Acknowledgement for the assistance of the local media partners in conducting this profile.

3 The Local Climate & Weather

3.1 The Local Climate

To understand better the relationship between weather, the locality and the vulnerability to climate impacts, the identified weather events of the period of study have been related to the historic climate averages from the UK Met Office.

The Met Office compiles historical 30 year climate averages specific to local areas; 1961-1990 and the most recent set of 1971-2000. Unfortunately there is no available data for the Aylesbury Vale area.

The nearest Met Office records are Oxford to the West, Bedford to the North East & Rothamsted to the South East. These three stations triangulated represent the majority of the Aylesbury Vale district. In order to investigate the relationship between the climate (30 year average) and the past 7 years of weather (2001-2007 inclusive), these three data sets have been averaged in order to obtain a synopsis of the areas weather.

3.2 The Local Weather

The local historical weather data has been compiled with data kindly provided by a private weather station based in Iver². Although this station is located in the south of the county, not within the Aylesbury Vale district, it was the nearest weather station that could provide historical weather data from 2001 to 2007.

3.3 Weather vs. Climate

Decisions within a local authority are typically assisted with data provided from historical weather scenarios. A typical example of this would be planning and development, where implications such as 1-100 year flooding are used to inform the decision-making process.

One thing that is becoming more and more apparent in the 21st century is the unpredictability of the weather. The climate is changing, whether by anthropogenic means or not. Past years are not necessarily representative of the future. Using historical scenarios to inform the decision making process may not be the most informed or indeed the correct way to base future scenarios on.

3.4 Future Climate

The impact and consequences of extreme weather events within Aylesbury Vale provide a good indication of what we may face in the next few decades as a result of the changing climate. Research into this area suggests we may encounter:

- Higher average temperatures and more frequent extremes
- Increased winter precipitation and a reduction in the summer
- More frequent winter storms and higher wind velocity

² Data kindly obtained from the Iver Weather Station (www.iverweather.co.uk).

Figures 1 to 3 detailed below are diagrams of predicted climate scenarios for the south east of the UK, detailing the changes in temperatures and precipitation for low and high emissions (CO₂) scenarios. (For further details and information see: www.ukcip.org.uk).

South East

Source: UKCIP02 Climate Change Scenarios (funded by Defra, produced by Tyndall and Hadley Centres for UKCIP)

Change in annual average daily temperature

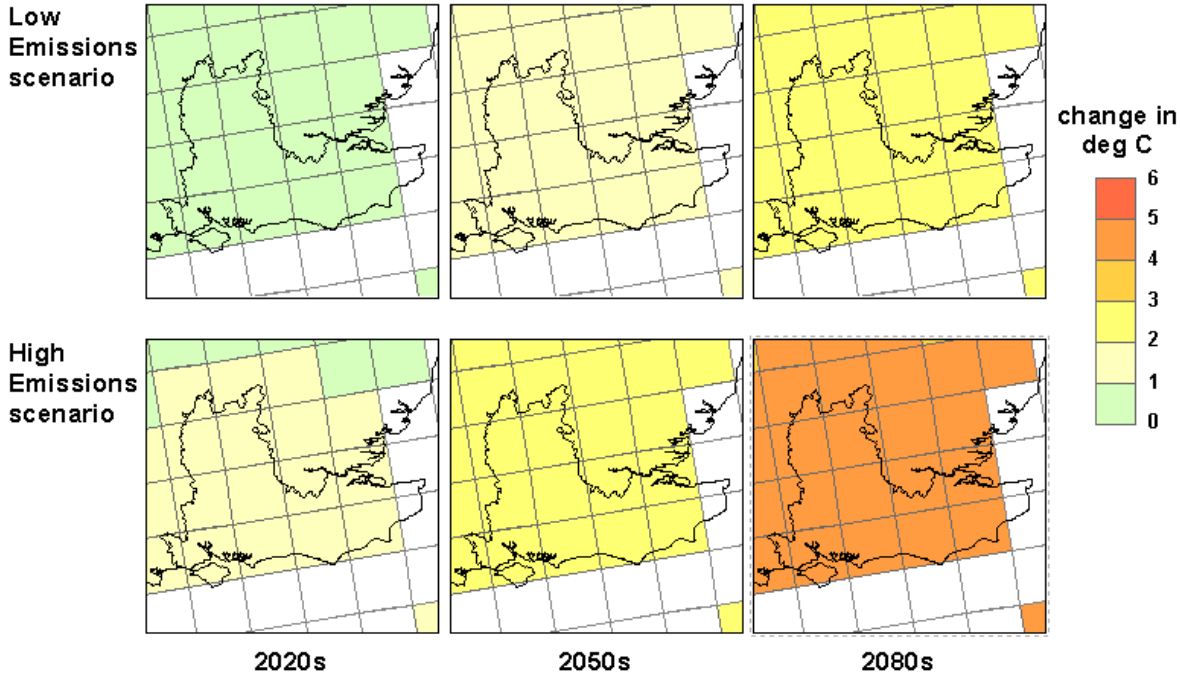


Figure 1: Future Annual Average Daily Temperature

South East England

Source: UKCIP02 Climate Change Scenarios (funded by Defra, produced by Tyndall and Hadley Centres for UKCIP)

Percentage change in summer precipitation

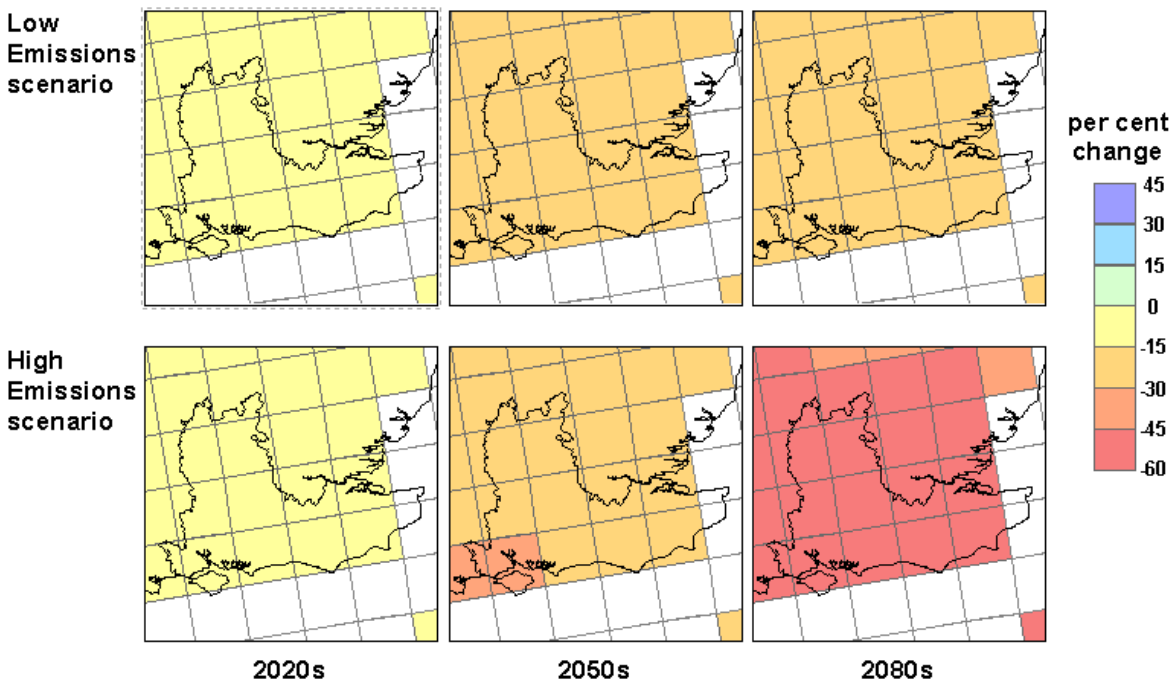


Figure 2: Future Summer Precipitation

South East England

Source: UKCIP02 Climate Change Scenarios (funded by Defra, produced by Tyndall and Hadley Centres for UKCIP)

