Notice of a public
Decision Session - Executive Member for Environment and Climate Emergency

To: Councillors Kent and Ravilious (Executive Members)

Date: Tuesday, 21 November 2023

Time: 10.00 am

Venue: The Thornton Room - Ground Floor, West Offices (G039)

AGENDA

Notice to Members – Post Decision Calling In:

Members are reminded that, should they wish to call in any item* on this agenda, notice must be given to Democratic Services by **4:00 pm** on **Thursday, 23 November 2023.**

*With the exception of matters that have been the subject of a previous call in, require Full Council approval or are urgent, which are not subject to the call-in provisions. Any called in items will be considered by the Corporate Services, Climate Change and Scrutiny Management Committee.

Written representations in respect of items on this agenda should be submitted to Democratic Services by **5.00 pm** on **Friday, 17 November 2023.**

1. Declarations of Interest (Pages 1 - 2)

At this point in the meeting, the Executive Member is asked to declare any disclosable pecuniary interest, or other registerable interest, they might have in respect of business on this agenda, if they have not already done so in advance on the Register of Interests. The disclosure must include the nature of the interest.

An interest must also be disclosed in the meeting when it becomes apparent to the member during the meeting.

[Please see attached sheet for further guidance for Members].

2. Minutes (Pages 3 - 4)

To approve and sign the minutes of the Decision Session held on 17 October 2023.

3. Public Participation

At this point in the meeting members of the public who have registered to speak can do so. Members of the public may speak on agenda items or on matters within the remit of the Committee.

Please note that our registration deadlines are set as 2 working days before the meeting, in order to facilitate the management of public participation at our meetings. The deadline for registering at this meeting is **5:00pm** on **Friday, 17 November 2023.**

To register to speak please visit www.york.gov.uk/AttendCouncilMeetings to fill in an online registration form. If you have any questions about the registration form or the meeting, please contact Democratic Services. Contact details can be found at the foot of this agenda.

Webcasting of Public Meetings

Please note that, subject to available resources, this meeting will be webcast including any registered public speakers who have given their permission. The meeting can be viewed live and on demand at www.york.gov.uk/webcasts.

During coronavirus, we made some changes to how we ran council meetings, including facilitating remote participation by public speakers. See our updates (www.york.gov.uk/COVIDDemocracy) for more information on meetings and decisions.

4. A Climate Ready York (Pages 5 - 84)

This report recognises the increasing threat facing the city, and region, by climate change. It outlines progress towards strengthening York's resilience to climate change and sets out key climate risks, as identified through a climate risk and vulnerability assessment

5. Annual Carbon Emissions Report 2022/23 (Pages 85 - 102)

City of York Council has set a target to reduce carbon emissions from corporate activity to net zero by 2030. An Annual Carbon Emissions Report is produced every year to monitor progress against this target and identify areas of improvement.

6. York Emissions Inventory Report 2023 (Pages 103 - 114)

This report presents the Emissions Inventory for the city of York. The data is used to monitor progress against the council ambition to achieve net zero carbon for the city by 2030.

7. Urgent Business

Any other business which the Executive Member considers urgent under the Local Government Act 1972.

Democracy Officer: Louise Cook
Telephone No- 01904 551031
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For more information about any of the following please contact the Democracy Officer responsible for servicing this meeting:

- Registering to speak
- Business of the meeting
- Any special arrangements
- Copies of reports and
- For receiving reports in other formats

Contact details are set out above.

This information can be provided in your own language.

我們也用您們的語言提供這個信息 **(Cantonese)**

এই তথ্য আপনার নিজের ভাষায় দেয়া যেতে পারে। **(Bengali)**

Ta informacja może być dostarczona w twoim własnym języku. **(Polish)**

Bu bilgiyi kendi dilinizde almanız mümkündür. **(Turkish)**

یہ معلومات آپ کی اپنی زبان (بولی) میں بھی مہیا کی جاسکتی ہیں۔ **(Urdu)**

☎ **(01904) 551550**

Agenda Item 1

Declarations of Interest – guidance for Members

(1) Members must consider their interests, and act according to the following:

Type of Interest	**You must**
Disclosable Pecuniary Interests	Disclose the interest, not participate in the discussion or vote, and leave the meeting unless you have a dispensation.
Other Registrable Interests (Directly Related) **OR** Non-Registrable Interests (Directly Related)	Disclose the interest; speak on the item only if the public are also allowed to speak, but otherwise not participate in the discussion or vote, and leave the meeting unless you have a dispensation.
Other Registrable Interests (Affects) **OR** Non-Registrable Interests (Affects)	Disclose the interest; remain in the meeting, participate and vote unless the matter affects the financial interest or well-being: (a) to a greater extent than it affects the financial interest or well-being of a majority of inhabitants of the affected ward; and (b) a reasonable member of the public knowing all the facts would believe that it would affect your view of the wider public interest. In which case, speak on the item only if the public are also allowed to speak, but otherwise do not participate in the discussion or vote, and leave the meeting unless you have a dispensation.

(2) Disclosable pecuniary interests relate to the Member concerned or their spouse/partner.

(3) Members in arrears of Council Tax by more than two months must not vote in decisions on, or which might affect, budget calculations,

and must disclose at the meeting that this restriction applies to them. A failure to comply with these requirements is a criminal offence under section 106 of the Local Government Finance Act 1992.

City of York Council	Committee Minutes
Meeting	Decision Session - Executive Member for Environment and Climate Emergency
Date	17 October 2023
Present	Councillor Ravilious (Executive Member)
Apologies	Councillor Kent
In Attendance	James Gilchrist, Director of Environment, Transport and Planning Matthew Pawson, Public Protection Manager (Investigations and Compliance)

9. Declarations of Interest (10:00 am)

The Executive Member was asked to declare, at this point in the meeting, any personal interests not included on the Register of Interests or any prejudicial or disclosable pecuniary interests she might have in respect of the business on the agenda. None were declared.

10. Minutes (10:00 am)

Resolved: That the minutes of the Decision Session held on 12 September 2023 be approved and signed by the Executive Member as a correct record.

11. Public Participation (10:00 am)

There had been no registrations to speak at the session under the Council's Public Participation Scheme.

12. Food Service Plan 2023-24 (10:01 am)

The Executive Member considered a report that sought approval for the council's Food Service Plan 2023-24, in compliance with the requirements of the Food Law Code of Practice.

The Public Protection Manager provided an overview noting that:

- The council was required to produce an annual food service plan to satisfy the statutory requirements within the Food Law Code of Practice which was overseen by the Food Standards Agency (FSA).
- The covid recovery plan had been successfully delivered and the authority had returned to using the code of practice as highlighted within Annex A of the report.

The Executive Member thanked the officer for his update, and in answer to her questions regarding the advice service, officers confirmed that:

- They actively provided advice to businesses, including tailored advice on specific areas, to ensure compliance with food hygiene legislation.
- During the past 6 months, 54 advice visits to premises had been undertaken.
- They would consult with North Yorkshire Council and provide feedback on the advice they provided to businesses to reduce carbon emissions.

Resolved: That the food service plan be approved.

Reason: To provide assurance that the council had a plan to fulfil its obligations under the Food Law Code of Practice.

Cllr Ravilious, Executive Member
[The meeting started at 10.00 am and finished at 10.08 am].

Meeting:	Decision Session - Executive Member for Environment and Climate Change
Meeting date:	21 November 2023
Report of:	Assistant Director Policy and Strategy
Portfolio of:	Executive Member for Environment and Climate Change

Decision Report: A Climate Ready York

Subject of Report

1. This report recognises the increasing threat facing the city, and region, by climate change.

2. It outlines progress towards strengthening York's resilience to climate change and sets out key climate risks, as identified through a climate risk and vulnerability assessment (see **Annex D**), including feedback from the wider region.

3. The report seeks approval to take a holistic approach to prepare for climate change by integrating adapting to a changing climate in emerging policies and strategies.

Benefits and Challenges

4. Climate change is already having significant impacts, and these are set to increase. Robust assessment of climate risks and opportunities underpins effective action to build climate resilience. York is no different to all other cities in needing to plan for a changing climate.

5. Investing in resilient infrastructure, institutions, systems, and natural capital has immediate benefits, while failing to do so can incur immediate and future locked-in costs, endanger lives, and hinder economic activity. Improved resilience to climate change impacts achieved because of adaptation action is not only a protective

measure to manage acute shocks and slow-onset hazards: it is also a driver of social and economic development[1].

6. Regional local authorities are working together to learn and build expertise to help the region better prepare for climate change.

7. The speed of global warming is faster than predictions, with leading climate scientists no longer able to confidently forecast the impact of rising global temperatures on interconnected weather and global cooling systems, like oceans and ice. The speed of this change is faster than the regulatory or policy environment and as such York will need to respond to climate change risks in an agile and flexible way.

Policy Basis for Decision

8. The Council's 10-year Plan sets out a goal for York to be carbon neutral and contribute to the regional ambition to be carbon negative, with iconic green spaces to enjoy today and the environment protected for future generations. The Plan will be delivered, in part, through the York Climate Change Strategy 2022-2032 and Action Plan which recognises the threat of climate change at both a global and local scale.

9. The 10-year Plan and Climate Change Strategy and Action Plan align to the Council Plan 2023-2027, *One City for All,* which includes Four Core Commitments (outcomes) covering Equalities and Human Rights, Affordability, Climate Change, Health and Wellbeing (E.A.C.H.).

10. There is currently no statutory requirement, outside of flood risk strategy, for local authorities to strengthen resilience to a changing climate based on the scientific predictions such as anticipated rises in temperatures.

11. Local Authorities are encouraged to report an assessment of climate risks and actions annually to the Department of Environment, Food and Rural Affairs ("DEFRA").

[1] Saving lives and livelihoods: The benefits of investments in climate change adaptation and resilience Sophie Dicker, Sam Unsworth, Rebecca Byrnes and Bob Ward March 2021

Financial Strategy Implications

12. The report identifies the impact of climate change on the city, and this brings potentially significant financial implications for the Council. Examples of additional costs could be an increase in energy use (e.g., for cooling rather than heating), additional insurance premiums resulting from the costs incurred relating to significant weather events, as well as capital costs arising from building in climate resilience into activities.

13. The recommendations in this report do not in themselves impact the council's financial strategy however the longer-term financial impact of responding to and dealing with climate resilience will need to be included in future budget considerations for the council.

Recommendation and Reasons

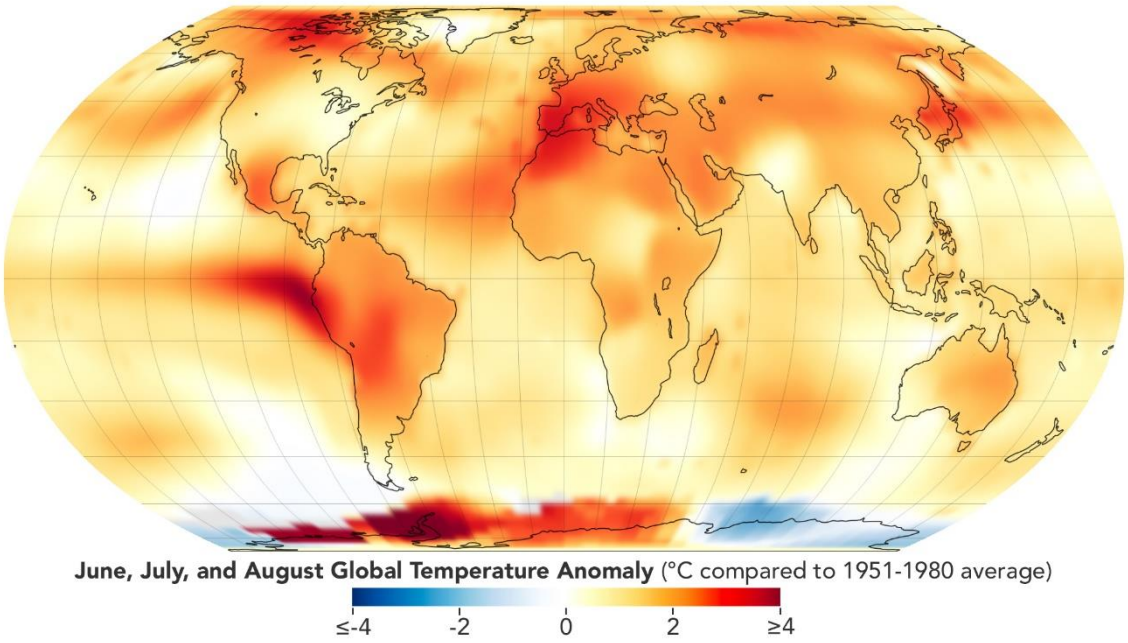
14. The Executive Member is recommended to:
    i. Approve the assessment of identified climate risks as set out in Annex D.
    ii. Approve the recommended next steps, as set out in Paragraph 49.

Reasons:
    i. To provide a basis for ongoing climate action.
    ii. To strengthen the approach towards a Climate Ready York.

Background

15. Climate change is one of the greatest threats facing our planet. According to the World Resource Institute, global temperatures have so far risen by 1.1°C, and already the planet has seen an increase in natural disasters such as flooding, hurricanes, and other extreme natural events.

16. NASA announced in September 2023 that this summer was the hottest on record. The months of June, July, and August combined were 0.23 C warmer than any other summer in NASA's record, and 1.2 C warmer than the average summer between 1951 and 1980. August alone was 1.2 C warmer than the average.



17. With the UK battered by Storm Babet and Storm Ciaran, we are yet to fully understand, or predict, the impact a changing climate will have on York, and in particular, the extent of more significant and frequent flooding events.

18. Increased frequency and magnitude of adverse weather events because of the changing climate brings multiple impacts that every Council service will need to address. To prepare for increases in global temperatures and the impact it brings locally and to Council services requires a shift in how the Council responds, whilst learning from the council's well-rehearsed response to flooding.

19. Adapting to climate risk is a feature of the CDP[2] rating process and building climate resilience will contribute to retention of York's 'A' rating.

20. The Council announced a climate emergency in 2019, establishing an ambition to be Net Zero by 2030. In October 2021, the Council asked Executive to report on the city's climate resilience and in December 2022, and Council approved the Climate Change Strategy, which set out objectives to further strengthen York's resilience to climate change.

[2] Formerly known as the Carbon Disclosure Project

21. In February 2023, Climate Emergency Policy and Scrutiny Committee considered a report setting out the Council's approach for assessing climate risks and opportunities and the proposed next steps, including engagement with city and regional partners.

