



Ryedale District Council Climate Change Comprehensive Risk Assessment 2011



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Acronym: Ryedale District Council – RDC

1. Executive Summary

Services throughout Ryedale District Council will be affected in the future by episodes of weather extremes and RIEP funded two local government officers to come into North Yorkshire Authorities to interview key council department representatives to understand what can be done at a service level to adapt each individual Authority against future disruption which will cost time and money.

A weather extreme assessment examining the past five years was carried in 2010 by AECOM to understand past weather extreme events in Ryedale. This report indicates that the majority of impacts are caused by excessive rainfall (54%) and snow and blizzards (44%).

Ryedale District Council is very experienced with the impacts of flooding and proactive at reducing the impact to Council Services. The council services are proactive at reducing the impact on service delivery and are continually seeking solutions to ensure services are not badly affected by any type of adverse weather episode.

During the interview process several positive actions were generated (refer to the Climate Change Adaptation action plan on page 9) by the individual services which indicates how Ryedale District Council can progress the weather extreme adaptation agenda in the near future, to reduce the risk on business continuity and the time and cost constraints associated with a reduced or postponed service.

Disclaimer

All information and content provided in this report has been collected from services representatives of Ryedale District Council as part of the RIEP funded work. All actions/ risks stated in the action plan were suggested by the service representative and are written only as a guide or suggestions of the types of actions that could be taken and therefore no liability is held with the author/s of this report.

2. Methodology

The sustainability officers group for York and North Yorkshire has drawn on Regional Improvement and Efficiency Partnership (RIEP) funding to employ two climate risk assessment project offices to undertake climate risk assessment work in the local authorities of York and North Yorkshire. The major risks and suggested actions required to address the risks have been assessed from interviews and discussions with Council staff across its key services whilst giving regard to the predicted future climatic conditions.

Interviews were conducted with representatives of key Council Departments that delivered services or that managed areas which were likely to be impacted by climate change. The officers were reminded of the key conclusion of the Local Climate Impact Profile which showed the current vulnerability – see Table 1 below. The officers were then taken through the likely changes in climate as identified from the regional Climate Change study and the United Kingdom Climate Impacts Programme (UKCIP) model - UKCP09 as highlighted in the Table below and discussions took place on the likely impacts on their services and work.

Future Climatic condition	2020	2050	2080
Increased summer temperature	+ 1.3°C	+ 2.3°C	+ 3.3°C
Decreased summer rainfall	- 8%	- 19%	- 23%
Increased winter temperature	+ 1.3°C	+ 1.9°C	+ 2.9°C
Increased winter rainfall	+ 4%	+ 11%	+ 15%
Increased storminess	Increase overtime		
Increased rainfall intensity	Increase overtime		
Rising sea level	22cm by 2050, 36cm by 2080*		

Table 1. Predicted climate change.

Source: Weathering the storm: Yorkshire and Humber regional adaptation study, 2009.

*UKClimate Change Projections 2009.

For each service area the key risks were identified and the actions needed to deal with these risks were recorded – these might be changes to service plans, gathering further evidence or better working with partners.

The facilitator used the comments on the likelihood and severity of the impact on their services and budget to rank the risk according to the methodology as listed below. The risks and actions were those identified by those being interviewed or provided in Workshops and do not represent the views of the facilitator. The detailed methodology used on the day can be seen at Appendix 1 below.

3. Key Risks to Ryedale district from a Changing Climate

Key climate change risks are drawn from the previously produced LCLIP and from the UKCP09 predictions.

4. LCLIP Evidence for Ryedale District Council

The media database indicates that the majority of climate impacts are caused by excessive rainfall (54%) and snow and blizzards (44%). No events regarding drought or landslip were recorded.

Pickering suffered the most impacts at a single location. This was primarily due to flooding events during July 2007. The database indicates urban areas are most affected by flooding and flooding events are more common in northern areas of Ryedale at the edge of the moors. Past flooding has damaged buildings, infrastructure and reduced the availability of Council services.

Snow and blizzards are a source of regular seasonal disruption to Ryedale. The 'big freeze' of the 2009/10 winter was the source of the majority of impacts. Snow and ice in urban areas result in increased accident risk and higher call out rates for the emergency services responding to accidents. Remote rural areas can be cut off, removing access to all Council services. Most snow and blizzard events have resulted in consequences which are subjectively regarded as of a medium or high severity.

Few consequences of storms and high winds have been reported in the past six years. Wind speeds of 120mph have been recorded. In one incident a tree was blown over and blocked a road.

A prolonged period of unusually high temperature was recorded in the summer of 2006 - with temperatures exceeding 30°C. While few consequences were reported, it can be inferred that overheating would have occurred in office buildings and schools across the district.