Percentage change in winter precipitation

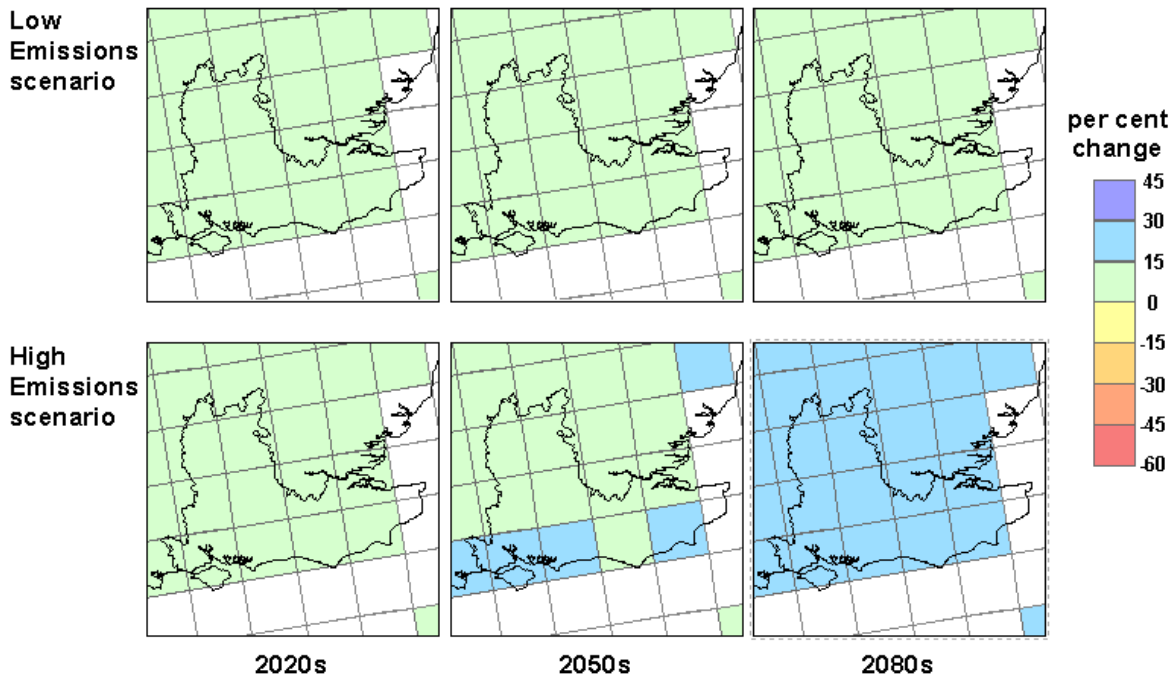


Figure 3: Future Winter Precipitation

3.5 Results

To illustrate the difference between the current weather and the historical 30 year climate (*in which future plans are based upon*), the last five years of weather (2003 to 2007 inclusive *) have been plotted in the graphs below and compared to the Met Office climate 30 year average data sets (1961 to 1991 & 1971 to 2000). This simple comparison should not be construed as evidence of climate change; however it does illustrate well the comparison between the climate and historical weather.

Although it would be remiss to make any real comparisons between the data due to the difference in time period of the data sets (average years), the weather in the last five years does pose some interesting questions if the past 30 year climate was used to inform the decision making process for future plans and construction.

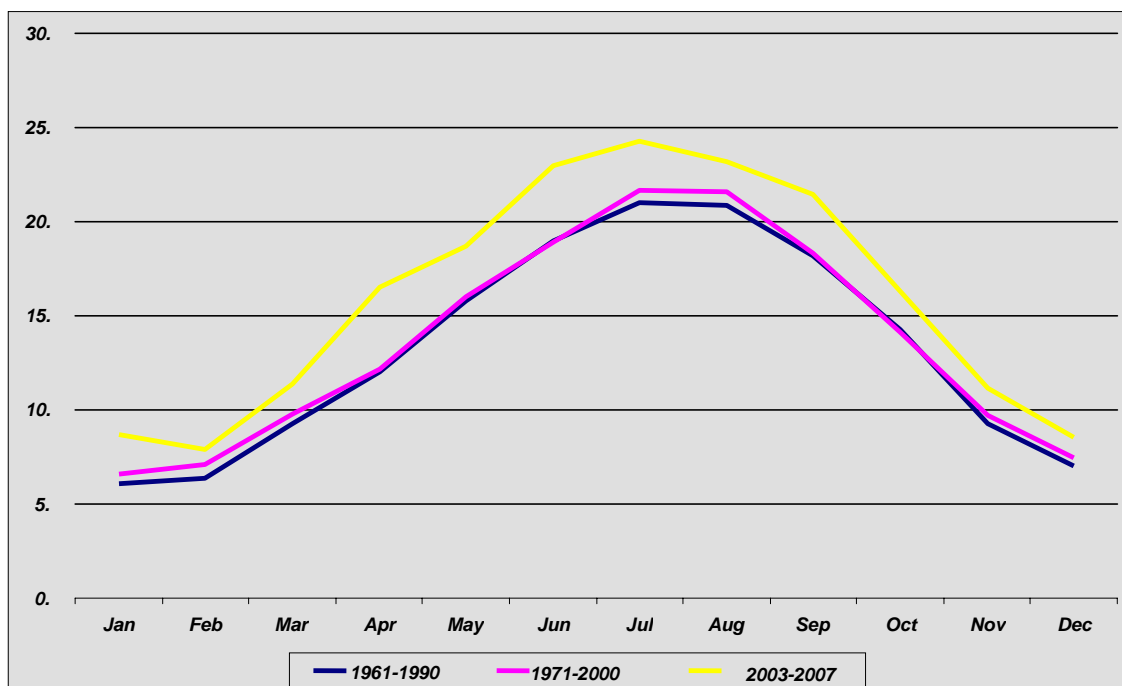


Figure 4: The Average Maximum Monthly Temperature

* Incomplete data for 2003 (March to December missing)