22. Work to understand climate risks has been ongoing since then, aided by the Yorkshire and Humber Climate Commission (YHCC) Climate Adaptation Programme.

23. The draft Local Plan sets out the regulatory framework for new developments across the city. It is recognised that at the time of producing the Local Plan, and indeed since, the speed of global warming exceeds predictions with impacts not yet fully understood or able to inform current planning powers.

24. Provision in the Community Infrastructure Levy to overcome these impacts once better understood provides some assurance that despite the speed of global warming, the city will still have some capability to respond to impacts.

25. York already has expertise in preparing for extreme weather events. Under the Flood and Water Management Act 2010, CYC a statutory duty to develop, maintain and implement a strategy for the management of local flood risk. The local flood risk management strategy defines how the Council, in partnership with other organisations who also have statutory roles, will manage flood risk across its area. The strategy focuses on flood risk from all sources, such as rivers, surface runoff, groundwater, and ordinary watercourses. The strategy links to the strategic flood risk assessment[3] and reinforces policies within the emerging Local Plan[4].

York Climate Change Risks and Vulnerabilities Assessment (CCRVA)

[3] https://www.york.gov.uk/downloads/download/795/strategic-flood-risk-assessment-documents
[4] https://www.york.gov.uk/LocalPlan

26. Drawing on the latest UK climate projections[5] and Met Office data showing the expected impacts of climate change on urban areas in the UK, current and future climate risks for cities like York include:

- **Heatwaves and extremely hot days**; - causing health issues like heat stress, crop failure, food insecurity and disruption to travel, work and services.
- **Heavy rain and storms**; - leading to fluvial and surface water flooding, structural damage, crop failure, food insecurity and disruption to travel and services.
- **Extended dry periods and drought**; - leading to pressure on water supplies and causing issues like building subsidence along with crop failure and food insecurity.

27. Following Council's steer and using the UK Climate Change Risk Assessment 3 framework as the starting point, an initial assessment of risks undertaken in 2022 (see **Annex A**). This identified 46 risks and opportunities, of which six risks were seen as a priority for the city, including:

- Risk to people, communities and buildings from river and surface water flooding
- Risk to building fabric.
- Risk to terrestrial species and habitats from temperature change, water scarcity, wildfire, flooding, wind and altered hydrology.
- Opportunities from new species colonisation in terrestrial
- Risk to soils including seasonal aridity and wetness.
- Risk to food safety and food security.

28. Whilst the report provided useful insights, its author noted limitations associated with its production. Given these limitations, the report made clear that the identified priority risks are not the only ones relevant to York and recommended that future work considers ALL risks and opportunities from the UKCCRA3.

29. Since 2022, the Council has sought to build on this initial assessment by drawing on evidence from across the wider region,

[5] UK Climate Projections (UKCP18)

a process facilitated by the Yorkshire and Huber Climate Commission Climate Adaptation Programme.

30. For example, Kirklees Council's CCRVA is considered comprehensive and methodologically robust[6]. It identifies priority risks within eight themes including, Water, Waste, Health and Wellbeing, Buildings and Property, Culture Leisure and Tourism, Natural Environment, Energy and Infrastructure and Services. See **Annex B**. Risk identification included a review of the CCRA3 and stakeholder engagement.

31. The assessment notes there is a substantial amount of overlap between risks, consequences, and climate impacts. This means that the same types of risks can arise from different types of climate impacts and likewise the same consequences can arise from a variety of different risks. Additionally, a single risk can give rise to several different consequences, and these can then cascade further into additional risks and/ or consequences. There are also interdependencies between different risks, consequences, and themes.

32. Kirklees Council's assessment also notes that not everyone is impacted by climate change in the same way, with some population groups more vulnerable to climate change than others. This is detailed in **Annex C**.

Learning from others

33. Due to the nature of climate change, and the predicted increase in heat, water insecurity and freezing temperatures, different services, infrastructures, and systems will be affected differently.

34. To ensure the impact of risks and vulnerabilities are understood, the Council has engaged with different organisations and services to explore the impact of a changing climate.

[6] Assessment methodology was in general accordance with the guidance set out in ISO 14091:2021 - Adaptation to climate change.

Regional local authorities

35. The YHCC Climate Adaption Programme brought neighbouring local authorities together to share evidence and good practice. The regional workshops identified several common challenges encountered by local authorities:

- Given the sometimes lengthy timeframes being used to assess climate resilience, climate adaptation can compete with more immediate priorities. In part to address this, some local authorities have adopted an explicit and high-profile 'Climate Ready' commitment to sit alongside the 'Zero Carbon' ambition.
- Climate risks, when assessed, can strengthen corporate risk registers, strategies, and plans to help strengthen climate change risk management.
- Securing high level awareness of the risks and vulnerabilities is critical, particularly when the risks impact on all different areas of systems and infrastructures.
- Some local authorities have integrated climate adaptation and mitigation plans - with clear labelling of actions contributing to climate adaptation, climate mitigation, or both.

City partners

36. Throughout 2023, the Council engaged city partners to raise awareness of climate risks and to gain an understanding of how city organisations understood the risks pertinent to their own organisation, supply chains and infrastructure.

37. Partners shared their own unique perspectives, summarised below:

- Partners had experienced a range of climate impacts on customers, staff, buildings and equipment, costs, and business continuity.
- Consequently, organisations were already adapting to climate change in various ways, such as turning down heating and changing energy systems, reviewing HR policy, and working practices, adjusting income projections for anticipated disruption events, changing seasonal menus, and assessing building occupancy.

- Opportunities for future joint action include:

    - Risk assessment and sharing good practice.
    - Building capacity for new skills and technologies
    - Lobbying for national policy action and resources.
    - Raising awareness of risks and issues, especially for those that are digitally excluded.

Council services

38. Different services in the Council will be affected in very different ways, depending on the weather event itself, and the impact it has on users and continuity of service.

39. The Council is already taking action to adapt to climate risks, including through the Council's planning, development and regeneration functions, housebuilding and retrofit programmes, estates and energy management, transport and highways, fleet replacement programme and changes to working practices. Examples include changing personal protective equipment to be more light weight during heatwaves, changing routines to miss extreme heat of the day, and considering materials that will be more durable.

40. Adult and children's health and wellbeing service adaptation plans will reported to the York Health and Care Partnership, and the Health and Wellbeing Board. There is a multi-agency health and care group developing plans to build both resilience and response.

41. YHCC and DEFRA set out guidance about how organisations manage climate risks through their risk management procedures. Integrating climate risks within all levels of risk management, from the corporate risk register (CRR) down, is considered an effective way to ensure attention remains focussed and risks are regularly monitored.

42. Later this year, the Council will begin reporting through the DEFRA Adaptation Reporting Power. This will bring greater focus on adaptation planning and provide opportunity for participating local authorities to highlight barriers and constraints to achieving climate resilience.

Steps to strengthen a climate resilient York:

1. Understanding York's risks and vulnerabilities

43. To better understand York's climate risks and vulnerabilities, *The York Climate Change Risks and Vulnerabilities* report has been updated to include evidence and learning from others and is presented for Executive Member approval in **Annex D**.

44. The evidence included in the revised report has been derived from various sources to build a picture. It is not a statutory requirement on local authorities to have a Climate Change Risk and Vulnerability Assessment and instead, York, has learned from others and drawn together multiple evidence to inform the assessment.

45. The Executive Members for Environment and Climate Change are asked to note this is a live document and as such will continue to evolve over time as more is understood about the impact of climate change on the city, the systems, and infrastructures within it.

46. It is recognised that a number of significant risks were not included in the initial priority assessment and will need to be explored further in future work. The speed of climate change and the impact it is already having on our city's systems and infrastructure means that we will continue to need to learn from and respond to ever increasing extreme weather events. This is an approach York is familiar with, as it has continued to learn and adapt from successive flood events.

1. Strengthening York's Climate Resilience

47. Engagement with local authorities across the region revealed the challenging nature of climate change risk assessment and adaptation planning, not least due to the speed of global warming and whether the science is able to adequately forecast, the lack of statutory responsibility to adapt the environment and the potential inherent constraints of the regulatory planning environment that is not able to respond at the same speed as global warming.

48. Learning from neighbouring authorities and to help York build on the positive catchment area flooding programme, Executive Members are invited to strengthen the Climate Change Strategy ambition to be net zero by 2030, by adding that **by 2030 York will have set the conditions to be Climate Ready**.

49. Should Executive Members approve strengthening the Climate Change Strategy ambition to include climate resilience, several steps will be taken to strengthen York's approach:

    i. The climate change action plan will be updated to indicate when actions are mitigating carbon emissions or adapting to climate change events, or both, continuing to keep climate adaption to the fore of planning and delivery.

    ii. A task and finish group will identify opportunities and requirements for additional action against priority risks and further risk assessment.

    iii. Emerging strategies and policies, such as the draft Local Transport Strategy, will consider the speed of global warming and build in provision for climate adaptation from the outset.

    iv. The Community Infrastructure Levy criteria will be reviewed to include supporting preparations for climate resilience, whether that is new developments or supporting existing developments, transport, education, or economic activity.

    v. The Council will continue to engage with regional and local partners, sharing good practice and lessons learned to help build a library of adaptation expertise.

    vi. The Council will continue to work with DEFRA to share understanding of the risks and actions and opportunities to strengthen local authority powers to deliver adaptation activities across different systems and infrastructures.

    vii. The Council will review *York's Climate Change Risks and Vulnerabilities report* annually, updating it to ensure it remains comprehensive and relevant.

Options analysis

50. Options are:

1. Do nothing.
2. Share expertise, but do not take further actions until climate change impacts are more regularly experienced and understood.
3. Strengthen York's approach to building climate resilience now, recognising the speed of global warming is faster than current regulatory powers.

51. **Analysis**

	Benefits	**Disadvantages**
Do nothing	By not understanding climate risks, York residents and partners will be unaware of the potential threats. No resource will be wasted in implementing mitigations that turn out not to be useful.	The cost of inaction will lead to increased reactive maintenance or systems changes that will intensify. The cost of adapting in the future could be greater than the cost of preparations now. The Council will miss the opportunity of learning from good practice, sharing tools and processes, and ensuring York is able to capitalise on available funding. York will be inadequately prepared for the risk of climate change.
Share expertise	The YHCC programme provides a structure and pathway to build expertise. York will recognise the risk of climate change	Unable to capitalise on funding as insufficient information of the risk to York to prepare. Insufficient understanding in place to prepare the city for future challenges.

	and be better informed about steps to take.	
Strengthen York's approach to climate resilience	York's climate resilience will be strengthened – The Council will be better prepared for the impact of climate change -the adaptations required will be understood and form part of emerging strategies, policies, or plans. The Council will be able to capitalise on available funding (such as CIL) or incorporate into the work programme to minimise impact on the revenue budget.	York's businesses and residents will be more aware of the threat of climate change and global warming, which could lead to uncertainty and concern.

Consultation

52. Consultation with local authorities from across the region via the YHCC Climate Adaptation programme has informed the development of *York's Climate Change Risk and Vulnerabilities Assessment* and this report.

53. Organisations and businesses across York were invited to take part in two climate adaptation workshops during 2023 and feedback from these sessions has been incorporated within this report and the risk assessment report.

54. The Council's Climate Change Programme Board were consulted on an early draft of the report.

Organisational Impact and Implications

Financial

55. The recommendations in the report have no immediate financial implications however as identified in the Financial Strategy Implications section there are longer term implications for the council in dealing with the impact of climate change.

Human Resources (HR)

56. There are no HR implications arising as direct result of this report.

Legal

57. There are no legal implications for the matters specifically referred to within this report, including the proposed next steps.

58. There is no legal requirement to consult on updates to the Climate Change strategy. The Policy Framework set out within Appendix 1 of the Council's Constitution (Scheme of Delegation) confirms that any updates to the Council's Climate Change strategy is required to have regard to recommendations by Executive. Updates to other policies and plans because of this work (such as (but not limited to) the draft Local Transport Strategy or any draft Local Plan documents) may be required to have regard to recommendations by Executive but will require the approval of full Council in due course as per Appendix 1.

59. Subject to any Data Protection and Privacy implications (see below), or any implications related to sensitive/confidential information, there should be no legal implications with sharing of data, information and/or expertise via the YHCC programme.

60. Any issues requiring support from Legal Services will however need to be addressed as and when they arise.

Procurement

61. Whilst there are no direct procurement implications relating to the strategy outlined, should the council need to respond to the climate

resilience and should any works or services be required, procurement implications will then come into place.

62. Should any priorities require procurement, all works and/or services must be procured via a compliant, open, transparent, and fair process in accordance with the council's Contract Procedure Rules and where applicable, the Public Contract Regulations 2015. Further advice regarding the procurement process and development of procurement strategies must be sought from the Commercial Procurement team.

Health and Wellbeing

63. As noted in this report, climate change poses a serious threat to human health, and in fact has been described by the Lancet Commission as 'the biggest global health threat of the 21st century'.

64. Local public health issues raised by climate change, and which require an adaptation response, include:
    i. Population-level effects of extreme heat / cold events e.g., excess deaths
    ii. Increase in likelihood of emerging zoonotic diseases which could affect health in the city.
    iii. Decline in food systems, and associated effect on nutrition and therefore human health.
    iv. Declining air quality and increased incidence / exacerbation of respiratory and other illnesses

65. In addition, health sector adaptation / mitigation plans around climate change will need to include:
    i. estate issues e.g., vulnerability to flooding.
    ii. the NHS role in reducing carbon emissions e.g., use of anaesthetic gases.
    iii. adapting to the increased healthcare use associated with poor air quality, poorer diets, and more sedentary activity.
    iv. absorbing patient surges / demand related to extreme heat / cold events.

66. NHS England planning processes (Greener NHS) have requirements on both the ICB and local providers around climate change adaption, mitigation, and emergency planning.

Environment and Climate action

67. Tackling Climate Change represents a core commitment within the Council Plan (2023 -2027) and this commitment extends to both mitigation and adaptation. Our climate is already changing and ensuring that the Council and City are in the best state of preparedness for dealing with these changes will have long-term health and financial benefits.

Affordability

68. The assessment has identified the following impacts:
    - Further risks to homeless communities without safe shelter.
    - Increased requirement for retrofitting properties with cooling systems.
    - Risk to household energy demands from increased cooling/heating requirements.
    - Increase in risk of condensation, damp, mould growth, mildew.

69. These have negative impacts on those who are homeless or in poverty within the city. As stated in the assessment people on a low income are less able to deal with climate events as they lack the economic or financial capacity to invest in measures to make their home more resilient or to obtain e.g., flood insurance.