5. UKCP09 Predictions for Ryedale district

UKCIP (UK Climate Impacts Programme) conducted a piece of work in 2009 to project how the climate may change in 2020, 2050 and 2080 and below shows how they project the weather could change over the next 70 years in Ryedale.

2020 Yorkshire and Humber Climate Projections

Estimates are of:

Increase in **winter mean temperature** by 1.3°C.

Increase in **summer mean temperature** by between 1.3 - 1.4°C.

Increase in **summer mean daily maximum temperature** by 1.7 - 1.8°C.

Increase in **summer mean daily minimum temperature** by 1.5°C.

Change in **winter mean precipitation** of 5% (increase).

Change in **summer mean precipitation** of -6% - -5% (decrease).

2050 Yorkshire and Humber Climate Projections

Estimates are of:

Increase in **winter mean temperature** by 1.9°C - 2.5°C.

Increase in **summer mean temperature** by 2.2°C - 2.6°C.

Increase in **summer mean daily maximum temperature** by 2.9°C - 3.5°C.

Increase in **summer mean daily minimum temperature** by 2.4°C - 2.9°C.

Change in **winter mean precipitation** of 9% - 12% (increase).

Change in **summer mean precipitation** of -15% - -18% (decrease).

2080 Yorkshire and Humber Climate Projections

Estimates are of:

Increase in **winter mean temperature** by 2.5°C - 3.6°C.

Increase in **summer mean temperature** by 2.5°C - 4.2°C.

Increase in **summer mean daily maximum temperature** by 3.4°C - 5.6°C.

Increase in **summer mean daily minimum temperature** by 2.8°C - 4.7°C.

Change in **winter mean precipitation** of 12% - 20% (increase).

Change in **summer mean precipitation** of -17% - -28% (decrease).

6. Summary of key risks to Ryedale District Council from a changing climate

Regional and local climate data has been collated to provide likely scenarios for key services (receptors) and is presented in table 2 below.

Severity and likelihood of incidents was scored by service representatives during the interviews and workshops and these have been multiplied to give the colour-coded level of risk. The table gives the service type, the likely impact and consequences of future climatic conditions and a risk rating for now, 2020, 2040 and 2080.

The risk of negative issues is quantified as follows:

1-9 = low (green)

10-15 = medium (amber)

16-25 = high (red)

The opportunity for positive outcomes is indicated as follows:

Pale blue indicates a low level of opportunity

Dark blue indicates a high level of opportunity

RECEPTOR	FUTURE CLIMATIC CONDITION	IMPACT	CONSEQUENCE	level of risk = severity x likelihood			
				Now	2020	2040	2080
Built Infrastructure - all types of property	Increased winter rainfall	Flooding	buildings on low-lying areas at risk of flooding, increased property damage, threat to properties unaware of being in a flood risk zone due to surface water flooding	8	12	20	25
Transport	Increased winter rainfall	Flooding	Serious flooding of highway network leading to road closure and impacts accessibility for service delivery	8	12	20	25
Natural Environment	Hotter/Drier summers and increased rainfall intensity	Summer flash Flooding	Unpredictability of flood zones due to localised weather events leading to disruptions in service delivery.	4	9	12	20
Built Infrastructure - all types of property	Increased summer temperatures	Overheating	Reduced comfort in buildings for occupants - increased need for climate controlled environments. Impacts on the health, safety	6	9	16	20

			and wellbeing of the workforce and residents.				
Tourism and Economic Development	Increased winter rainfall, Increased rainfall intensity, increased storminess	Winter and summer flooding, storms	Loss of key outdoor events and attraction to the area.	4	9	16	25
Tourism	Increased summer temperature, increased winter temperature, decreased summer rainfall	Longer tourist season	Increased number of tourists leading to potential income opportunities for businesses.	1	4	9	16
Road network	Increased summer temperature/ decreased summer rainfall	Heatwaves - increased risk of melting road surfaces and damaged road structures	Restrictions to the road network and vehicle usage.	15	15	25	25

Table 2. Key risks to Ryedale District Council from a changing climate.

Key

The risks are quantified using the methodology followed, those rated 9 and above are amber, 16 and above red. The colour blue in varying shades has been used for opportunities.

The actions identified are those under way or planned in green, medium term over the next 5 years and in red over the next 5 to 10 years and beyond.

7. Ryedale District Council service based Comprehensive Risk Assessment

Service representatives were interviewed in 2011 using the methodology given in appendix 1. The following are the findings of this work and include descriptions of climate adaptation work already being undertaken and suggested actions which have gone forward into the action plan (Table 3). The risks and actions were those identified by those being interviewed and do not represent the views of the project officer.