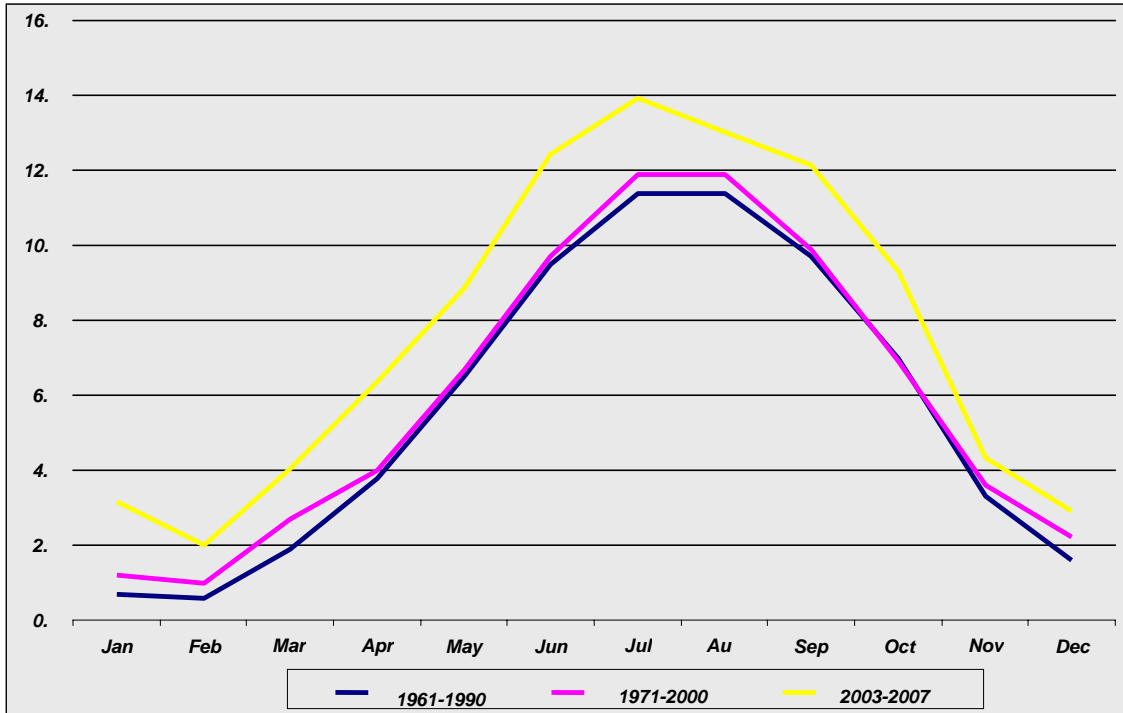


Figure 5: The Average Minimum Monthly Temperature

Figures 4 & 5, detail the average maximum and minimum monthly temperatures respectively. A small increase can be clearly seen between the two Met office averages (approximately 0.7 °C maximum increases for July & August). The five year weather average has seen the maximum and minimum temperatures higher than the historical climate. If historical data was used to inform a decision regarding internal temperatures of a building for example, over the last five years, it may well have been uncomfortable for the occupants.

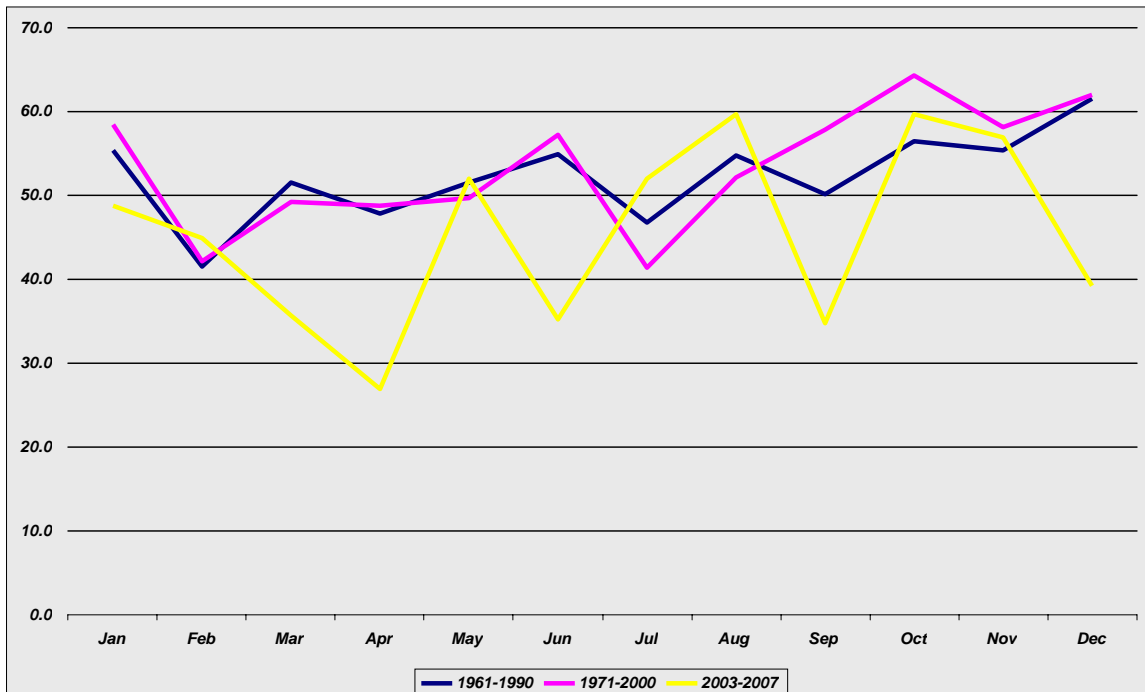


Figure 6: The Average Total Monthly Rainfall

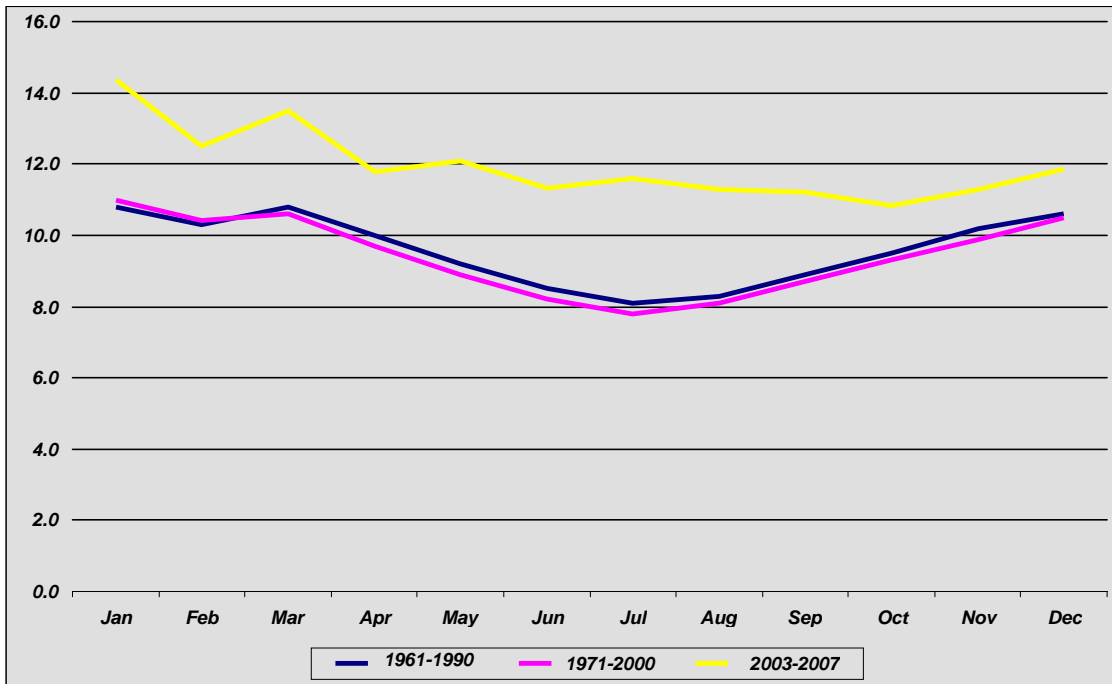


Figure 7: The Average Maximum Wind (Gust)

Figures 6 & 7, detail the average total monthly rainfall and average maximum wind respectively.

Again real comparisons between the data cannot be made due to the different average data years, however figure 6 clearly shows a more sporadic nature of monthly rainfall, widely predicted in future climate scenarios.

Figure 7 appears to show an increase in the average maximum wind speed throughout the year.

4 AVDC Service Impacts

4.1 Storms

- **Damage to Infrastructure**

- **Property Services** - No data available.
- **Insurance Claims** – Insurance claims since 2001 attributable to storm damage total approximately £67,000.

- **Loss of Power – Property Services**

No data available.

- **Fallen Trees – Leisure**

562 tree's damaged by storms since 2001 (2% of stock), clear up costs were approximately £21,000. Storms typically paralyse normal service until the recovery task is well underway. On a few occasions normal service has been suspended whilst trying to deal with a sudden increase in enquiries, inspections and works issued to the contractor.

The forthcoming tree strategy is to contain a contingency plan for dealing with storms.

- **Outside Events – Leisure**

Outdoor Continental Market had to be cancelled due to adverse weather.

Outdoor event in Aylesbury (Sept 2006), due to weather a pre-booked artist could not play (Cost £1,500). Some adaptation measures to reduce impact of extreme weather in place; Inflatable's not to be booked for future outside events and reconsideration as to the location & date for future events are in place. Service risk register includes an assessment on outside events.