70. There are plans to develop a 10-year Anti-Poverty Strategy and climate change impacts and mitigations should be cross referenced with ongoing work around mitigating climate change.

Equalities and Human Rights

71. The Council recognises, and needs to take into account its Public Sector Equality Duty under Section 149 of the Equality Act 2010 (to have due regard to the need to eliminate discrimination, harassment, victimisation and any other prohibited conduct; advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it and foster good relations between persons who share a relevant protected characteristic and persons who do not share it in the exercise of a public authority's functions).

72. At the time of writing there are no equalities implications identified in respect of the specific matters discussed in this report. However, an Equalities Impact Assessment will be carried out in due course and the process of consulting on the recommendations in this report will identify any equalities implications on a case-by-case basis, and these will be addressed in future reports.

Data Protection and Privacy

73. As there is no personal data, special categories of personal data or criminal offence data being processed, there is no requirement to complete a Data Protection Impact Assessment (DPIA). This is evidenced by completion of DPIA screening questions AD-01500.

Communications

74. Climate is a core commitment of the Council Plan- One City, for all- and cutting carbon and enhancing our environment for the future is a priority.

75. While there are no communications actions directly linked to this report, communications work will be required in support of the council plan and climate strategy. This will include sharing information, support and advice with staff, residents, and businesses, as well as highlighting the work that is taking place in support of York's net zero ambitions. Some of the information in this report may be used in messaging to highlight the climate emergency and why the council is taking action.

Economy

76. The recommendations in this report respond to the impacts and risks identified in the report and its Annexes for businesses and the economy. Building risks and impacts apply equally to residences and to business premises, transport risks and impacts would affect the ability of people to get to work, customers to get to premises, and businesses to receive and deliver goods and services. Mitigating those risks, as is recommended, is therefore of great importance from an economic perspective.

Risks and Mitigations

77. This report is about understanding and preparing to mitigate the risks of global warming and climate change.

78. The risk of doing nothing means that York will not be adequately prepared for climate change risks, unable to capitalise on available funding (or make better use of existing funding) and unable to safeguard different residents who are likely to be more vulnerable to the impact of climate change.

Wards Impacted

79. All.

Contact details:

For further information please contact the authors of this Decision Report.

Author

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Telephone:	01904 552057
Report approved:	Yes
Date:	13/11/2023

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Background papers

- Council 2019 - A climate emergency
- Council October 2021 - A report on climate risks
  (Public Pack) Agenda Supplement Agenda Supplement for Council, 21/10/2021 18:30 (york.gov.uk) – item 6 (ii)
- Council December 2022 - approval of the Climate Change Strategy
  Agenda for Council on Thursday, 15 December 2022, 6.30 pm (york.gov.uk) item 36
- Executive November 2022 - approval of the Climate Change Strategy and Action Plan
  https://democracy.york.gov.uk/ieListDocuments.aspx?CId=733&MId=13292&Ver=4 item 47
- Climate Emergency Policy and Scrutiny Committee - February 2022 Climate risk report

Annexes

Annex A - York's Climate Change Risks and Vulnerabilities Assessment October 2022
Annex B - Kirklees Priority Climate Impacts by Theme
Annex C - Kirklees - Assessment of Vulnerable groups
Annex D - York's Climate Change Risks and Vulnerabilities Assessment - revised September 2023.

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ANNEX A

Climate Change Resilience Risk Report for York

October 2022

Contents

1 Executive Summary

This report has been produced in response to the City of York Council motion that requested the Executive provide a report on the city's climate resilience. It uses an approach based on the UK Climate Change Risk Assessment, with modifications to make it more suitable to the local context.

While very few Local Authorities currently have climate change adaptation/resilience strategies, it is an area that will require greater local attention as the impacts of climate change increase. Crucially, not every place will experience those impacts equally, and therefore improving the local understanding of the climate risk risks for York can help our preparedness.

The report identifies 6 priority climate resilience risks for York:

i. Risk to soils from changing climatic conditions, including seasonal aridity and wetness
ii. Risks to food safety and food security
iii. Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology
iv. Opportunities from new species colonisations in terrestrial habitats
v. Risks to people, communities and buildings from river and surface flooding
vi. Risks to building fabric

Local data is scarce for many of these risks, limiting the effectiveness of potential policy and decision making. More needs to be done to capture relevant information to support an evidence-based approach to climate resilience.

Although activity to address several of these risks is limited, York is managing the flood risk particularly well. This is due to a joined up, local, regional, and national response, involving multiple agencies and multiple stakeholders which has produced a response that is proportionate to the risk. We should seek to replicate our approach to the flood response to the other risk areas.

Access to funding and resources is often a problem when trying to address risks from climate change. Climate Change risks are not easily evaluated with traditional cost/benefit analysis making it difficult to make the case and allocate funding. The recent devolution deal for North Yorkshire may provide potential resources to addressing the local and regional challenges.

Finally, the six risks highlighted in this report are not the only ones relevant to York. Resilience is a joined-up, overall response to climate change, and it is important to highlight that building general adaptive capacity, should be prioritised over responses to any singular threats.

This report has been produced to create awareness and start a conversation about the climate change resilience risks relevant for York. It is recommended that work is refreshed and expanded as the impacts of climate change are anticipated to become even more acute and the costs of inaction are likely to far out way the costs of associated with a planned, proportionate response.

2 Introduction

In 2019, City of York Council declared a Climate Emergency and have since set an ambition for York to be net zero carbon by 2030.

The impacts of climate change are already being seen locally. Alongside our net zero and carbon mitigation activity, we also need to adapt to become more resilient to the changes in our climate to create a city fit for the future.

2.1 Background

Climate change is the greatest threat facing our planet. According to the World Resource Institute[1], global temperatures have so far risen by 1.1°C, and already the planet has seen an increase in natural disasters such as flooding, hurricanes, and other extreme natural events.

The 2022 IPCC Report[2] warned that the world is set to reach 1.5°C above pre-industrial levels within the next two decades and stated that only the most drastic cuts in carbon emissions would help prevent an environmental disaster. The IPCC have historically always used deliberately cautious language, but declared in their latest report that, “it is unequivocal that human influence has warmed the atmosphere, ocean and land”, demonstrating the severity of the situation that humans have created.

The met office produced the below graphic of the expected impacts on urban areas as a result of climate change.

[1] https://www.wri.org/climate
[2] https://www.ipcc.ch/report/ar6/wg2/

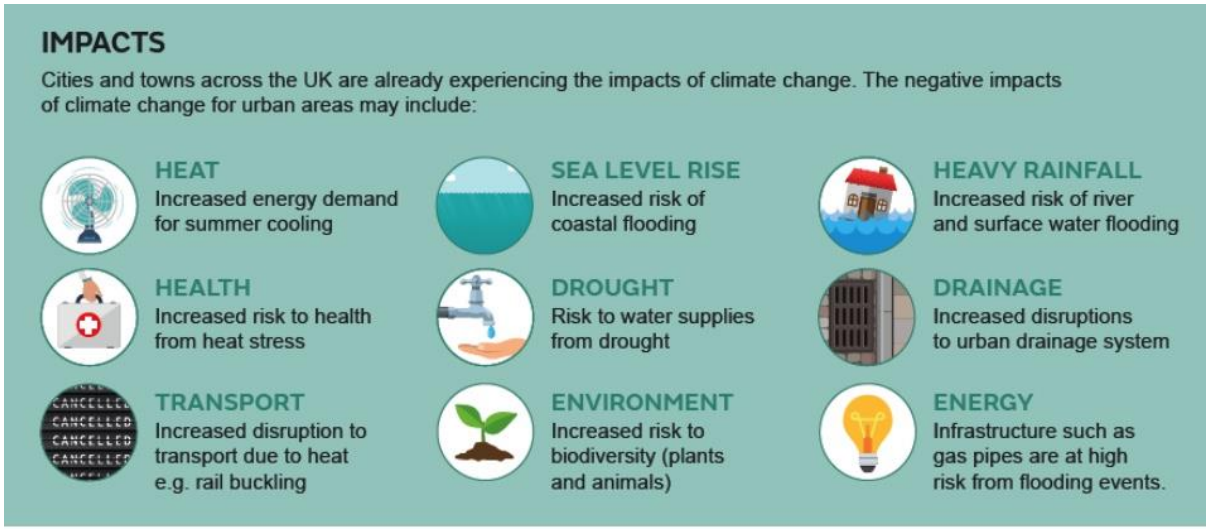


Figure 1: Negative impacts in urban areas from climate change

These impacts will not impact all countries or areas equally; therefore, understanding the local impacts of climate change are an important consideration when developing an appropriate response.

Council Motion

This report has been produced in response to a City of York Council motion (21st October 2021)[3] that requested the Executive provide a report on the city's climate resilience:

- *Council therefore resolves: To ask Executive to report on the City's climate resilience by assessing the risks from the eight priority risk areas of the UK Climate Change Risk Assessment (June 2021) https://www.theccc.org.uk/publication/independentassessment-ofuk-climate-risk/ , plan for enhancement of the city's climate resilience and management of the unavoidable impacts of climate change.*

(For the full council motion see Appendix A)

2.2 Aim and Objectives

This report sets out to improve our understanding of the climate risks to York through:

- Identifying the most significant threats and opportunities to York due to climate change
- Summarising the learning and activity that has taken place to date in these areas
- Presenting initial findings and recommendations for the most significant risks
- Supporting the ambition of the York Climate Change Strategy

[3] https://modgov.york.gov.uk/documents/g12805/Printed%20minutes%20Thursday%2021-Oct-2021%2018.30%20Council.pdf?T=1

2.3 Local Authorities and Climate Strategies

York is one of 316 Local Authorities to declare a climate emergency and put a strategy in place to address climate change (as of December 2019)[4]. Only 26 of the 409 local authorities have not yet declared a climate emergency, while a further 67 have declared an emergency but have no plans in place. However, only a small number of local authorities have published climate change resilience/adaptation plans:

Council Name	**Year Published**
Cambridge City Council[5]	2018
Somerset West and Taunton Council[6]	2020
Bristol City Council[7]	2020
Leeds City Council[8]	2022 (June)
Brent County Council[9]	2022 (July)
Stafford Borough Council[10]	Draft out for consultation but available online

Table 1.: Councils with Climate Related Resilience/Adaptation Strategies (as of August 2022)

2.4 What is resilience?

According to the IPPC: "Resilience is defined as the capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity, and structure as well as biodiversity in case of ecosystems while also maintaining the capacity for adaptation, learning and transformation. Resilience is a positive attribute when it maintains such a capacity for adaptation, learning, and/or transformation".

Essentially, resilience means how well a complex system (like an ecosystem or a city) can 'bounce back' from adverse events and return to a place where the system functions as normal. Resilience is a dynamic process in which the system actors constantly learn and evolve to build resilience against future events.

[4] https://data.climateemergency.uk/councils/?name=&declared_emergency=False&has_plan=True&promise_combined=&authority_type=&region=&geography=&population=&sort=-name
[5] https://www.cambridge.gov.uk/media/5996/climate-change-adaptation-plan.pdf
[6] https://www.somersetwestandtaunton.gov.uk/media/2429/carbon-neutrality-and-climate-resilience-plan.pdf
[7] https://democracy.bristol.gov.uk/documents/s8548/16c%20Appendix%201%20Bristol%20Resilience%20Strategy.pdf
[8] https://democracy.leeds.gov.uk/documents/s233962/CEAC%20Adaptation%20report%201060622.pdf
[9] https://www.brent.gov.uk/neighbourhoods-and-communities/community-priorities/climate-emergency/climate-resilience-and-adaptation-plan
[10] https://www.staffordbc.gov.uk/sites/default/files/cme/DocMan1/Policy%20and%20Plans/Climate-Adaptation-Strategy-Draft.pdf

2.5 UK Third Climate Change Risk Assessment

Recent resilience strategies use the Third UK Climate Change Risk Assessment (UKCCRA3) as a reference point. Within the UKCCRA3, a variety of risks and opportunities from the effects of climate change were analysed under various scenarios (e.g. 2°C of warming by 2050, 4°C by 2080 etc.), with the report concluding that there were eight priority risk areas where the UK required more action to meet the magnitude of the risk.

Priority Risk Area	Magnitude of Risk	Key policy areas
Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards.	High	Biodiversity ; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to soil health from increased flooding and drought.	Medium but will increase to high by 2050.	Biodiversity; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions.	Medium but will increase to high by 2050.	Biodiversity; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to crops, livestock and commercial trees from multiple hazards.	Medium but will increase to high by 2050.	Biodiversity; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks	Medium but will increase to high by 2050.	Public procurement; Business resilience; Environmental land management; Trade
Risks to people and the economy from climate-related failure of the power system	High	Infrastructure; Energy; Net Zero
Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings	High	Building regulations and strategies Planning reform
Multiple risks to the UK from climate change impacts overseas	High	National resilience; Overseas aid; Research and capacity building

Table 2.: The 8 national priority risk areas to UK, according to the UKCCRA3

Whilst these eight priority risk areas have relevance to York within the national context, more localised impacts are not considered and may, therefore, not be as useful when analysing the local picture.

This report will use the UKCCRA3 as a guide but will identify the priority risks areas to York, assessing where the most urgent climate resilience planning is needed.

Each risk response is summarised and includes information about the national context/response where relevant.