Council Services - Beckie Bennett

Ryedale District Council is very experienced with the impacts of flooding and is proactive at reducing the impact to Council Services. All the appointed vehicle drivers are trained and have equipment (egg: lifejackets) on board to enable them to continue services through severe weather extremes. Ryedale District Council has a buddy system when responding to extreme weather impacts so that at least one employee per vehicle is experienced in reacting to difficult situations. Ryedale DC provides a 24 hour standby service to react to weather extremes. To date there has been limited disruption and only local road diversions have been necessary. Ryedale DC is in the process of renewing/ replacing the sandbag resource with sandbags that are less prone to rot and deterioration.

In past flooding events the brown bin service was terminated and resources were diverted to priority collections. In such circumstances news updates are regularly uploaded to the Council's website. Ryedale District Council has helped fund the slowing the flow project at Pickering which uses soft landscaping to reduce the likelihood of flooding.

Ryedale DC is currently planning a waste transfer station and climate adaptation needs will need to be considered at the design stage. These should include increasing the capacity to cover disruption and temporary additional storage from extreme weather events. Currently, travel time to the landfill site is effected by congestion.

Actions

- Continue to run the Budi Scheme to share knowledge and expertise.
- Implement annual awareness-raising sessions on subjects of heat stress and dehydration during the summer periods.
- Monitor travelling time to the landfill site, including during the August school holiday period.
- When tendering new equipment, specify vehicles that could cope with stated weather extremes.
- Consider climate adaptation measures when designing the waste transfer station.
- Prepare emergency measures in preparation for water shortages in the future.

Estates - Phil Long

Phil Long has recently conducted a scenario which looked at the impact of electricity shortage on Council operations. Ryedale DC has a small number of generators for essential works and services. Some services could be suspended if extreme weather affected mains electricity supply. Katie Speed at North Yorkshire County Council is currently writing the major incident plan for Ryedale which will indicate what to do in the event of an extreme weather impact.

Public toilets have had to be closed in recent winters as they were damaged by frozen pipes. Ryedale DC has funded projects in the district to resolve flooding issues and RDC continues to support research into reducing the impacts of climate events.

Actions

- Implement measures to overcome winter freezing in public toilets.

Forward Planning – Daniel

Ryedale DC's Local Development Framework focuses most future developments around major settlements which have suitable infrastructure and this will reduce some of the risks associated with future extreme weather events. Site selection criteria will cover allocating development in low risk flood zones. Sustainable Urban Drainage Systems (SUDS) are promoted where applicable, in developments over a certain threshold, in order to reduce the amount of water flowing to local drainage and river networks.

The Forward Planning team promote the concept of sustainable buildings, e.g.: ensuring the layout and orientation of the development maximises the capture of natural heat.

Actions

- Promote Sustainable Urban Drainage Systems in appropriate developments.
- Promote the installation of renewable technologies, particularly in rural settlements, to reduce reliance on the National Grid.
- Promote sustainable building design to adapt future properties to climate change.

Facilities Management

Ryedale DC has a small property portfolio with four key sites (Ryedale House, vehicle depot and two leisure centres with swimming pools). Other assets include public toilets and business units. Ryedale House has a poor thermal fabric which makes it hot in the summer and cold in the winter. These issues are exacerbated by poor glazing.

Ryedale DC is currently looking at future-proofing some of its assets to adapt to climate change and reduce the reliance on the National Grid.

Actions

- Consider options for adapting Ryedale House to reduce the adverse summer and winter temperature ranges.
- Continue to research options to reduce the reliance on the National Grid from Ryedale District Council assets.
- Investigate which public toilets are at risk from flooding and work proactively to reduce the risks.
- Consider how facilities could cope during periods of severe water shortage.

Information Technology

IT equipments and structures are in place for employees to continue working during extreme weather events.

A 'rectified undistributed' power supply to the Ryedale house server room, reduces the risk of any damage in extreme weather events. Files are backed up to three storage facilities.

RDC has a contract with a disaster recovery company to minimise downtime in the case of IT failure.

Actions

- Promote IT services, security and protection to staff.

Environmental Health, Sport and Leisure

Milder winters could increase the prevalence of pest species which would require increased resource to tackle. Brown bins are promoted as being better for the recycling of garden waste as compost bins are known to be used by pests.

Warmer temperatures could increase the risk of food poisoning in food premises, requiring continued awareness raising and education.

A sport strategy is being developed.

Actions

- Promote and raise awareness of the risk of food poisoning during warm periods.
- Consider climate change adaptation in the development of the sport strategy.

8. Ryedale District Council Climate Adaptation Action Plan

The actions from the interviews have been tabulated to give a 2011 climate adaptation action plan (Table 3).