- **Leaf Sweeping – Contract Services (Waste)**

Leaf sweeping crews sent out on a reactionary basis after storms. In addition from September to December, proactive scheduled leaf cleaning takes place.

- **Recycling Collection Bins – Environment Services/Contract Services**

Environment Services have experienced complaints regarding collection bins being blown over. In addition to spreading rubbish onto the streets, potential 3rd party claims could ensue. Garden waste bins are particularly at risk to movement because of wind impacts due to their limited mass and potential to be top heavy. This is a good example of an indirect impact to the council reputation and potential impact to service delivery. Thought as to the suitability of light weight collection bins or advice to weigh down the bin may well be necessary.

Similar wind related issues concerning plastics and can recyclables baskets, spreading litter around. Causing additional work for litter teams and impacting on the reputation of the service. At the close of this report, high winds closed the Calvert Disposal site, halting collection services for a day across the entire district. This event is not costed within this report.

- **Health & Safety for Staff Travelling – Contract Services (Waste)**

One member of staff severely injured as a result of high winds. Severe Weather Policy document issued for Contract Services.

4.2 Rain / Flooding

- **Outside Events – Leisure**

July 2007 -Buckingham Festival, the park flooded during the event. Resulting in loss of equipment (£10,000 insurance claim for loss of a generator).

- **Vegetation Growth**

- **Customer Services** - Complaints from public as grass could not be cut.
- **Green Spaces** - Wet summer of 2007 - 500 litres of extra fuel required to cut long grass. Long periods of rain result in delays in the grass cutting programme.

- **Public Enquiries – Customer Services** - Increase in the number of calls from customers for July flood. Not possible to quantify.

- **Delays in Construction – Design Services & Property Services**

Construction projects face delays due to the weather. Contractors may claim a time extension but not an increase in remuneration (Impact to service delivery & reputation). Parts of Aylesbury Vale impossible to do ground works on during the winter due to clay sub soil. Operational issues as outstanding works have to be fitted in around the weather, example: - white lines cannot be made on tarmac when wet and there are issues with laying tarmac and concrete when wet or in periods of frost.

The flooding of February 2001 delayed the opening of the new swimming pool complex of months and caused significant damage to the site. Although the cause was attributed to a blocked culvert, the flooding would not have arisen if the quantity of rain had not fallen in such a short period of time. Extreme weather exacerbates potential weaknesses in infrastructure.

- **Flooded Green Spaces – Leisure**

There have been numerous instances of playing fields being flooded. Football pitches tend to be used as natural run off areas by developers.

- **Land Drainage Issues – Design Services**

Over the last ten years increasing resources have been required to attend to land drainage issues. Culminating in an additional resource requirement (one new full time member of staff @ £30,000).

Due to the consultancy nature of design services, quantifying the impact to their service from the weather is possible. Since 2003 approximately £80,000 of resources has been attributed to land drainage.

Proactive measures in place since 2002 - annual checking of AVDC water courses and flag maintenance. There is a continuing battle with land owners to maintain water courses falling on private land.

Significant additional workload for new developments as a result of the 'sustainable urban drainage (SUDS) directive',

Initial flooding response dealt with by engineering, passed to emergency planning if additional resources are required.

Land drainage issues are particularly prevalent within the locality due to the clay under soil.

- **Refuse Collection Delays – Contract Services**

Contact services have experience problems with flooded roads in the more isolated areas with access problems to some villages. In the event of missed collection, the service attempts to contact the village council or local media. The missed properties are then added on to the next days round if feasible.

- **Flooded Car Parks – Parking**

Buckingham town car park is particularly susceptible to flooding, however there are no records kept of loss of car park usage. Although the car park is free and therefore no loss of revenue, both service delivery and reputation are impacted. In addition a potential loss of revenue to the local retail economy could ensue.

- **Refuse Collection (Flood Damaged Goods) – Contract Services**

The July 2007 floods in Buckingham resulted in a day set aside to collect flood damaged goods. The standard bulky waste collection charge was waived. This currently is on an ad-hoc basis. A more formal and published procedure should be investigated.

- **Emergency Response**

- **Housing Needs** - Personnel assisting the emergency efforts in the July 2007 Buckingham floods received an honorarium payment of £100 (gross), this was paid to 20 staff (approximately 140 hours). This token payment once subject to tax and NI could be considered diminutive considering the anti social hours the emergency covered. Although staff are expected to assist in emergency call outs, if future climate predictions are to be acted upon, a more formal and fair compensation scheme should be investigated. Thought may be required as to the feasibility of expecting staff to attend emergency situations after working a full day, given EU working time regulations and health and safety issues.
- **Environmental Health** - The July 2007 Buckingham flood required Environmental Health Officers to attend to provide help & assistance to households & businesses. Six staff were put on standby and four subsequently went to the affected area to hand out advice leaflets.
- **Design Services** - Design services attributed in-excess of £10,000 on the Buckingham flood (£7500 on flood bags, £2161 standby contractor, and £810 staff time).

It is widely acknowledged that in addition to the time spent on attending to an emergency situation, a further hidden cost is subsequent debriefs and post reporting. If time accrued as a result of the impacts of extreme weather were reported on staff timesheets, this hidden cost would be quantifiable and potentially managed accordingly.

- **Local Businesses / Economy**

A number of businesses were affected by the flooding in Buckingham in July 2007. Although not possible to quantify, clear evidence of further impacts have been recorded in the historical event summary. Reports of farmers being affected by flooding have been identified (flooded fields).

- **Insurance Claims – Insurance**

Since 2001, claims attributable to flooding have been approximately £21,000.

4.3 Sun / Heat

- **Subsidence – Insurance**

Liabilities and insurance excess have been increasing over time. In the last two years an increase in subsidence liability claims has been noted. Since 2001, subsidence claims have totalled approximately £187,000.

- **Anti Social Behaviour & Crime – Environment Services**

Anti social behaviour increases in the summer months. Although difficult to draw comparisons due to a number of externalities and insufficient data, an example would be from the summers of 2006 compared to 2007. In Aylesbury, the number of reported incidents of rowdy/nuisance behaviour in the 'hot' month of July 2006 when compared to that of 2007 identifies a 26% higher number of reported incidents³.

Domestic burglaries increase in the summer months, typically from open windows. Domestic violence and assault crimes tend to be more prevalent during the summer months; insufficient data was available to compare years.

Projected climate change scenarios could have a potentially negative influence in summer related crimes and anti social behaviour. 3 More accurate data could identify if England's last football world cup game on the 1st July has lead to inflated figures

- **Nuisance Complaints – Environmental Services**

Nuisance complaints throughout the summer months typically increase, such as complaints from noise, odours from waste bins and bonfires. Noise complaints increase with domestic properties due to open windows, which is a normal event to alleviate internal temperatures.

- **Internal Cooling – All Services**

Internal cooling of offices is an ongoing issue that appears to affect most buildings. Staff complaints increase significantly when temperatures are consistently above 32 °C. Currently there is no Health & Safety legislation for upper temperature working conditions, however Unions suggest 30 °C. Due to the long term plans for office relocation, investment in air conditioning is not cost effective. Temporary air conditioning units have been fitted to Friars Square and the Depot in the last five years to alleviate some of the issues. There are implications here for the Gateway if a suitable system of cooling and ventilation is not included, based on anticipated increasing outside summer temperatures. Issues surrounding the internal temperatures of the new offices have already arisen, with staff commenting on the temperature being either 'too hot' or 'too cold'.

When internal temperatures are a localised issue, an ad-hoc system of purchasing portable air conditioning units and fans appears to prevail. All these measures to actively cool offices have a negative effect on electricity consumption, CO₂ emissions and cost implications.

Passive cooling in new developments should be actively perused where possible. Care should be given to ensure all new developments will be able to accommodate future predicted summer temperatures within the planned operating life span of the building.