3 Methodology

3.1 The UKCCRA3 and the Adapted Approach for York

The methodology for this report has been adapted from the one used for the UKCCRA3, which identified and assessed 65 climate-related risks and opportunities to the UK. Each risk/opportunity was thoroughly investigated in the UKCCRA3 Technical Report by answering three main questions. The Technical Report provides in-depth, national scale analysis for each risk and opportunity, authored by experts after reviewing both academic and grey literature (such as reports, working papers, government documents and white papers), to arrive at an urgency score. A basic summary of this method can be seen below:

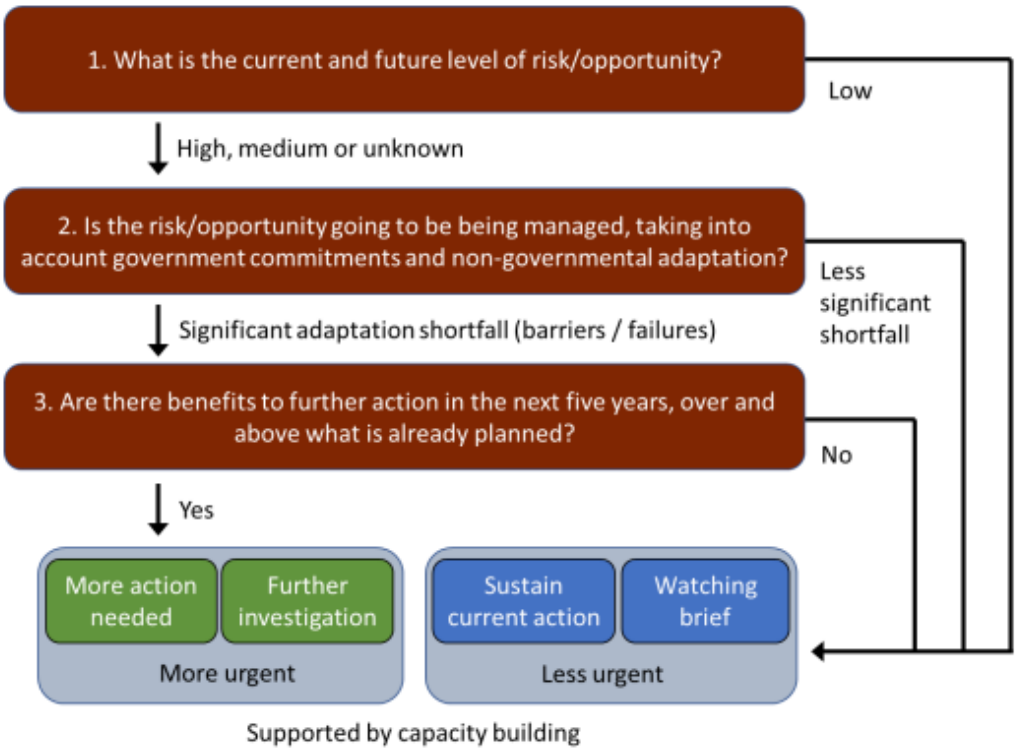


Figure 2.: Assessment criteria of each risk in the UKCCRA3

This approach was used as the basis for this report but has been modified to match the local context for York and to fit the available time and capacity.

3.2 Stage 1 –Risks & Opportunities Survey

To collect the data and local knowledge for each risk & opportunity, they were categorised into themes and a bespoke survey was produced for each theme. (See Appendix B).

This was done to:

- Guide respondents to provide meaningful information that could be analysed
- Increase participation by limiting responses that most closely aligned with the experts subject areas

Due to the interdisciplinary nature of the risks contained in UKCCRA3, some risks have been designated more than one category and were sent to numerous experts, across multiple disciplines.

Experts were asked to assign an order of magnitude to each of the risks & opportunities to York by 2050, based on their expert knowledge. The magnitude scoring system was adapted from the UKCCRA3 and adjusted to formulate the approximate values that were appropriate for York's size and population. The adapted magnitude scoring table for York is below in Table 3.

The survey ran for three weeks in June. It is worth noting that this was before York recorded the record temperatures in July 2022's extreme heatwave.

Note: For those interested in how this table was produced, please see the calculations in Appendix C.

	High Magnitude Major annual damage and disruption or foregone opportunities:	Medium Magnitude Moderate annual damage and disruption or foregone opportunities:	Low Magnitude Minor annual damage and disruption or foregone opportunities:
Economic	£1.4m+ damage (economic) or foregone opportunities, and/or	£140,000 - £1,400,000 of damage (economic) or foregone opportunities, and/or	Less than £140,000 damage (economic) or foregone opportunities, and/or
Health	1+ death(s) , 3+ major health impacts, 30+ people affected / minor health impacts, and/or	No deaths, a few major health impacts, 3 - 30 people affected / minor health impacts. and/or	No deaths, no major health impacts, a few people affected / minor health impacts, and/or
Land	10+ hectares of land lost or severely damaged , and/or 10+ km of river water/km2 of water bodies affected, and/or	1 - 10 hectares of land lost or severely damaged, and/or 1 - 10 km of river water/km2 of water bodies affected, and/or	Less than 1 hectare of land lost or severely damaged, and/or less than 1 km of river water/km2 of water bodies affected, and/or
Habitat Loss	Major impact (~10% or more at local level) to valued habitat or landscape types (e.g., BAP habitats, SSSIs), and/or	Intermediate impact (~5% at local level) to valued habitat or landscape types (e.g., BAP habitats, SSSIs), and/or	Minor impact (~1% at local level) to valued habitat or landscape types (e.g., BAP habitats, SSSIs), and/or
Species Loss	Major impacts on or loss of species groups, and/or	Intermediate impacts on or loss of species groups, and/or	Minor impacts on or loss of species groups, and/or
Natural Assets	Major impact (10% or more at local level) to an individual natural capital asset and associated goods and services[4], and/or	Intermediate impact (1 to 10% at local level) to an individual natural capital asset and associated goods and services, and/or	Minor impact (~1% or less at local level) to an individual natural capital asset and associated goods and services, and/or
Cultural Heritage	Major loss or irreversible damage to single locally iconic heritage asset (e.g., Minster)	Medium loss or irreversible damage of locally iconic heritage asset (e.g., Minster)	Low loss or irreversible damage to locally iconic heritage asset (e.g., Minster)

Table 3. Adapted Magnitude for York Area

The results of the survey were assigned a numerical value for analysis purposes:

- High Magnitude = 3
- Medium Magnitude = 2
- Low Magnitude = 1

An average magnitude score was taken for each risk, highlighting those risk areas that were most significant for York. Those risks with the highest magnitudes were progressed to Stage 2 for further investigation.

Note: The survey results that came back as "does not apply to the risk", "not my area of expertise" or "unknown magnitude" were not included in the average magnitude score calculation to avoid skewing the data. "Not my area of expertise" and "unknown magnitude" are useful to highlight where more research is needed.

3.3 Stage 2 - Local assessment

The most significant risks identified in the survey were investigated further by a combination of desk-based research and semi-structured interviews with technical and academic experts. The interviews were conducted throughout July 2022.

The guiding questions for Stage 2 have been modified from the UKCCRA3 methodology to fit the more localised scope of this report. The questions asked were:

- Are the risks and opportunities going to be managed at the local level now and in the future?
- Are there benefits to further action in the next five years, over and above what is already being planned?

Follow-up questions were asked depending on the response to the above and included:

- What is already being done in and around York to combat the risk/opportunity?
- Are there any plans to manage this risk/opportunity in the future?
- Does the current response match the magnitude of the risk/opportunity at the local level?

3.4 UKCCRA3 Risks Excluded from the Report

Not all risks & opportunities included in the UKCCRA3 have local relevance to York. The following risks & opportunities were excluded from the analysis.

3.4.1 International Dimensions

Whilst international dimensions are a key part of the climate change problem, some of risks have been excluded from the analysis as they encompass issues that are unlikely to be able to be affected by Council policy e.g., "ID4 Risks to the UK from international violent conflict resulting from climate change on the UK", was excluded as it is more in the scope of the national governments remit, as seen in the Ukraine/Russia conflict.

3.4.2 H13 Risks to education and prison services

This risk was omitted as:

i) York does not have a prison within its boundary.

ii) The effect on education that the UKCCRA3 Technical Report details concerns issues that are not regionally dependent or affected by location e.g., the effect on concentration

levels of children due to warmer classroom conditions. As this risk applies largely equally across all local authorities, no new information can be gained that isn't already contained in the UKCCRA3.

3.4.3 Coastal and Marine

The risks in Table 4 were omitted because they only referred to coastal and marine related threats. York does not have a coastline and is therefore not relevant in trying to inform local resilience strategy decisions.

Risk ID	Risk
N14	Risks to marine species, habitats, and fisheries from changing climatic conditions, including ocean acidification and higher water temperatures
N15	Opportunities to marine species, habitats, and fisheries from changing climatic conditions
N16	Risks to marine species and habitats from pests, pathogens, and invasive species
N17	Risks and opportunities to coastal species and habitats due to coastal flooding, erosion, and climate factors
I3	Risks to infrastructure services from coastal flooding and erosion
H3b	Risks to people, communities, and buildings from coastal flooding
H4	Risks to the viability of coastal communities from sea level rise

Table 4.: Excluded Risks

4 Results

4.1 Stage 1 - Survey Results

46 risks & opportunities received a response and were assigned a magnitude by experts. Of these, the 6 most significant were progressed to stage 2:

Risk	Average Magnitude Score	No. Responses	UKCCRA3 Magnitude Results (based on 2°C warming pathway by 2050)
N4 Risk to soils from changing climatic conditions, including seasonal aridity and wetness	2.93	3	High
H9 Risks to food safety and food security	2.92	2	High
N1 Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology	2.64	2	High
N3 Opportunities from new species colonisations in terrestrial habitats	2.57	2	Medium (Opportunity)
H3a Risks to people, communities and buildings from river and surface flooding	2.57	1	High
H5 Risks to building fabric	2.45	3	Medium

Table 5.: Top Risks as a Result of Climate Change

It is important to note that these are not the only risks & opportunities that should be considered in resilience planning. Limitations to the approach of this study and available responses provide a low level of confidence in the assignment of severity and a more general approach to resilience planning is recommended.

4.1.1 Risks with No Data Available

Of the fifty risks that were assessed in the various surveys, four returned no data, as experts were not able to attribute a magnitude to the risk (Table 6.). The national magnitude of each risk from the UKCCRA3 is included below, these risks may need to be investigated further as part of a future study for their relevance to York. The national magnitude of each risk from the UKCCRA3 is included below for reference. As no data is available, these risks will be excluded from the analysis of this report.

Risk	UKCCRA3 Magnitude Classification

I7 Risks to subterranean and surface infrastructure from subsidence	Medium
H10a Risks to health from water quality	Medium
H10b Risks to health from household water supply	High
H7b Risks to health and wellbeing from changes in aeroallergens	Medium

Table 6.: Risks that returned no data from the surveys

4.2 Stage 2 – Interviews and Desk-based Research of the Top Six Risks to York

The average magnitude for each impact area is shown at the start of each of the risks in this section and summarised in a table.

4.2.1 N4 Risk to soils from changing climatic conditions, including seasonal aridity and wetness

Impact Area	Average Magnitude	Impact if no action taken (annually)
Economic	3.00	£1.4m+ damage (economic) or foregone opportunities
Health	3.00	1+ death(s), 3+ major health impacts, 30+ people affected / minor health impacts
Land	3.00	10+ hectares of land lost or severely damaged, and/or 10+ km of river water/km2 of water bodies affected
Habitat Loss	3.00	Major impact (~10% or more at local level) to valued habitat or landscape types
Species Loss	3.00	Major impacts on or loss of species groups
Natural Asset	3.00	Major impact (10% or more at local level) to an individual natural capital asset and associated goods and services
Heritage	2.50	Major loss or irreversible damage to single locally iconic heritage asset (e.g., Minster)
Overall Average	2.93	High

Table 7: Summary of Impact Areas for Risk N4

There have been strong calls from the UK Climate Change Committee for a comprehensive soil monitoring programme. This is particularly important for York as a local Environment & Land Use Advisor for the National Farmers Union raised that there are concerns about the health of soil in York and the surrounding area. Much of the land around York is classified as grade 2 or 3[11] conditions suitable for high quality arable crops (such as wheat, barley, oilseed rape etc.) and horticultural crops

"…. soil health is a huge challenge… you can't improve what you can't measure"

Wetter winters, flash flooding and waterlogged fields are always a concern for farmers, but especially those in York, as geographically the land is relatively flat and has lots of rivers and waterways. Climate

[11] (Very good quality to good/moderate quality (Agricultural Land Grades | Land Research Associates (lra.co.uk)).

change will exacerbate these risks. Flooding is covered in more detail in risk H3a, but it is an important factor that impacts soil health, both for agricultural and non-agricultural land use (e.g., planted woodland).

Increasingly, at the other end of the spectrum, seasonal aridity in York is also catastrophic for soil health. York is on the Eastern side of the UK and is therefore likely to experience less rainfall than other parts of the country. This risk is already being experienced, the only month with above average rainfall in 2022 has been February, with data from Yorkshire Water showing that rainfall in July 2022 was only 33.3% of historical average and reservoirs are at 53% of typical levels for the time of year [12].

With regards to adaptation, there has been action taken at a range of scales – both locally and nationally. The agricultural sector is coming together to improve soil health and increase resilience to the impacts of climate change, however more action is required to fully address the risk. The new Environmental Land Management Scheme (ELMS) will have a focus on management of soils through data collection and monitoring. This will help to further incentivise positive and informed management decisions of soils to not only adapt and become more resilient to the impacts of climate change, but also ensure food security (see Risk H9).

A healthy soil balance of good structure, organic matter, nutrients, soil fauna and flora through skilful management, leads to good yields and increased productivity with reduced erosion. Better crop yields from productive land means less productive land could be used to provide services such as growing trees and storing more carbon. This can be done by implementing 'regenerative' farming practises and Integrated Farm Management, which have grown in popularity and interest over the past few years.

Summary:

- Increasing recognition and awareness of the risk
- Risk not well managed at the local or the national level
- Farmers are a key stakeholder in addressing the risk
- Urgent soil monitoring programme is needed

Recommendations:

- A good soil monitoring programme
- Requires explicitly defined sustainable outcomes for soils
- Working more closely with farmers and landowners on this risk

4.2.2 H9 Risks to food safety and food security

Impact Area	Average Magnitude	Impact if no action taken (annually)
Economic	2.50	£1.4m+ damage (economic) or foregone opportunities
Health	3.00	1+ death(s), 3+ major health impacts, 30+ people affected / minor health impacts
Land	3.00	10+ hectares of land lost or severely damaged, and/or 10+ km of river water/km2 of water bodies affected

[12] https://www.yorkshirewater.com/about-us/open-data/watsit-report/

Habitat Loss	3.00	Major impact (~10% or more at local level) to valued habitat or landscape types
Species Loss	3.00	Major impacts on or loss of species groups
Natural Asset	3.00	Major impact (10% or more at local level) to an individual natural capital asset and associated goods and services
Heritage	n/a	n/a
Average	2.92	High

Table 8: Summary of Impact Areas for Risk H9

"We need to be thinking about food security and environmental protection as the same thing. The two can be interlinked."

The risk to food safety is difficult to be directly influenced or manage at a local level. The UK has some of the highest environmental and safety standards of anywhere in the world. Farmers in the York area are required to ensure these high standards are upheld. While climate change will impact food safety and security, through changeable weather patterns and warmer weather resulting in new pests and diseases, the application and enforcement of national standards is the responsibility of organisations such as the Food Standards Agency and the Health and Safety Executive (via the Chemicals Regulation Division) as opposed to local authorities.