Action	Responsible Officer / service area	Adaptation Action Plan	Service Plan	Recommended risk for risk register
Continue to run the Budi Scheme to share knowledge and expertise.	Beckie Bennett/ Council Services	X		
Implement annual awareness-raising sessions on subjects of heat stress and dehydration during the summer periods.	Beckie Bennett/ Council Services	X		
Monitor travelling time to the landfill site, including during the August school holiday period.	Beckie Bennett/ Council Services	X		
When tendering new equipment, specify vehicles that could cope with stated weather extremes.	Beckie Bennett/ Council Services	X		
Consider climate adaptation measures when designing the waste transfer station.	Beckie Bennett/ Council Services	X		
Prepare emergency measures in preparation for water shortages in the future.	Beckie Bennett/ Council Services			X
Implement measures to overcome winter freezing in public toilets	Phil Long/ Estates	X		
Promote Sustainable Urban Drainage Systems in appropriate developments.	Daniel – Forward Planning	X		
Promote the installation of renewable technologies, particularly in rural settlements, to reduce reliance on the National Grid.	Daniel – Forward Planning	X		

Promote sustainable building design to adapt future properties to climate change.	Daniel – Forward Planning	X		
Consider options for adapting Ryedale House to reduce the adverse summer and winter temperature ranges.	Facilities	X		
Continue to research options to reduce the reliance on the National Grid from Ryedale District Council assets.	Facilities	X		
Investigate which public toilets are at risk from flooding and work proactively to reduce the risks.	Facilities	X		
Consider how facilities could cope during periods of severe water shortage.	Facilities			X
Promote IT services, security and protection to staff.	IT	X		
Promote and raise awareness of the risk of food poisoning during warm periods.	Environmental Health Sport and Leisure	X		
Consider climate change adaptation in the development of the sport strategy.	Environmental Health Sport and Leisure	X		

Table 3. Ryedale DC Action Plan.

9. Conclusion

This piece of work was funded by RIEP and the intention is for the Ryedale DC sustainable development officer to work across the service areas to implement the results and in particular the action plan. Action at an early stage is likely to save considerable resources in the future as the climate changes and climate adaptation measures are needed.

Appendix 1 – Detailed Methodology

The risk assessment was conducted by meeting with individuals or groups of staff in City of York Council and following the method outlined below.

Key activities at risk:

Please consider the key activities that your service/work area currently have responsibility for and consider the major impacts that a changing climate might have on your work. A matrix has already been partly completed by pulling out actions from a similar exercise in West Yorkshire and based on the work CYC did at the Tackling Climate event in 2009 and through the local impact assessment for York 2010.

Future climatic conditions affecting activities:

Please use the menu below to select the individual climatic condition relevant to the chosen activity. The table below outlines these future climatic conditions:

Future Climatic condition	2020	2050	2080
Increased summer temperature	+ 1.3°C	+ 2.3°C	+ 3.3°C
Decreased summer rainfall	- 8%	- 19%	- 23%
Increased winter temperature	+ 1.3°C	+ 1.9°C	+ 2.9°C
Increased winter rainfall	+ 4%	+ 11%	+ 15%
Increased storminess	Increase overtime		
Increased rainfall intensity	Increase overtime		

Table 4. Future climatic conditions. Source: Weathering the storm: Yorkshire and Humber regional adaptation study, 2009

Impact:

Please list the key impacts that the different climatic conditions (above) would have on the activities e.g. flooding or heatwave.

Consequence:

What are the results of the impacts? Who or what is impacted? Please list positive & negative consequences e.g.: Increased tourism (+) or road closed (-). If the consequence is positive, then highlight in blue.

How severe is the impact:

Please rank using the following scores:

- 1 = Insignificant
- 2 = Minor
- 3 = Moderate
- 4 = Major
- 5 = Catastrophic

How likely is the risk:

Please rank using the following scores:

- 1 = Low
- 2 = Fairly low
- 3 = Medium
- 4 = Fairly high
- 5 = High

Level of risk:

This is an automatic calculation (severity x likelihood = risk).

We have followed normal risks assessment protocol by selected scores of:

1-9 to be green

10-15 to be amber

16+ to be red

Taking each red risk

Please list any actions that are currently in place or will soon be out in place to address the risk.

If there are none, please propose what would be necessary to deal with the risk. Each action should be colour-coded to represent whether the action is needed, planned or done.

Red = needed

Amber = planned

Green = done

Cost of action

Score low, medium or high. Monetary values were not used as the cost will be relative to each service or sector and should not be used as a comparable measure.

Appendix 2 - Acknowledgements

The Regional Improvement and Efficiency Programme (RIEP) would like to thank the following individuals and organisations in their support in the creation of this document:

West Yorkshire Comprehensive Risk Assessment

East Midlands Comprehensive Risk Assessment

The following Ryedale DC officers:

Waste and Recycling Officer

Beckie Bennett

Phil Long

Forward Planning Officer - Daniel

Facilities Manager

IT Manager

Environmental Health, Sport and Leisure Manager.