- **Staff Absence (School Closures) – All Services**

Due to high internal temperatures, there have been instances of school closures. This has an indirect impact on the districts service delivery, as it may be necessary for some staff to leave work early when schools close.

- **Green Spaces Tree's & Water Use – Leisure**

The hot summer of 2006 resulted in newly planted trees requiring an additional £1500 of water being used for irrigation. During this summer, a brief, extremely hot week caused widespread dropping of leaves for young trees planted the previous winter. In general, hot dry summers see an increased watering of fine turf (e.g. cricket pitch, bowls green) and hanging baskets.

- **Access to Green Spaces – Leisure**

In 2003, the new Fairford Leys sports ground as a result of the long dry summer, the drainage runs under the pitches collapsed making them dangerous to play on. The whole site was out of action for 24 months. Two further pitches closed for an additional 12 months. Approximately 60 working days spent overseeing the renovation and renovation costs approximately £50,000. There was considerable reputational damage from widespread local press coverage.

Grass cutting green spaces is becoming more difficult to predict, with mild autumns prolonging the grass cutting programme.

- **Reduced Garden Waste – Contract Services/Recycling**

Hot summers such as experienced in 2003 & 2006 typically result in a decrease in garden waste which has a negative effect on recycling rates.

- **Increased Visitor Numbers – Leisure**

Attendance figures for the Aqua Vale Swimming & Fitness Centre were over 25% higher for the hot July of 2006 (46,171 visitors) when compared with the July of 2007 (36,825 visitors).

- **Impacts to Bio diversity – Community**

Throughout the time period studied, a number of heat/lack of rain impacts have been identified. It was reported that in Thornborough the trust officials believe that due to dry ditches the water voles were almost extinct. In Wendover woods, the Chilterns Conservation board believe due to higher temperatures and lack of rain affecting the beach wood trees, the lack of shade will result in the loss of its blue bell plants.

It has been reported that the chalk streams throughout the Chilterns are in danger from drying up completely if more is not done to save water.

Wildlife has been hit hard in both the hot summers of 2003 & 2006. High temperatures have dried up village ponds, rivers and turned water toxic. The resultant effect has been a high number of deaths to ducks, fish and birds.

The duck population in Aylesbury was hit by an outbreak of botulism; in addition other animals died due to contact with the water. The botulism outbreak in 2006 was the worst the canal has seen in years. The canal basin saw the duck population decimated. Botulism is common, however it thrives when temperatures rise & water levels drop.

4.4 Snow & Ice

- **Staff Absence (School Closures) – All Services**

A seemingly natural side effect from snow fall is the resultant school closures. School closures have an indirect impact on the districts service delivery as it may be necessary for some staff to either work from home (clearly not always practical if they have prior commitments at the office) or leave work early.

- **Refuse Collection Delays – Contract Services (Waste)**

A number of periods of snow have resulted in waste crews not completing collection rounds. Contract services maintain a comprehensive reporting system to record missed

collections due to severe weather. In addition there is a procedure in place to follow in the event of severe weather.

During very cold spells, there have been instances of waste bin lids freezing up and not having the ability to open.

- **Salting Car Parks – Parking Services**

Periods of snow and ice result in parking services having to salt car parks. No records available as to the number of instances where salting is administered. There has been one instance where an elderly woman slipped in Aylesbury town centre car park. She was treated in Stoke Mandeville hospital for minor injuries. A complaint about AVDC's policy on gritting car parks was reported. The procedure for salting car parks is based on a BCC Highways weather warning of temps less than minus 2 degrees. Contract Services inform the contractor to salt approaches and upper levels of car-parks.

However the procedure is not formally published therefore could not be referred to in any customer inquiry/complaint or litigation claim.

5 BCC Services Impacts

5.1 Storms

- **Damage to Infrastructure – Property Services**

Storm and flooding damage (records are not split into type of weather event) to properties have resulted in maintenance costs totalling approximately £74,000 since in 2001(County total £112,000).

- **Service Impacts – Waste Management**

Due to health and safety concerns, two days were lost as a result of high winds at Calvert landfill site. High winds also cause problems with litter being blow from the landfill sites.

- **School Closures – Children & Young People**

A database of school closures has been running approximately 2-3 years. A number of schools have been closed as a result of storms, due to access problems, utilities failure and on health and safety concerns. Reasons for closure are descriptive, however vague, with reasons which include due to: - 'bad weather', extreme weather' and simply 'school closed'.

- **Operational Problems – Rights of Way & Access**

High winds can cause operational problems and block rights of way. Currently there is no proactive monitoring and the service relies on the public to inform them of issues.

- **Staff Health & Safety – All Services**

Health and safety issues can arise when employees are out in storm conditions. One employee has been hit by a sign which was blown off due to excessive wind. This employee is now off work permanently. There is no apparent formal procedure for working in storms and high winds.

- **Fallen Trees**

- **Country Parks** – The number of fallen trees and time spent due to weather damage is currently not recorded.

- **Schools** – Due to health and safety concerns there is a tree policy to inspect school trees.

5.2 Rain / Flooding

- **Staff Health & Safety – All Services**

There have been reported instances where staff have slipped and fallen due to mud when travelling on foot. No reported incidents from staff attending flooding incidents.

- **Damage to Infrastructure – Property Services**

See Storms.

- **Emergency Response**

- **Transportation Infrastructure Management** - Emergency response to the July flood in Buckingham cost approximately £10,000 in contract and equipment costs.

- **Finance** - Emergency cost code set up for July 2007 flooding. It is apparent that as service departments end up absorbing the cost, many did not use the codes.

- **Emergency Planning** - No computer records of emergencies, all records are in paper format only, making it difficult to interrogate archives for specific incidents. A new more comprehensive emergency plan currently work in progress (in final draft).

- **Adult Social Care** – Maintains data records of vulnerable clients who are identified in the advent of an emergency. Responses to emergencies are recorded and passed to emergency planning to be filed. Personal records of attendance are performed by some staff in an attempt to quantify the time spend attending emergency responses, to which they receive no remuneration. No formal recoding of weather related impacts.

- **Customer Service & Communication Media Relations** – In the event of an emergency such as the flooding in July 2007, the department effectively ‘drops’ all current tasks and has to focus on the emergency, potentially impacting on general.

- **Operational Problems –**

- **Rights of Way & Access** – Fluvial flooding causes operational problems as access to areas can be limited. Flash flooding causes surface erosion and access problems for bridges.

- **Waste Management** – Two events of flooding at the in-vessel composting (IVC) site in High Wycombe have been identified. These caused contaminated compost. Clearly evidence from High Wycombe should be considered in relation to AVDC plans for an IVC in the district.

Problems arise when using vehicles on landfill sites when excessively wet. The cost of tankering water off site is a cost that must be considered when excessive rain falls outside the carrying/storage capacity of the site.

If site pads are not maintained and cleaned regularly and pumps are not regularly maintained, flooding will lead to blockages at the pump. If blocked, water will backlog to clamps. With forecast severe rain, High Heavens can and do book additional tankers to remove excess water from site – presently to Camberley –

although it is hoped that agreement can be reached with the water company to send to more local sewer.

Tanker costs are £680/18 tonne load. The site has in the past had to send out up to 18 tanker loads in one week. Flooding can lead to odour problems in the compost and complaints from local neighbours, potential for Environment Agency involvement and reputational and cost issues. A worst case scenario would be where the material became completely anaerobic which could require disposal to landfill.

Past experience would influence future design of such facilities including consideration of provision of a covered composting area i.e. a building which allows control of water and also odour and connection to the foul sewer would be sought.