There are pressures from climate change effects on both domestic growing, as well as the international food supply chain. Securing local supply chains will help protect against international supply side shocks and price increases. Local and regional farming is therefore, crucial to addressing this risk; However, so far there are no formal plans to help address the threat of food security from climate change.

Farmers are not the only actors in addressing this risk. Action needs to be taken throughout the supply chain and include logistics companies and major retailers who often have significant power in price setting.

Building resilience into food supply networks is being managed somewhat by the private sector. However, due to the complex nature of the food supply system and their multi-staged processes, coupled with the uncertainty around climate change impacts, there are indications that the private sector might struggle to take all appropriate actions. Therefore, there is a role for Government in removing some of the barriers to enable and encourage private sector adaptation, as well as ensuring a higher level of resilience along supply chains. This is particularly relevant for York, as there is a significant proportion of the local businesses community that are small independents, who will find it hard to employ the resources needed to help mitigate and adapt to the risk.

The UK is well placed to ensure food security for the country and from further afield. It is essential that this ability is supported both locally and nationally and is not undermined by cheaper imports from elsewhere that may not be to the same standards. Local authorities can support local farmers and ensure food safety by procuring locally produced, seasonal food where possible. However, this particular risk presents a unique problem in that while supporting British Farmers does have many benefits in food safety, it could adversely affect food security, as cheaper imports are excluded from the market, driving food prices up further, and may result in greater usage of food banks. This is a

political choice that may need to be looked at further, so no recommendation was able to be made in this regard.

Food security might be an area that councils should become more involved in. Increases in food prices means that the poorest people may find it increasingly harder to access food and the council may need to do more in terms of supporting these people. Routine monitoring of food security is essential to public health and should help policy-makers better plan for any future threats. Early warning systems would also be useful in addressing the risk but will also help reduce any unnecessary knock-on effects and costs to the health and social care systems.

Summary:

- Food safety and food access are both likely to be aggravated from climate change effects
- The food access and food security issue will have adverse knock-on effects to the health and social care systems
- The private sector is adapting to the risk partially, but government needs to close the gaps
- The agricultural sector is a key stakeholder in addressing the risks

Recommendations:

- Activities such as horizon scanning[13] to understand changing risk of food safety
- Food early warning systems or food detection systems[14] will also be crucial in mitigating climate related food threats and should be utilised wherever possible
- Routine assessment of food security to protect public health and limit costs for the health and social care sectors
- Work with local farmers to increase resilience in food supply chain
- Urgent assessment should be done to fully understand the impact that climate change could have on food supply and how many will be pushed into poverty if price spikes in food occur

4.2.3 N1 Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology

Impact Area	Average Magnitude	Impact if no action taken (annually)

[13] Horizon scanning is used as an overall term for analysing the future: considering how emerging trends and developments might potentially affect current policy and practice. This helps policy makers in government to take a longer-term strategic approach and makes present policy more resilient to future uncertainty.

[14] Early Warning Systems (EWS) alert to the presence of food crises and related drivers, informing decision makers and saving lives. The Early Warning Hub brings together information from across Early Warning Systems in one place. There is a range of Early Warning Systems (EWS) relevant for food security. https://www.foodsecurityportal.org/tools/early-warning-hub#:~:text=Navigating%20EWS-,Early%20Warning%20Systems%20(EWS)%20alert%20to%20the%20presence%20of%20food,Warning%20Systems%20in%20one%20place.&text=There%20is%20a%20range%20of,EWS)%20relevant%20for%20food%20security.

Economic	2.00	£140,000 - £1,400,000 of damage (economic) or foregone opportunities
Health	2.50	1+ death(s), 3+ major health impacts, 30+ people affected / minor health impacts
Land	3.00	10+ hectares of land lost or severely damaged , and/or 10+ km of river water/km2 of water bodies affected
Habitat Loss	3.00	Major impact (~10% or more at local level) to valued habitat or landscape types
Species Loss	3.00	Major impacts on or loss of species groups
Natural Asset	3.00	Major impact (10% or more at local level) to an individual natural capital asset and associated goods and services
Heritage	2.00	Medium loss or irreversible damage of locally iconic heritage asset (e.g., Minster)
Average	2.64	High

Table 9: Summary of Impact Areas for Risk N1

Although geographically York is largely flat, it has wide variety of landscapes within its borders from arable agricultural land, extensive waterways, and woodlands etc. which create habitats for similarly varied species. One of Europe's strongest populations of the Great Crested Newt live in York and the surrounding area, likely due in part to farming practices and farmers creating water attenuation and drainage ditches, creating the clusters of aquatic habitats that the newts require. However, as the climate warms and we begin to see prolonged dry spells through the year, these habitats dry up and populations dwindle.

There are local conservation programmes that are run to help promote biodiversity and protect species, such as the Community Woodland project in Knapton created by the City of York Council. However, discussions with experts show that action to reduce risk to terrestrial species and habitats often comes from planning and new developments. Developers are currently required to enhance application sites for ecology post construction, resulting in a net gain of biodiversity – in-line with the national Planning Policy Framework and the Draft Local Plan for the City of York. These biodiversity enhancements are secured through planning conditions and are required to be appropriate to the existing site ecology. At present there are no requirements for such enhancements to consider climate resilience, however applicants are often required to provide on-going management and maintenance programmes for biodiversity enhancements and landscaping in general, which are again secured through planning conditions.

In November 2023, the Environment Act (2021) will see the requirement mandated for all developments to provide a minimum of 10% biodiversity net gain. A further obligation for developers will see the safeguarding of enhancements through the provision of a minimum 30-year management plan. These new requirements will place greater emphasis on the resilient, long-term success of newly created habitats as factors such as time and difficulty in creating new habitats must be accounted for when calculating final net gains. The overall aim of biodiversity net gain is to leave sites in a better

state post-construction, however net gain must be used as a tool to create connectivity between green areas, providing a mosaic of habitats that allow existing and new ecology to move through the wider landscape. The isolation of species results in reduced genetic diversity limiting a population's resilience to change, whether this be changing environmental conditions or disease.

"Ecology 101 is do not isolate your populations…"

Biodiversity net gain provides us with a legally secured mechanism to deliver and enforce change through the planning system, however, we are yet to see this theory in practice. This of course must be balanced with the need to encourage investors to invest in York which brings in economic benefits to the city. Connectivity also has implications beyond the local level, and wide roaming species would benefit from local, regional, and nationally joined up conservation and protection plans to ensure resilience at all levels.

There are good indications that these issues have been recognised in policy development, but as of yet the mechanisms for delivery are unclear and the level of funding undetermined: the risks to people and nature are serious and the cost of addressing them should not be underestimated. There is limited evidence on the effectiveness of adaption actions in this area and it is intrinsically difficult to assess the extent to which harm has been avoided, especially given the long timescales over which both climate change and ecological processes operate. Consistent, long-term monitoring and assessment will be important to inform adaptive management and build a robust evidence base for further action.

It is essential that adaptation is consistently factored into decision-making alongside climate change mitigation and the protection of biodiversity from the start. It will also be critical to embed the concept of nature-based solutions at the heart of climate change adaptation across other sectors, including agriculture, flood risk management, water supply, infrastructure, and urban planning. The opportunities for co-benefits are high but there are also serious costs if this does not take place. One expert suggested that for the City of York Council in particular, there may be a role in being proactive in finding sites for developers and suggesting these areas of land that could be improved upon.

Summary:

- This risk is being partially managed through planning applications e.g., biodiversity net-gain requirements
- There are already conservation efforts taking place within the region
- Level of risk will increase over time, and it is unclear if this risk will be managed fully in future

Recommendations:

- Proactive approach to planning and development
- Connecting habitats up to reduce species isolation
- Regularly review and if necessary, adjust boundaries for conservation objectives of protected sites, species objectives and indications of favourable habitat conditions

4.2.4 N3 Opportunities from new species colonisations in terrestrial habitats

Impact Area	Average Magnitude	Impact if no action taken (annually)

Economic	3.00	£1.4m+ damage (economic) or foregone opportunities
Health	3.00	1+ death(s), 3+ major health impacts, 30+ people affected / minor health impacts
Land	3.00	10+ hectares of land lost or severely damaged, and/or 10+ km of river water/km2 of water bodies affected
Habitat Loss	3.00	Major impact (~10% or more at local level) to valued habitat or landscape types
Species Loss	2.00	Intermediate impacts on or loss of species groups
Natural Asset	2.00	Intermediate impact (1 to 10% at local level) to an individual natural capital asset and associated goods and services
Heritage	2.00	Medium loss or irreversible damage of locally iconic heritage asset (e.g., Minster)
Average	2.57	High

Table 10: Summary of Impact Areas for Risk N3

Although there have been some projects in the region, the response to the opportunities for new species colonisations has been limited and relates to individual cases rather than an overall strategy. A scheme in Pickering is being trialled by Forestry England and Exeter University to introduce beavers to "slow the flow" and help as Natural Flood Management (NFM) measure (see Risk H3a). There are however, concerns about the knock-on effects this may have to local farmers crops, and is therefore already a contentious issue.

There are also conservation efforts in terms of protecting species (e.g., the Tansy Beetle population on the river Ouse), however in terms of new species introduction it is not an area with much research done in the York area and a Countryside and Ecology Officer commented that they "*don't think the data is available yet…"* to be able to make an informed decision. Therefore, any opportunities from new species colonisations are not currently being realised.

Research opportunities are available in this space, and the Council could benefit by working closely with local universities and other educational institutions to gain more insight. However, it is recommended that a cautious approach be taken regarding this opportunity as altering ecology can have significant impacts that aren't always considered in even the most rigorous of research. Changes to the climate may also mean that there is increased disruption from invasive species. The Signal Crayfish has already caused damage to the UK and its rivers, and increased temperatures are shown to boost their performance [15].

Summary:

- There are some individual projects that could prove successful, although these are in the early stages of research
- The response to the opportunities is not well understood and therefore more research will need to be carried out

[15] https://onlinelibrary.wiley.com/doi/pdf/10.1002/eco.2258

- Climate change is already causing problems with invasive species, and could only improve the performance of these species e.g., the Signal Crayfish

Recommendations:

- While there may be benefits not currently realised in relation to the opportunity, it is important that a cautious approach be taken whenever taking steps that may alter ecology
- There could be opportunities to work with the local universities and educational institutions to understand the opportunities for the region

4.2.5 H3a Risks to people, communities and buildings from river and surface flooding

Impact Area	Average Magnitude	Impact if no action taken (annually)
Economic	2.00	£140,000 - £1,400,000 of damage (economic) or foregone opportunities
Health	2.00	No deaths, a few major health impacts, 3 - 30 people affected / minor health impacts
Land	3.00	10+ hectares of land lost or severely damaged, and/or 10+ km of river water/km2 of water bodies affected
Habitat Loss	3.00	Major impact (~10% or more at local level) to valued habitat or landscape types
Species Loss	3.00	Major impacts on or loss of species groups
Natural Asset	3.00	Major impact (10% or more at local level) to an individual natural capital asset and associated goods and services
Heritage	2.00	Medium loss or irreversible damage of locally iconic heritage asset (e.g., Minster)
Average	2.57	High

Table 11: Summary of Impact Areas for Risk H3a

The flood risk from rivers has been described in interviews as "*well managed*" for York and is overseen by the Environment Agency because the rivers are classed as "main river". Numerous assets protect the city from floodwater, including hard defences, upstream storage (Clifton Ings) and the Foss Barrier. These provide a high standard of protection to York, with a risk of overtopping in any year of 1 in 100. The hard defences throughout the city and the Foss Barrier have been upgraded in recent years with significant investment and are designed to maintain the standard of protection until 2039 in the face of predicted rises in river levels because of climate change. This investment followed significant flooding in 2015 when the Foss Barrier being overwhelmed by the volume of floodwater. Although the assets are currently regarded as providing a high standard of protection *"…we're starting to get towards the upper end of the design capacity",* and it is not possible to eliminate the risk of flooding. It is important that local communities are supported to focus on being resilient to flooding when it occurs, including signing up to flood warnings and taking action to minimise damage when flooding does occur It is also important to take a long-term and strategic approach to managing water within the catchment, which is something that partners are committed to and is demonstrated through the York and North Yorkshire Catchment Flood Management project.

Localised surface water flooding is the responsibility of City of York Council and is in many ways more difficult to manage. It can occur at any time of year but particularly in summer when greater levels of convective rainfall occur, and large volumes of rainwater fall in a relatively small area in a short space of time. Drainage systems are unable to cope, and unlike river flooding which can be modelled and well predicted to be able to give citizens some warning and time to plan a response, this particular type of rainfall is very hard to predict.

As Lead Local Flood Authority, the Council takes action to manage flood risk from surface water and smaller ('ordinary') watercourses. This includes both managing the impact of new development and delivering drainage maintenance and projects to reduce risk. Sustainable Urban Drainage Systems (SuDS) and Natural Flood Management approaches can be sustainable options for managing water at source to help partially mitigate and adapt to the risk in the short to medium term, but such approaches are typically resource intensive to deliver and may be difficult to fund. The impacts of these actions are often hard to quantify and the data available to project planning decision makers are less robust than data for river flooding.

Sustainable Drainage Systems; Responsibility and Accountability; and Property-Level Flood Resilience and were also highlighted as areas of interest through the interviews with experts (see Appendix E).

Although not directly related to the risk, it is also worth mentioning here that the impact to farmers from field flooding for alleviation purposes (see Risk N4 above) and their compensation, did appear in discussions with experts. Flood mangers find it difficult to involve wider stakeholders such as farmers who can help in managing some of this risk, when there is little benefit or incentive for them to do so. Therefore, there is potential for cross benefits in the management of surface flood risk, and the soil health of agricultural land if a solution can be found. Government policy in this area is developing however, particularly as part of the new Environmental Land Management Schemes.

Summary:

- This is the most well managed of the risks in the report
- The adaptation and resilience measures that are already taking place offer good protection to the risk, at least in the medium term
- Design capacity for some defences is reaching the limit of what can be achieved
- Surface level flooding is more of the concern for York, because it is much harder to predict
- Work is also being conducted within the wider catchment area to seek solutions for up-stream management

Recommendations:

- For surface level flooding, as it is hard to predict, resilience measures might be the most effective way to manage the risk. Informing households that are more prone to surface level flooding could allow for resilient adaptation measures to protect homes e.g., higher electricity points in the home.
- Sustainable Drainage Systems (SuDS) for new builds, and a review of the old drainage infrastructure where necessary.