- **Flooded Roads –**

- **School Transport** – School transport experience problems in July 2007 floods when attempting to return children from school. There is no current recording of impacts to service delivery as a result of the weather. The service operates a complaints log for delays in school transportation, however it does not have a category for the weather, therefore the true impact is impossible to quantify.
- **Transportation Infrastructure Management** – The media study identified numerous instances of flooded roads throughout the time period studied, however there are no service records available to quantify the true impact. Routine maintenance procedures are in place to empty gullies. If formal recording procedures were in place, it would be possible to compare routine gully emptying with 'issue' roads susceptible to flooding. The media study identified a number of reported complaints regarding continually flooded roads. A more proactive maintenance schedule should be investigated if and when appropriate records were maintained.
- **Adult Social Care** – Instances of flooding can adversely affect home care access. No formal recording of service delivery or resource impact.
- **Children & Young People 'School Closures'** – Two schools closed during the July 2007 floods, due to access problems with flooded roads.

- **Local Businesses / Economy**

- **Economy & Enterprise** – No records on the number of businesses affected by flooding or the impact flooding has had on those businesses or the economy. County council functions are more strategic, whilst districts deal with the operational issues. However there appears to be no strategic focus or insight into the effects of flooding on the local economy.
- **Trading Standards** - Due to control restrictions on movement of livestock, problem have arisen with farmers needing to move animals out of flooded fields. To move animals under restrictions, farmers require a Defra movement licence.

5.3 Sun / Heat

- **Road Damage – Transportation Infrastructure Management**

During the hot summer 2006, 15 roads suffered from melting due to the excessive heat. These required surface dusting from road gritters usually associated with spreading salt. One road suffered sufficient damage that it required resurfacing. No costings were available to quantify this impact.

Prolonged hot periods can also cause sub soil problems, which result in the road becoming 'bumpy'.

No formal recording of the impacts and damages as a result of heat stress. No records of costs or service impact.

- **Reduced Garden Waste – Waste Management**

A positive impact to a hot, dry summer is the resultant decrease in green waste produced by householders and therefore required to be composted. Conversely a wet summer would increase green waste. The unpredictability of our weather has the potential to make predicting quantities and resources required for processing difficult. This may also impact on forecasts to meet LATS Landfill diversion targets.

- **External Temperatures – Schools**

In the summer of 2006, due to excessive temperatures, some schools chose to move their sports days from the afternoon to the morning (9:00-11:00). This instance of adapting to the prevailing weather conditions is a good example of how climate adaptation can be achieved by changing lifestyles and routines, without the need to apply any additional resources or expenditure.

- **Internal Temperatures –**

- **Adult Social Care** - Receive a summer weather report from the PCT for guidance on the impending weather. As home care and elderly care are externalised, there is no data collected regarding internal temperature observations or concerns.

- **Business Performance** – In general if employees are too hot, fans are purchased (negative effect on electricity consumption, CO₂ emissions and cost implications).

- **Health & Safety** – During hot summer of 2006 as a result of direct sunlight & high internal temperatures, a school had to move its chemical storage. No formal records of staff complaining about internal temperatures. It is apparent that there appears to be internal temperature issues with the Eastern Street offices in Wycombe. There is guidance issued for working in high temperatures to staff; however there is no official upper limit on internal temperatures. Unions suggest 30 °C.

- **Children & Young People - 'School Closures'** – St Mary's school in June 2002 had to be shut early as internal temperatures reached 45 °C (9 classrooms affected).

During the hot summer of 2006, due to direct sunlight and excessive internal temperatures some schools decided to move classes to north facing classrooms.

- **Property Services - Building Surveying & Maintenance** – In the last few years, the service has seen an increased demand for air conditioning.

- **Subsidence/Tree Roots – Insurance**

Liabilities and insurance excess have been increasing over time. Since 2003, subsidence and tree roots claims have totalled approximately £57,000 (County total £127,000).

5.4 Snow & Ice

- **Gritting Decisions - Transportation Infrastructure Management**

The service has seven ice monitoring stations positioned around the county to assess the requirement to send out gritting lorries.

- **Closed Day Centres - Adult Social Care**

One day care centre had to close due to snow problems in February 2007, as a result of the closures, the clients were moved to another centre.

- **Internal Temperatures - Business Performance**

In general if employees are too cold, heaters are purchased (negative effect on electricity consumption, CO₂ emissions and cost implications).

- **Staff Absence (School Closures) – Schools & All Services**

A seemingly natural side effect from snow fall is the resultant school closures. School closures have a direct impact on the educational service delivery, as well as the county's service delivery as it may be necessary for some staff to either work from home or take unscheduled leave.

- **School Closures – Children & Young People**

A database of school closures has been running for approximately 2-3 years. There have been numerous instances of closed schools, with the majority of closures due to staff not being able to travel to the school.

6 Conclusion

During the process of completing the project it was evident that there was a general understanding amongst services of the effect the weather can have on their respective service. However there was a lack of recording mechanisms in place for the exposure of impacts from extreme weather. In addition to this, it was apparent that some service departments exhibited an ignorance / disinclination to the impacts of extreme weather. The risk of extreme weather affecting the local authority in general is clearly apparent, reducing the potential risk and inevitable impact cannot be managed without being assessed and quantified.

A thorough seven year media search from 2001 to 2007 (inclusive) was conducted. This identified all the weather related events that resulted in impacts to the local authorities. It was envisaged that these events would be investigated and the impacts quantified. However due to the large number of events which had taken place, it was neither practical within the time frame of the project nor realistic for the departments to commit resources to fully assess the events and quantify the impacts. Furthermore, current employee reporting practices restricted this activity as most services do not attribute staff time to specific activities. If the true impact of the weather is to be quantified and managed effectively, staff time must be recorded more effectively.

One service seemingly better aware and prepared for the impact of weather is AVDC Leisure – Green Spaces. It is no coincidence that the service has seen the detrimental effects the weather can have on all aspects of impacts (service delivery, cost, resources and reputation). The service has seen the effects of a hot summer (Fairford Leys football pitches – see Section 5.3 – Access to Green Spaces), heavy rain/flooding (July festival in Buckingham – see Section 5.2 – Outside Events) and from storms (outdoor continental market in Aylesbury – see Section 5.1 – Outside Events). Adaptation to extreme weather has already started to happen. Lessons have been learnt regarding the collapsed drainage runs of Fairford Leys, inflatable's have been

banned from outside events and caution is now exercised as to when outdoor events take place and risk assessments are now standard. These are good examples of how a service can adapt and reduce the effect from the weather relatively easily once the impacts are known.

One area of concern is the apparent complacency of extreme weather and future climate change scenarios on economic development both at a county and district level. Economic development need to be very conscious of the potential challenges and opportunities of our changing climate.

The heat waves experienced in the summers of 2003 and 2006 could become a normal summer within 30 years. Impacts to infrastructure included melting roads and tennis courts, collapsed drainage systems and closure of shops and leisure facilities. The effects on the community included large numbers of people suffering sunstroke, dehydration and 61 deaths in a ten day period within the Aylesbury Vale. Furthermore anti-social behaviour, burglaries and assaults all increase in summer months. Impacts to the local bio-diversity included dried up river beds, outbreaks of botulism and blue green algae, which resulted in high numbers of deaths to ducks, fish and birds.

The summer 2007 floods cannot be attributed directly to climate change, although it does provide a clear indication of the scale and nature of the extreme weather events we may experience as a result.

A changing climate will generate both opportunities and threats to local authorities. It is important that these are identified and the consequences understood. In order to achieve this, a review as to the logistics of reporting weather impacts is suggested. Simple time and cost reporting would provide a valuable insight into the true impact of the weather.

The partnership approach is clearly the way forward. Parish councils already seek information and advice from AVDC Design Services regarding flooding, BCC Adult Social Care receive summer heat plans from the PCT. Sharing information and coordinating strategic planning would clearly benefit both district, county, other services and the wider community.

Senior management must acknowledge the impact the weather can have on operations, service delivery and the impact on the community and other stakeholders, regardless of financial implications of extreme weather.

Future work could lead to the establishment of indicative thresholds and trigger levels. Identifying thresholds could assist in reducing the impact of extreme weather events, with the potential once trigger levels are established for a more proactive emergency response rather than the more historical reactive delivery.