- Encouraging individuals and communities who may be vulnerable to flooding in the future to also assume some level of responsibility for flood resilience. Although it is not clear what level of responsibility would be appropriate and should be discussed with stakeholders.

Note: Further information on the evidence gaps or questions about the implementation of policy at the national (that are also relevant to York) are contained in Appendix E

4.2.6 H5 Risks to building fabric

Impact Area	Average Magnitude	Impact if no action taken (annually)
Economic	2.67	£1.4m+ damage (economic) or foregone opportunities
Health	3.00	1+ death(s), 3+ major health impacts, 30+ people affected / minor health impacts
Land	3.00	10+ hectares of land lost or severely damaged, and/or 10+ km of river water/km2 of water bodies affected
Habitat Loss	3.00	Major impact (~10% or more at local level) to valued habitat or landscape types
Species Loss	2.00	Intermediate impacts on or loss of species groups
Natural Asset	2.00	Intermediate impact (1 to 10% at local level) to an individual natural capital asset and associated goods and services
Heritage	1.50	Low loss or irreversible damage to locally iconic heritage asset (e.g., Minster)
Average	2.45	High

Table 12: Summary of Impact Areas for Risk H5

There are some considerations of risks to buildings from effects of climate change, primarily in relation to flooding. This is, however, is mainly reactionary rather than adaptive, as repairs to housing are only done at the point of damage to the building. So far there is no formal strategy to address the risk at the local level, and therefore more work is needed in this area

"the most effective investment might be around data analysis and getting some real expertise in around the analysing of big data sets".

Further to the risk posed by flooding, "sub-floor flooding" (which occurs when there is a gap in the flooring and water leaks through from underneath) has become a greater concern during the winter months but can happen any time in the year whenever the water table levels in York are high. Whilst there is already a programme running within the Council on this issue, the response to this threat is again, only a reactionary measure, rather than a proactive adaptation strategy.

Another concern within the risk to building fabrics is unusually high heat. July 2022 saw temperatures of nearly 40°C in York and has raised questions about the threat of fires due to the increased dryness during the summer months. Much of York's building stock was not designed to accommodate such

temperatures (which could impact vulnerable groups such as the elderly in care homes), nor to deal with the increased threat of fires.

Perhaps more worryingly and related to high temperatures, in late July 2022 Liverpool Victoria Insurance highlighted the impact that intense heat can have on building foundations which can lead to subsidence, especially if the building is built on clay soil [16].

This is particularly concerning for York as much of the soilscape [17] is either:

- "Slowly permeable seasonally wet slightly acid, **but base-rich loamy and clayey soils**" (Soilscape 18 - indicated in bright green in Figure 3.)
  or
- "Slightly acid loamy and **clayey soils with impeded drainage**" (Soilscape 8 - indicated in brown in Figure 3.)

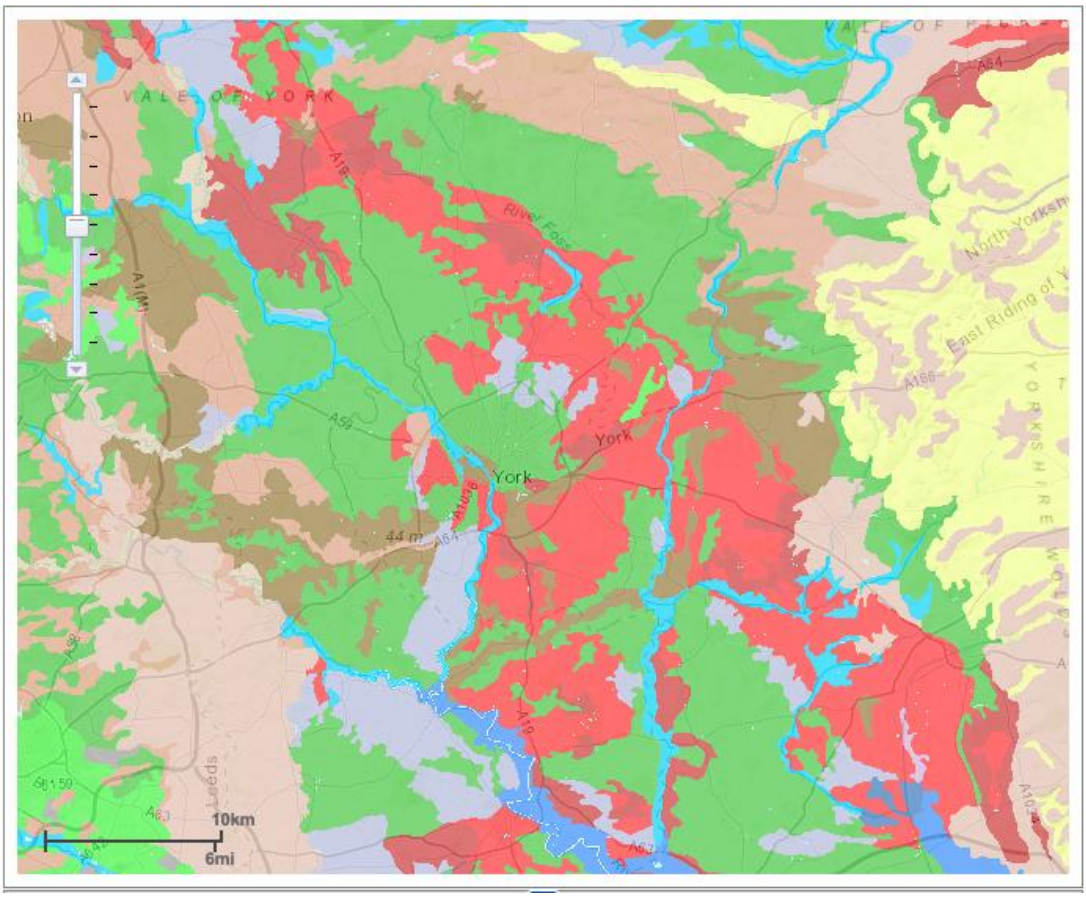


Figure 3.: Map of York's soilscape

Soilscape 18 covers a lot of York's residential areas, particularly in the North of the City, including Rawcliffe, Huntington, Earswick, New Earswick, Heworth, and parts of Clifton and Osbaldwick (highlighted as the striped area in Appendix F). Some smaller but still densely populated areas in the

[16] https://www.insurancetimes.co.uk/news/subsidence-claims-increased-by-49-in-last-year-lvgi/1438289.article

[17] http://www.landis.org.uk/soilscapes/index.cfm

South, such as the south of Acomb, the area around Hob Moor, and Dringhouses, also share the same soilscape.

Although not as clayey as Soilscape 18, Soilscape 8 (indicated in brown) is also vulnerable to the risk, due to the clay content of the soil (see Appendix G for map). This covers much of the town centre, as well as populated areas in the South such as Askham Bryan, Copmanthorpe and parts of Heslington.

It is also notable that many of these clay soil areas include critical infrastructure to York, such as the outer ring road, although this is not the focus of this particular risk and roads may be less affected by this subsidence issues than house foundations, however it might be worthy of further investigation.

Further investigation and action more action is required to deal with the threats of water damage in the winter and heat damage in the summer, including to better understand the risk of high temperatures causing subsidence to York's building stock and infrastructure. It is worth noting here that risk H5 is not being adequately met at the national level either, so York is not behind compared with the national response, but there is an opportunity for the Council to move ahead of the curve, as the local authority has greater powers in with housing compared with some of the other risks in this report.

Summary:

- The response is mainly reactionary rather than proactive
- Data is limited
- Future risk not really considered at the local level
- Further investigation required

Recommendations:

- Increase the knowledge base around the risk at the local level
- For new builds, the Council should ask for data on how developers are planning to cope with the likelihood of increased temperatures in future summers at the design stage e.g., through the effect on building fabric or how they plan to cope if subsidence becomes increasingly likely etc.
- Opportunity to work with other councils that also have large amounts of clay soils to understand the impact.

5 Limitations

There are a number of limitations associated with the production of this report which need to be considered alongside the conclusions:

- The survey sent out to experts was done with no weighting involved. Further research could be done into which aspects of each are valued e.g., health may be given more weighting than heritage sites, but this is more of a managerial choice and therefore not done in the survey.
- The survey could have benefitted from more respondents, as the amount of survey responses averaged only 2.1 per risk
- The water related survey was not completed so this input from experts in this area was not contained in the survey outcomes

- The survey was conducted over a very short period of time in July 2022 when the weather was dry and hot and therefore participants may have been more aware of dry weather-related risks e.g., effects from high temperatures, fires, soil erosion etc.
- The six risks highlighted in Stage 2 of this report are not the only ones relevant to York. The purpose of this report is to investigate some of the top risks in more detail and is by no means comprehensive. Further work should be done on ALL risks/opportunities from the UKCCRA3 in the report, however not all risks could be considered due to the shorter time scale to deliver the report.
- This was a brief survey done over a relatively short space of time and therefore other risks/opportunities that are not included here should not be discounted. For example, the "risks to business from reduced employee productivity due to infrastructure disruption and higher temperatures in working environments" was also investigated, but the risk is not very well understood, at neither the local or the national level, and therefore requires more research.

6 Conclusion

This report has highlighted those risks taken from the UKCCRA3 that local experts felt were most relevant to York. Where possible (from talking with experts through semi-structured interview) recommendations have been proposed for each risk.

Some key findings from this work include:

- For a lot of the risks, local data was quite limited, and for decisions to be made to address the risks, more needs to be done in terms of gathering the information for data-driven decisions to be made. The Council could consider working more closely with the academic community, and the educational institutions within the city for these data collections.

- York is managing the flood risk particularly well. This is due to a joined up, local, regional, and national response, involving multiple agencies and multiple stakeholders which has produced a response that is proportionate to the risk. This is not the case with the other risks outlined in this report. Lessons should be learnt from the flood response and applied to the other risk areas, as well as those risks that were not included in the reports analysis.

- Resilience is a joined-up, overall response to climate change, and it is important to highlight that building general adaptive capacity, should be prioritised over responses to any singular threats.

- Access to funding and resources is often a problem when trying to address risks from climate change, as many risks aren't able to have the costs and benefits to actions easily quantified. The recent devolution deal may provide some hope that more resources will be allocated to addressing the local problems; however, this is not a guarantee.

6.1 General Recommendations and Next Steps

➢ The risks contained in the report should be reviewed on a regular basis and updated as more learning occurs.

- A bigger range of scores could be offered to identify the magnitude with greater accuracy e.g., in the report there is no distinction in the 'high magnitude category' if a risk could cause annual damage of £1.5m or if a risk could cause £10m of annual damage. This would allow those more extreme affects to be captured in the analysis.
- Responsibility and accountability are sometimes difficult to assign to actors in cases of multi-stakeholder, complex, and shared problems like the ones outlined in this report. It may therefore be worth the council conducting some assessment of the biggest risks to York outlined in the report and decide where the council can add value (beyond current action), and where the council draw the line in terms of involvement, and the onus is placed on other stakeholders.
- The survey could be conducted over a longer time-period to avoid any temporal biases in responses.

7 Appendix

Appendix A: Full Council Motion

Government Must Work with Councils to Tackle Worsening Heatwaves and Extreme Weather

Council notes:

- *The work currently being done by City of York Council to progress towards our 2030 zero carbon ambition including the community woodland, new zero carbon housing and energy efficiency retrofit schemes as well as a draft city-wide strategy.*
- *That progress in most areas is nonetheless held back by a lack of substantial and consistent Government investment and closer working with local councils.*
- *The signs in York over the last few years that climate change has already begun in earnest, with hotter drier summers, warmer wetter winters and increased frequency of extreme weather and flooding.*
- *That in 2018 at COP24 the UK Government signed up to working with local communities to deliver the UK's 'Nationally Determined Contributions' in the 2015 Paris Climate Agreement.*
- *That, in May 2021, the Rt. Hon. Alok Sharma MP, President of COP26, said collaboration would be a key objective of the COP26 Climate Summit in November - "Governments, business and civic society need to work together to transform the ways we power our homes and businesses, grow our food, develop infrastructure and move ourselves and goods around".*

Council believes:

- *That despite these agreements and statements, there is still no formal relationship allowing joint partnership working between Local and National Government to take mitigation and adaptation actions against the climate emergency.*
- *That greater collaboration and action are required if we are to mitigate our greenhouse gas emissions and meet our commitments under the Paris Climate Agreement;26*
- *That mitigation strategies should be accompanied by effective adaptation measures to ensure that we are equipped to deal with the changes in our climate that have already begun. These include the potential for heatwaves and extreme weather that will threaten the health and wellbeing of our most vulnerable residents and may also impact on food security.*

Council therefore resolves:

- *To ask Executive to report on the City's climate resilience by assessing the risks from the eight priority risk areas of the UK Climate Change Risk Assessment (June 2021) https://www.theccc.org.uk/publication/independentassessment-ofuk-climate-risk/ , plan for enhancement of the city's climate resilience and management of the unavoidable impacts of climate change.*
- *To add this Council's voice to calls by the Local Government Association and the Association of Directors of Environment, Economy, Planning and Transport, and others, for a joint local and national government taskforce to plan action to reach 'net zero' emissions.*

- *To call for such a partnership to set appropriate regulations, benchmarks and targets and create the much-needed long-term funding to enable local council areas, communities, and economies to decarbonise whilst remaining resilient and able to realise the benefits of decarbonisation in terms of new green jobs and a healthier environment.*
- *To therefore ask the Chief Operating Officer to write to Alok Sharma MP, President for COP26, the Prime Minister, and the Leadership Board of the LGA, informing them of our support for a joint Local/National Government Climate Change Partnership Taskforce and asking for one to be established as soon as possible.*

ANNEX A

Appendix B: Survey categorisation of each risk from the UKCCRA3

ID Cod	Risk or Opportunity	Category 1	Category 2	Category 3	Category 4
N10	Risks to aquifers and agricultural land from sea level rise, saltwater intrusion	Agriculture	Land management		
N6b	Risks to and opportunities for agricultural productivity from extreme events and changing climatic conditions (including temperature change, water scarcity, wildfire, flooding, coastal erosion, wind and saline intrusion).	Agriculture	Land management		
N7	Risks to agriculture from pests, pathogens and invasive species	Agriculture			
N9	Opportunities for agricultural and forestry productivity from new/alternative species becoming suitable	Agriculture	Forestry		
H11	Risks to cultural heritage	Built environment			
H5	Risks to building fabric	Built environment	Flooding		
B4	Risks to finance, investment and insurance including access to capital for businesses	Business/Economy			
B5	Risks to business from reduced employee productivity due to infrastructure disruption and higher temperatures in working environments	Business/Economy	Public health	Transport	
B6	Risks to business from disruption to supply chains and distribution networks	Business/Economy			
B7	Opportunities for business from changes in demand for goods and services	Business/Economy			
H6a	Risks and opportunities from winter household energy demand	Energy	Built environment		
H6b	Risks and opportunities from summer household energy demand	Energy	Built environment		
I10	Risks to energy from high and low temperatures, high winds, lightning	Energy			
I11	Risks to offshore infrastructure from storms and high waves	Energy			
I13	Risks to digital from high and low temperatures, high winds, lightning	Energy			
B1	Risks to business sites from flooding	Flooding	Business/Economy		
B2	Risks to business locations and infrastructure from coastal change from erosion, flooding and extreme weather events	Flooding	Business/Economy		
H3a	Risks to people, communities and buildings from river and surface flooding	Flooding			
H4	Risks to people, communities and buildings from sea level rise	Flooding			
I2	Risks to infrastructure services from river, surface water and groundwater flooding	Flooding	Water Supply	Energy	Transport
I4	Risks to bridges and pipelines from flooding and erosion	Flooding	Transport		
I6	Risks to hydroelectric generation from low or high river flows	Flooding	Energy		
I7	Risks to subterranean and surface infrastructure from subsidence	Flooding	Built environment		
N6a	Risks to and opportunities for forestry productivity from extreme events and changing climatic conditions (including temperature change, water scarcity, wildfire, flooding, coastal erosion, wind and saline intrusion)	Forestry	Land management		
N8	Risks to forestry from pests, pathogens and invasive species	Forestry			
N11	Risks to freshwater species and habitats from changing climatic conditions and extreme events, including higher water temperatures, flooding, water scarcity and phenological shifts	Biodiversity			
N12	Risks to freshwater species and habitats from pests, pathogens and invasive species	Biodiversity			
N13	Opportunities to freshwater species and habitats from new species colonisations	Biodiversity			
N18	Risks and opportunities from climate change to landscape character	Land management			
N4	Risk to soils from changing climatic conditions, including seasonal aridity and wetness	Land management	Agriculture		
N5	Risks and opportunities for natural carbon stores, carbon sequestration and GHG emissions from changing climatic conditions, including temperature change and water scarcity	Land management			
H1	Risks to health and wellbeing from high temperatures	Public health			
H12	Risks to health and social care delivery	Public health			
H2	Opportunities for health and wellbeing from higher temperatures	Public health			
H7a	Risks to health and wellbeing from changes in air pollution	Public health			
H7b	Risks to health and wellbeing from changes in aeroallergens	Public health			
H8	Risks to health from vector-borne diseases	Public health			
H9	Risks to food safety and food security	Public health	Agriculture		
N1	Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology	Biodiversity			
N2	Risks to terrestrial species and habitats from pests, pathogens and invasive species	Biodiversity			
N3	Opportunities from new species colonisations in terrestrial habitats	Biodiversity			
I12	Risks to transport from high and low temperatures, high winds, lightning	Transport			
I5	Risks to transport networks from slope and embankment failure	Transport			
B3	Risks to businesses from water scarcity	Water Supply	Business/Economy		
H10a	Risks to health from water quality	Water Supply	Public health		
H10b	Risks to health from household water supply	Water Supply	Public health		
I1	Risks to infrastructure networks (water, energy, transport, ICT) from cascading failures	Water Supply	Energy	Transport	
I8	Risks to public water supplies from reduced water availability	Water Supply			
I9	Risks to energy generation from reduced water availability	Water Supply	Energy		

Appendix C: Calculations of adapted magnitude tables

Climate Magnitude categories for UK and England (Taken from UKCCRA3)

	High Magnitude Major annual damage and disruption or foregone opportunities:[1]	Medium Magnitude Moderate annual damage and disruption or foregone opportunities:	Low Magnitude Minor annual damage and disruption or foregone opportunities:
Quantitative Evidence	£hundreds of millions damage (economic) or foregone opportunities, and/or	£tens of millions damage (economic) or foregone opportunities, and/or	Less than £10 million damage (economic) or foregone opportunities, and/or
	Hundreds of deaths[2], thousands of major health impacts, hundreds of thousands of people affected / minor health impacts, and/or	Tens of deaths, hundreds of major health impacts, tens of thousands of people affected / minor health impacts. and/or	A few deaths, tens of major health impacts, thousands of people affected / minor health impacts, and/or
	Tens of thousands of hectares land lost or severely damaged[3] , and/or thousands of km of river water/km2 of water bodies affected, and/or	Thousands of hectares of land lost or severely damaged, and/or hundreds of km of river water/km2 of water bodies affected, and/or	Hundreds of hectares of land lost or severely damaged, and/or tens of km of river water/km2 of water bodies affected, and/or
	Major impact (~10% or more at national level) to valued habitat or landscape types (e.g., BAP habitats, SSSIs), and/or	Intermediate impact (~5% at national level) to valued habitat or landscape types (e.g., BAP habitats, SSSIs), and/or	Minor impact (~1% at national level) to valued habitat or landscape types (e.g., BAP habitats, SSSIs), and/or
	Major impacts on or loss of species groups, and/or	Intermediate impacts on or loss of species groups, and/or	Minor impacts on or loss of species groups, and/or
	Major impact (10% or more at national level) to an individual natural capital asset and associated goods and services[4], and/or	Intermediate impact (1 to 10% at national level) to an individual natural capital asset and associated goods and services, and/or	Minor impact (~1% or less at national level) to an individual natural capital asset and associated goods and services, and/or
	Major loss or irreversible damage to single nationally iconic heritage asset (e.g., Stonehenge, Giants' Causeway)	Medium loss or irreversible damage of nationally iconic heritage asset (e.g., Stonehenge, Giant's Causeway)	Low loss or irreversible damage to nationally iconic heritage asset (e.g., Stonehenge, Giants' Causeway)
Qualitative Evidence	Expert judgement of chapter authors, confirmed with agreement across authors, CCC and peer reviewers suggest there is a possibility of impacts of the magnitude suggested above.		

[1] This could be an annual average or expected annual damages. Where evidence is only related to a single event, authors should make a judgement on the magnitude and state this in their assumptions.

[2] The implied value of number of deaths is broadly in line with the value of prevented fatalities used by Government in the appraisal of policies (see DfT, 2019). It should be noted that this applies to an 'average' prevented fatality, i.e., someone of average age and who is otherwise healthy. The number of major injuries / major health outcomes, and minor injuries / minor health outcomes / people affected, are also in line with values used in appraisal.

[3] These values are based on the average value for an agricultural hectare of land in England that is estimated to be £22k (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710539/Land_Values_2017.pdf).
It is noted that the average value for residential, commercial, and industrial land is much higher, and thus if urban land areas are affected, these scoring categories might be adjusted, i.e., so that a lower number of hectares would be equivalent to a low, medium, or high ranking.

[4] The areas of natural capital assets are based on the definitions and reported values in the ONS Natural Capital Accounts and expert analysis of equivalence, https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalaccounts/2019
.

	York
Economics	Metrics in table above adjusted for gross value added[1] , thus, to give relative importance, values in table are reduced by a factor of 71[5]. - £1.4m+ of damage or foregone opportunities, - £1,400,000 - £140,000 of damage or foregone opportunities - Less than £140,000 damage or foregone opportunities.
Health	Metrics in table above adjusted for population, reduced by a factor of 316[6] for York. - 1+ deaths, 3+ major health impacts, 30+ people affected / minor health impacts, and/or - No deaths, a few major health impacts, 3 - 30 people affected / minor health impacts, and/or - No deaths, no major health impacts, a few people affected / minor health impacts, and/or **Adjusted values have been rounded to produce useful metrics with which to guide magnitudes decision**
Land	Metrics in table above adjusted for land , reduced by a factor of 900[7]. - 10+ hectares of land lost or severely damaged, - 1 - 10 hectares of land lost or severely damaged, - Less than 1 hectare of land lost or severely damaged.
Habitat / Natural Capital	As table above

[5] Economics. Gross Value Added (GVA) is taken from Office for National Statistics https://www.ons.gov.uk/economy/grossvalueaddedgva/bulletins/regionalgrossvalueaddedbalanceduk/1998to2017

	GVA (2017 £M)	Factor calculation
UK	1,802,741	
York	25,270	1,802,741 / 25,270 = **71.34**

[6] UK population = 66.4 million (https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/nationalpopulationprojections/2018based#table-1408dbb6)

York population approx. 210,000 (https://www.healthyork.org/place.aspx#:~:text=People%20who%20live%20in%20York&text=The%20population%20of%20York%20is,than%20England%20as%20a%20whole)

Calculation: 66,400,000 / 210,000 = approx. **316**

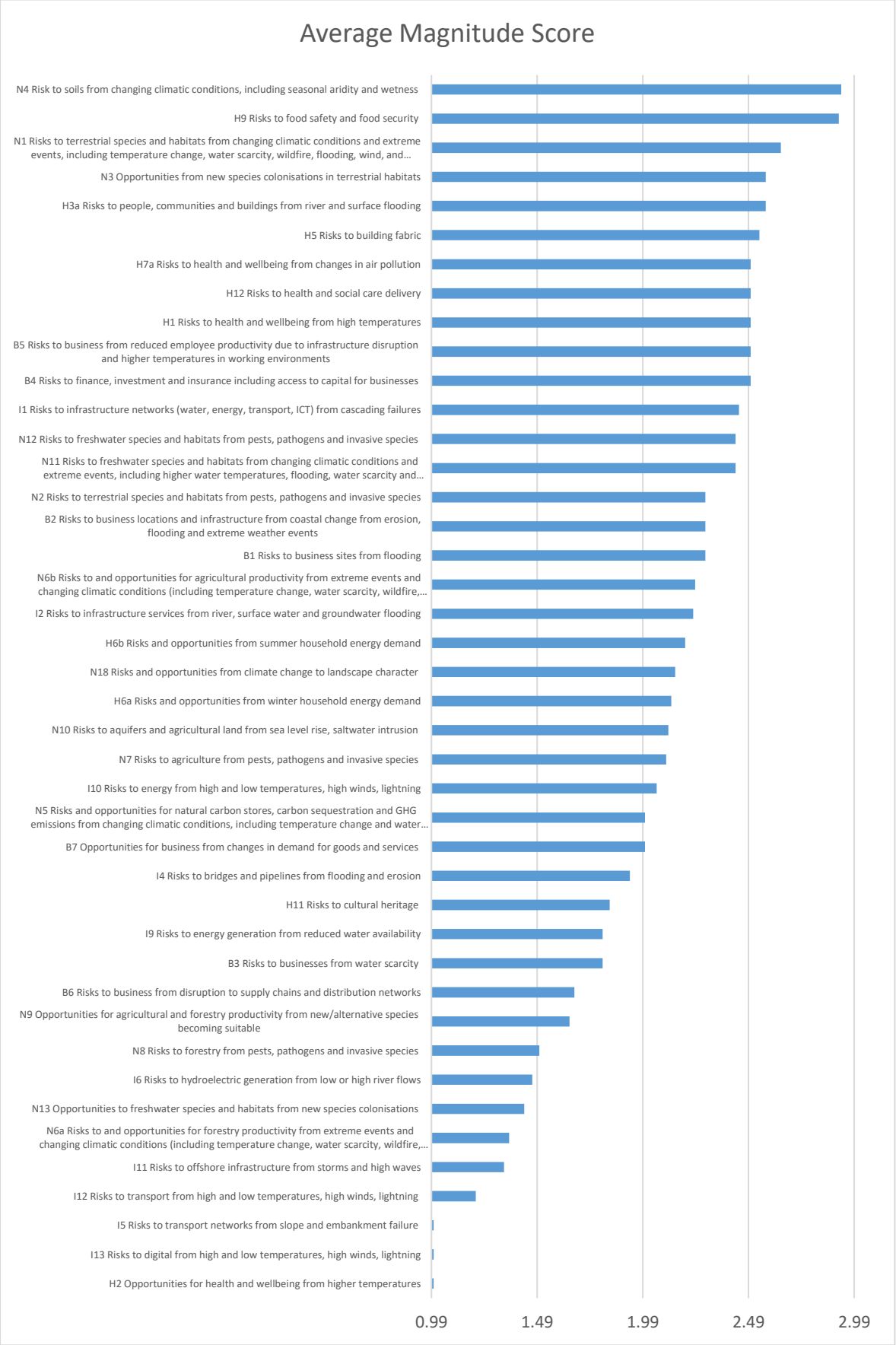
[7] UK land area = 24,417,000 hectares (https://www.ons.gov.uk/economy/environmentalaccounts/articles/uknaturalcapitallandcoverintheuk/2015-03-17)

York council area = approx. 105 square miles (Source: www.york.gov.uk) which is approx. 27,195 hectares

Therefore (24,417,000 / 27,195 = **898**) gives reduction factor for York based on UK land cover statistic

ANNEX A

Appendix D: All UKCCRA3 risks/opportunities distribution by average magnitude score



Appendix E: Evidence gaps or questions about implementation of policy in regards to H3a (nationally)