Addendum 1: National Indicators Influenced by Severe Weather

Nearly 12% of new National Indicators' can be potentially influenced by the weather. These include:

NI N ⁰	NI Title
8	Adult participation in sport
15	Serious violent crime rate
16	Serious acquisitive crime rate
17	Perceptions of anti-social behaviour
20	Assault with injury crime rate
21	Dealing with local concerns about anti-social behaviour
22	Perceptions of parents taking responsibility for the behaviour of their children
23	Perceptions that people in the area treat one another with respect and consideration
24	Satisfaction with the way police and local government dealt with anti-social behaviour
25	Satisfaction of different groups with the way police & local government dealt with anti-social behaviour
27	Understanding of local concerns about anti-social behaviour and crime by the local council and police
32	Repeat incidents of domestic violence
33	Arson incidents
34	Domestic Violence
39	Alcohol harm
41	Perceptions of drunk and rowdy behaviour as a problem
47	People killed or seriously injured in road traffic accidents
48	Children killed or seriously injured in road traffic accidents
49	Number of primary fires & related fatalities and non-fatal casualties
178	Bus services running on time
187	Tackling fuel poverty
189	Flood and coastal erosion risk management
197	Improved local biodiversity

Addendum 2: Historical Weather Event Summary (All LA Services)

2001	January	Snow & Ice	<p>Refuse collections suspended in Aylesbury and other areas experienced disruption.</p> <p>Mild disruption to the road network.</p> <p>Bedgrove school shut for 2 days due to burst water pipe, believed to be from the 'cold snap over Christmas'</p>
	February	Rain	<p>Severe flood warnings for River Great Ouse between Brackley & Buckingham & Thornborough and Stoney Stratford on Monday. A422 diverted to run through flooded Thornborough, BCC said situation was not ideal, council had no choice'. Buckingham Town Council tried out new emergency procedures put in place 18 months ago, delivering 500 sandbags to residents. Brackley Fire service called to pump out potential residential damage.</p> <p>Buckingham Town, Buckingham Athletic, Brackley Town & Bicester Town football grounds underwater. Football games postponed.</p> <p>Leckhampstead was hit by worst floods since April 1998 during Monday's downpour. Roads to village blocked, Old School house outhouse flooded. Villagers rallied round to get sandbags out.</p> <p>Winter flooding has left roads in Bucks badly scarred; it will be a struggle to pay to improve them according to a BCC spokesman. Roads left with cracks and potholes after months of rain & flooding, followed by sharp frosts.</p> <p>The site of the new swimming pool complex in Aylesbury hit by flooding, significant delays and unexpected costs are expected.</p>
	April	Rain	<p>Recent floods delayed opening of new Aqua Vale swimming pool from April to the autumn.</p> <p>Southcourt & Walton Court Community new adventure playground cannot open due to H&S concerns. Ground too wet.</p>
	October	Storm & Rain	<p>Trees blown down by the wind & rain, cut power to 60 homes in Tring. 10 houses in Miswell Lane power out, power line knocked onto the road.</p> <p>Flood scheme unveiled to protect Buckingham from a '50 & 100 year' flood. BCC & AVDC asked for opinions from EA. (See February 2004 & October 2005)</p>
	November	Rain	<p>Rain water flooded roads in Dale Close, Brackley on Friday morning last week & was threatening to come into homes.</p>

2002	January	Storm & Rain	Gale force winds and heavy rain, rivers on flood alert. Road closures due to trees & electricity pylons coming down.
	May	General	Wendover woods may lose blue bells, due to global warming affecting the beech woods that provide shade for the plants states Chilterns Conservation Board.
	June	Sun	St Mary's school shut early as temps reached 45 °C. A permanent solution is sought to install solar covering. 9 classrooms affected.
	July	Storm & Rain	Lightning strike on Stoke Mandeville hospital short circuited fire alarms and telephone system. 24 patients evacuated. The incident was one of 100's the Fire service responded to. Storms across county. Winslow Church hit by lightning, 500 calls made to fire service in 4 hours. 15 events of fires to buildings due to lightning. 52 call outs for flooding. Man seriously injured.
	October	Storm	No street lighting in Stoke Mandeville (+ houses), 250 calls outs for Fire service (25-30 in AV), Chiltern Railway delays, BCC battled to keep roads & parks safe. 50 trees down in AV area, Dinton School shut due to no power. North Bucks hit by storm. 1000's of homes & businesses without power. 75 trees down (some 200 years old). Fire service had 200 calls. Many schools & businesses closed. Companies in Stoke Mandeville lost thousands of £'s due to no electricity from gales. Gales on 27 Oct left 120 trees blocking roads & cost council £45k to clear up with tree surgeons.
	December	Rain	Manor farm in Whitchurch. Fire service had to rescue sheep from a flooded field. One inch rain fell Sat night. 100 members of public noticed whilst driving & had rung farm to warn of stranded sheep.
2003	January	Rain	Flood warnings across the area are being carefully

	June	Sun	<p>monitored by district councils this week as heavy rain fell. Some roads closed.</p> <p>Two weeks rain fell in 4 days. BCC handed out 1000 sandbags, 18 roads closed. Flooded roads and properties. Cars stuck, residents trapped in homes. Buckingham FC's ground and Buckingham's Bourton Park underwater.</p> <p>AV woman stranded in her home for 24 hours due to flooding.</p> <p>Paramedics busy treating sunstroke and dehydration victims. Roads were melting and rail services in chaos amid fears of rails buckling.</p> <p>Crèche at Aqua Vale in Aylesbury left closed for a week, temperature in playroom 27 Deg °C.</p>
	August	Sun	<p>Winslow tennis courts shut in sunny weather due court surface melting & becoming sticky.</p> <p>34 deg C recorded in AV, set to be hottest week in living memory. Scores of people suffering from sunstroke & dehydration. Possible road melting & rail buckling. Paramedics had increased call outs, shops shutting, BCC checking roads.</p> <p>61 people in AV died as a result of the heat wave in a ten day period.</p>
		Sun & Lack of Rain	<p>New Football pitches closed in Fairford Leys by AVDC due to collapsed drainage runs under pitches from the hot & dry weather. 9 football pitches & sports pavilion closed for 24 months.</p>
	October	Storm	<p>250 year oak tree on Wakefield estate hit by lightning & burnt for several hours. Fire service attended for 2 hours.</p>
		Lack of Rain	<p>Walton Village pond has dried up due to lack of rain.</p>
2004	January	Snow & Ice	<p>Sudden blizzard-like conditions moments before rush hour caused AV traffic chaos on Wednesday. Several schools closed. Chiltern Railway services affected. Police advised motorists not to travel unless essential.</p> <p>Local roads gridlocked, Police helicopter was required to collect injured girl.</p> <p>Gritters scrambled to tour roads affected by blizzard.</p>
	February	Rain	<p>Flood defences from EA costing BCC £342k, grant from government only £116k. £226k shortfall. (See October 2005)</p>

2004 (cont)	March	Storm & Rain	Police cordon off road in Rowsham as strong winds had exposed a live cable.
	June	Storm	Strong winds blew through Aylesbury, uprooting a tree in the town centre.
		Lack of Rain	Thames water may impose water restrictions for garden sprinklers due to low rainfall. Aylesbury area received about half normal rainfall for June as it was the hottest June since 1976.
	October	Rain	Kingsbury development of town centre running 1 month late due to bad weather. Queens Park Arts Centre & Limelight Theatre face a £3k bill as flooding destroyed the boiler room.
	November	Rain	Flood warnings in Brackley and Buckingham area (Nov 18 & 19). River Great Ouse. Fields and roads flooded in surrounding area.
	December	Snow & Ice	Emergency services attended a spate of accidents in Aylesbury Vale due to freezing conditions. 2 roads closed.
2005	January	Lack of Rain	Water Voles almost extinct in Thornborough. Trust officials believe due to dry ditches (lack of rain).
	June	Storm	Bedgrove Infant School in Aylesbury hit by lightning, children had to be evacuated.
	July	Sun	Fire engines from Winslow & Aylesbury attended a fire for 4 hours. 600 bales of hay destroyed, cause of fire - the heat.
	August	Rain	Severe flooding over 15 years blamed for damage to land near Watermead lakes.
	October	Rain	Planned flood defence scheme for Buckingham dropped down on EA list of priorities.
2006	January	Snow & Ice	Elderly woman slips in Aylesbury town centre car park. Treated in Stoke Mandeville hospital for minor injuries. Complaint about AVDC's policy on gritting car parks.
	March	Lack of Rain	Bucks consumers warned by the EA to save water or face drought, as region had driest year since 1961. EA calling for hosepipe ban.

2006 (cont)	April	Lack of Rain	<p>Hosepipe & sprinkler ban came into force on 3 April. 1st ban in 15 years by Thames Water, due to 15 months of low rainfall. Last year was the 3rd driest since records began in 1897.</p> <p>EA urge water companies to apply for a drought order (level 2 restriction can ban private swimming pools, watering parks, washing cars).</p> <p>Chalk streams throughout the Chilterns are in danger from drying up completely if more is not done to save water, environmentalists warn.</p>
	May	Lack of Rain	Thames water delays call for level 2 drought order. The situation will be reviewed on a weekly basis & the situation remains finely balanced.
	June	Sun	<p>Ambulance service inundated with calls over weekend from members of the public suffering from dehydration and heat exhaustion.</p> <p>Report on effects of low rainfall and calls for increased water storage (reservoir). Worries over plans to increase housing stock.</p>
	July	Storm & Rain	<p>Homes, schools & businesses hit by flash flooding. Roads closed.</p> <p>Homes in Thornborough flooded. Schools, shops and homes suffer damage in what many have said was the worst flood to hit the Vale in years.</p> <p>Hayden Combined School closed for the rest of the week. Broughton school suffered lightning damage, Winslow C of E school shut due to electrical problems.</p>
	August	Sun	<p>Nearly 100 people admitted to Stoke Mandeville Hospital due to heat related illnesses.</p> <p>Wildlife has been hit harder; high temperatures have dried up rivers & turned water toxic being blamed for high number of deaths to ducks, fish and birds.</p> <p>Temps expected to reach a record on Wednesday (37 °C). Highways department confirmed roads were beginning to melt.</p>
		Storm & Rain	Trees uprooted, crops flattened, shops flooded. Small hospital flood. Roads blocked, power outs.
		Sun & Lack of Rain	Duck population hit by outbreak of botulism, other animals have died due to contact with the water. Experts say the botulism outbreak is worst the canal has seen in years. The once thriving canal basin is now devoid of any wildlife. Botulism is common however thrives when temperatures rise & water levels drop.
	2006	August	British Waterways warn visitors to Tring Reservoir to

(cont)			<p>avoid contact with the water due to high levels of naturally occurring blue green algae. Periods of high algae activity usually follow warm, sunny weather and light winds.</p> <p>September Rain Heavy Rain caused extensive flash flooding in Chesham for the 2nd time in 3 weeks. Causing traders on the high street extensive damage.</p> <p>October Storm A lightning strike is believed to have been the cause of a fire at Stoke Mandeville hospital on Sunday.</p> <p>November Rain Residents in Wendover are calling for better drainage after the latest in a series of flash floods hits.</p> <p>Buckingham fire service called out twice to rescue motorists stranded in floods. Tesco car park was under 4 feet of water. Numerous football pitches flooded.</p> <p>River Thames put on flood watch after a period of higher than average rainfall.</p>
2007	January	<p>Storm & Rain & Snow</p> <p>Storm & Rain & Snow</p>	<p>Flooding on Fleet Marston railway bridge caused traffic on A41 to be brought to a standstill. Weather stopped various football matches to be played.</p> <p>High winds cause damage across the Vale. John Colet School in Wendover closed due to roof damage. Part of Bicester road blocked due to tree damage.</p> <p>The river Great Ouse flood warning from Brackley to Newport Pagnell, including Westbury, Water Statford, Tingewick, Radclive, Buckingham, Thornton, Thornborough & Beachampton.</p> <p>Schools closed, roads closed & drivers stuck in floods. Gale force winds and torrential rain affected much of the county. Homes and businesses suffered from damaged roofs, fallen trees and flooded roads.</p> <p>"The weather caused about 3,400 faults in total; in normal circumstances about two months work" EDF Energy. Approx 15k homes without power.</p> <p>Snow fell this week, after the worst storms seen in the county for 20 years. Refuse collection for villages between Winslow, Buckingham & the Oxon border have been delayed or abandoned due to snow. Last week gale force winds battered the area leaving roads blocked by fallen trees and extensive flooding. County highways dept received over 800 calls regarding blocked roads.</p>
2007	January	Rain	Shipton Lee bridge on the road between Edgcott &

(cont)	(cont)		<p>Quinton has been impassable for much of the last 2 months due to flooding. Claims made by motorists who have driven into the flooding have been referred to BCC insurers.</p>
	February	Snow & Ice	<p>Heavy snowfall caused blockages to A43, A421, A422 roads.</p> <p>Heavy snow caused closure of 200 schools across Bucks. A41 bypass at Aston Clinton blocked due to jack knifed lorry. 21 gritters deployed by BCC. BCC received over 1800 phone calls from the public. The public were unhappy with BCC response. "How many thousands of working hours were lost on Feb 8th when, as predicted, heavy snow caused traffic chaos?" Snow fall worst in North of county.</p>
	March	Rain	<p>Concern from local farmers regarding flooding and changes to weather. One stud farm stated "between October & April, the fields normally flood 3 to 4 times a year. This winter it seems to have flooded more like 16 or 17 times". NUF stated "millions of £'s of crops a year are lost to flooding". EA stated "flooding is the biggest effect global warming will have on our country and this is set to increase if the risks continue to be ignored".</p>
	April	Sun	<p>A rise in temps could be to blame for an increase in the number of break-ins' throughout Aylesbury. (20°C average for month).</p>
	May	Rain	<p>One of the wettest bank holidays in recent years caused problems across the Vale. Oxford Road in Aylesbury flooded.</p>
	June	Rain	<p>Great Ouse on flood warning. Westbury, Water Stratford, Tingewick Radclive & Buckingham put on alert by EA.</p>
	July	Storm & Rain	<p>Winslow hit by a number of floods throughout the town. Health centre closed, roads blocked, properties flooded. Fire services were having one call/minute at one point in the afternoon. Severe flooding on A418 between Aylesbury & Wing.</p> <p>AV hit by severe storm. A number of lightning strikes, flooding incidents & ceiling collapses occurred in 2 hour period. One of the worst affected was Highridge Walk near Exchange Street, sandbags deployed. Residents of Vale House affected, lightning struck the building & knocked out power to the security system. Aylesbury Library closed as air-conditioning broke & it was too hot inside for the children.</p> <p>The river Great Ouse burst banks on 21 July, worst floods since 1998. The Woolpack pub estimates flood to cost £90k. Mike Hill landlord of the New Inn stated "it took business six years to recover from the last floods"</p>

2007 (cont)	July	Storm & Rain	Thieves are believed to be trying to use the floods to con their way into people's homes, following complaints from a number of people reporting suspicious callers to Thames Water.
	October	Warm Temps	Blue tongue originated in Africa & spread to Europe after the mild winter in 2006. "The whole of Buckingham is in the blue tongue protection zone and much of it is in the high risk area for foot & mouth" NFU. "We are just hoping for a hard winter with a bit of frost - that would be the best thing that could happen and we have not had one for some time, so we are due one now"
		Rain	Number of villages in the north of Aylesbury hit by flash flooding. Fire crews sent out. Roads blocked.