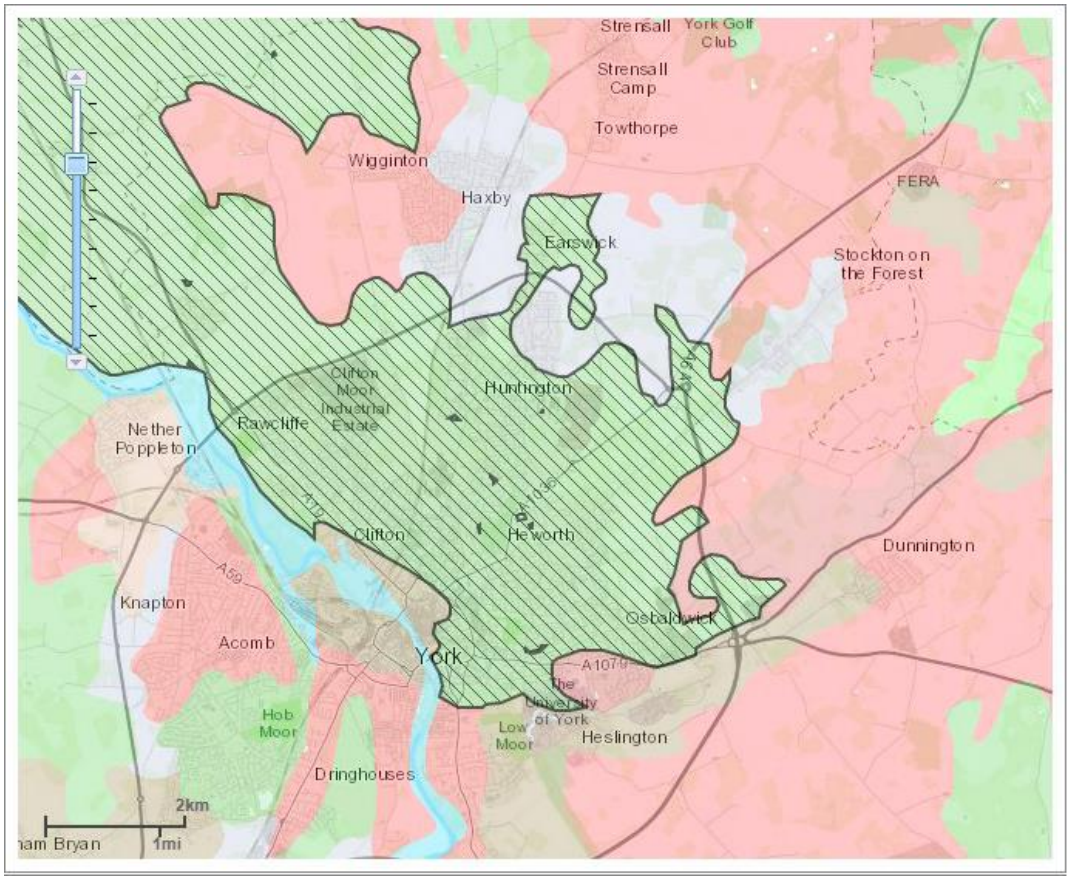
- **Lock-in from new development**. Housing development continues to occur on the flood plain e.g., in England (the latest data suggests that this accounts for 9% of all new development in England (MHCLG, 2020)) and in Scotland. Research conducted in 2016 regarding the effectiveness of Scotland's local planning authorities in implementing national planning policy suggested that the outcomes of flood risk assessment and climate change were not sufficiently influencing spatial strategies (LUC, 2016), which could lead to inappropriate development. Whilst climate resilient homes can be built on the flood plain, either with community level defences in place or with PFR measures, further evidence regarding the degree to which resilient measures are being incorporated is required and whether these homes are resilient to future changes in flood risk.
- **Uptake of green sustainable urban drainage.** There is insufficient evidence regarding the implementation of SuDS (Sustainable Drainage Systems), and particularly green SuDS, as this is not monitored (e.g., CCC (2019a)).
- **Flood insurance.** Across the UK, while Flood Re is providing support to increase access to affordable insurance for households at high risk of flooding who seek support, there are still many households that do not have insurance or have insurance that does not include flood cover. While flood insurance can play a protective role and a safety net in the event of a flood, household take-up rates vary by income and tenure, and some groups are less well protected.
- **PFR (Property-Level Flood Resilience).** The rate of PFR installation is almost certainly well below the optimum, which is certainly the case in England (CCC, 2019b), and there is a lack of incentives across the UK to increase take up of property level flood resilience measures where these are an appropriate household response. Some well-known barriers include lack of motivation from householders, lack of familiarity and access to information, costs, and behavioural biases to acting, and lack of professional skills and knowledge (CCC, 2019a). The new FCERM Policy Statement commits to encouraging a faster transition of the marketplace for PFR, providing more advice, products, and incentives to enable this transition.
- **Responsibilities and accountability.** There is a public expectation that risk will be managed by the UK Government, devolved administrations, and national environmental regulation agencies, as well as other public bodies such as local authorities (e.g., Power et al. (2020)). This may hinder individuals and communities' own involvement in taking steps to improve their preparedness. Governments and other national agencies across the UK are keen to enhance greater individual and organisational responsibility by setting out expectations and roles and responsibilities for managing flood risk now and in the future. This area is likely to remain a continued challenge requiring continual awareness raising and knowledge sharing. Behavioural science insights should inform future measures to encourage a greater sharing of responsibility.
- **Inequalities.** Disadvantaged communities in urban and rural areas remain at proportionally high risk of flooding now and in the future, although flood risks to health affect all populations, not just low-income households (Sayers et al., 2017a). This situation is projected to continue despite current Government investment regimes in England, Scotland and Wales prioritising deprived communities. Greater attention needs to be given to integrating policy objectives

and delivery across agendas including preferentially selecting interventions to reduce flood risk and response measures that do not disadvantage certain population groups.

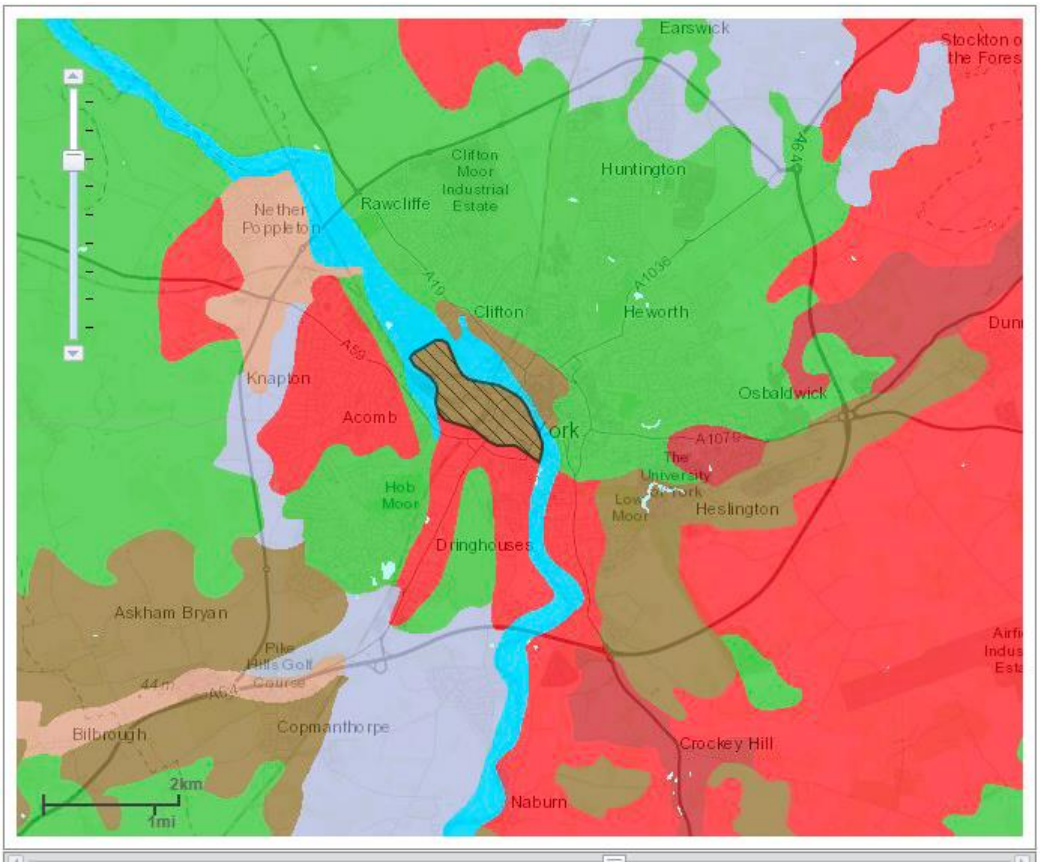
- **Maintenance budgets.** Further investment in maintenance is required to ensure that flood risk management measures can continue to manage current risk and have the potential to manage future risk. This has been particularly highlighted for England with the Efra Committee's flood report highlighting the need for a long-term resource budget settlement, aligned with the increased capital investment, so that the Environment Agency and other RMAs can plan for and maintain new and existing flood and coastal defences (Efra, 2021).

ANNEX A

Appendix F: Large Soilscape 18 area in York



Appendix G: Soilscape 8 (brown) coverage for York



ANNEX B

Kirklees Council CCRVA 2022 - Priority risks by theme:

Water:

- Water supply interruptions/restriction.
- Increase in daily peak demand.
- Waste seepage into water supply
- Poor water quality.
- Flooding, including damage to property, threat to life, displacement.

Waste:

- Increase in wet waste.
- Increase in weight of waste.
- Reduction in the efficiency of energy plants (cooling steam to generate electricity).
- Bin collections disrupted.

Culture, tourism and leisure:

- Flooding of leisure services and provisions.
- Overheating of playgrounds and outdoor sports facilities with no shade.
- Closure of businesses (e.g., damaged buildings or not being retrofitted).

Agriculture and the natural environment:

- Risk to terrestrial species and habitats.
- Increase in pests, pathogens and invasive species.
- Damage to Sites of Special Scientific Interests.
- Damage to soils e.g. due to periods of drought.
- Bare peat from past industrial pollution at risk of erosion/being washed away.
- Limitations in the window for peatland restoration work.

Health and wellbeing (incl. adult care, children and young people):

- Increased incidences of heat exhaustion and dehydration.
- Increased anxiety.
- Increase in vector borne diseases.
- Further risks to homeless communities without safe shelter.
- Unsafe working conditions for site, outdoor workers and frontline workers. .

Buildings and property:

- Overheating.
- Increased requirement for retrofitting properties with cooling systems.
- Risk to household energy demands from increased cooling/heating requirements.
- Flooding.
- Increase in risk of condensation, damp, mould growth, mildew.
- Changes in ground water levels.
- Increase in risk of subsidence.

Energy and infrastructure:

- Damage to energy assets and supply infrastructure (e.g., wind turbines, energy plant).
- Damage to IT infrastructure.
- Damage to transport infrastructure (e.g. road melt).
- Increase in local accidents on motorways and major trunk roads.

Services:

- Damage to service buildings and assets - such as schools, prisons, care homes.
- Increase in demand for health and social care services.
- Damage to specialist equipment.
- Increase in response time / wait times.
- Disruption to delivery of services (e.g., due to road closures etc.).

ANNEX C

Vulnerable Population Groups[1]:

1. Climate change can affect anyone. However, vulnerable population groups expected to be most affected by future hazards, as outlined in the CDP and Global Covenant of Mayors (GCoM) reporting frameworks, include:

    - **Women and girls** are more vulnerable to climate change based on biophysical characteristics as well as a result of their position in society (often being of lower socioeconomic status in society).
    - The **elderly** population are more likely to be increasingly physically, financially and emotionally at risk to the impact of climate change, largely due to changes in mobility, physiology and restricted access to resources.
    - **Young children and babies** also face disproportionate health effects particularly from heat related impacts as they are dependent on adults to help them adapt in their behaviour and clothing, this can have a detrimental impact on mental health and wellbeing.
    - **Marginalised/minority communities** can be disproportionately affected by climate change. This is generally linked to the vulnerabilities associated with people on lower incomes due to historic and systemic inequalities faced by these communities.
    - **People with reduced personal mobility**, can experience significant levels of vulnerability to changes in climate as a result of limitations presented across local infrastructure and services.
    - **Existing medical conditions** can make individuals more sensitive to climatic changes, increasing the potential for health impacts and worsening symptoms.
    - **People on low income** are less able to deal with climate events as they lack the economic or financial capacity to invest in measures to make their home more resilient or to obtain e.g. flood insurance.
    - **Tenants in the social and private rented sector** are likely to have a lower ability to adapt to climate change and extreme weather events compared to homeowners.

[1] Kirklees CCRVA 2022

- **Outdoor workers** are vulnerable to extreme heat and weather events, impacting their occupational health and safety as well as influencing their line of work.
- **Health, education and emergency service workers** become increasingly vulnerable as climate change exacerbates conditions as they have increased exposure to people suffering from climate induced health problems (e.g., vector-borne diseases), as well as an increase in strain on services due to demand impacting the physical and mental health of frontline workers.

ANNEX D

York Climate Change Risks and Vulnerabilities Assessment

September 2023

ANNEX D

Contents

ANNEX D

Executive Summary

This report has been produced in response to the City of York Council motion that requested the Executive provide a report on the city's climate resilience. It draws on the approach set out by the UK Climate Change Risk Assessment, with additional evidence from the region, local partners and council business continuity plans, with modifications to make it more suitable to the local context.

The Yorkshire and Humber Climate Commission Adaptation Programme has brought attention to the importance of building climate resilience to local authorities across Yorkshire and Humber. The City of York Council has remained an active participant and learned from neighbouring council's own risk assessments.

It is clear that as global warming intensifies, it is difficult for the science, policy and regulatory frameworks to evolve at the same pace. As a result, this risk and vulnerabilities assessment will remain "live" and be reviewed annually as climate change impacts are better understood, or predictions are more confident.
The report identifies climate resilience risks for York.

Local data is scarce for many of these risks, limiting the effectiveness of potential policy and decision making. To support an evidence-based approach to climate resilience the council will continue to work with regional partners to share best practice and evidence.

York has significant experience of adapting to climate risk and manages the flood risk well. This is due to a joined up, local, regional, and national response, involving multiple agencies and multiple stakeholders which has produced a response that is proportionate to the risk. We will seek to replicate our approach to the flood response to other risk areas.

Climate Change risks are not easily evaluated with traditional cost/benefit analysis making it difficult to make the case and allocate funding.
Finally, the risks highlighted are not the only ones relevant to York. Resilience is a joined-up, overall response to climate change, and it is important to highlight that building general adaptive capacity, should be prioritised over responses to any singular threats.

Introduction

In 2019, City of York Council declared a Climate Emergency and have since set an ambition for York to be net zero carbon by 2030.

York's 10-year Plan sets out a goal for York to be carbon neutral and contribute to the regional ambition to be carbon negative, with iconic green spaces to enjoy today and the environment protected for future generations. The Plan will be delivered, in part, through the York Climate Change Strategy 2022-2032 and Action Plan which recognises the threat of climate change at both a global and local scale.

The 10-year Plan and Climate Change Strategy and Action Plan align to the Council Plan 2023-2027 One City for All which includes Four Core Commitments (outcomes)

covering Equalities and Human Rights, Affordability, Climate Change, Health and Wellbeing (E.A.C.H.).

There is currently no statutory requirement for local authorities to strengthen resilience to a changing climate based on the scientific predictions such as anticipated rises in temperatures.

Local Authorities are required to report to DEFRA an assessment of risks and actions annually.

To elevate the importance of building climate resilience, the net zero ambition will be extended to include "**by 2030 York will have set the conditions to be Climate Ready**".

The impacts of climate change are already being seen locally. Together with our net zero and carbon mitigation activity, we also need to adapt to become more resilient to the changes in our climate to create a city fit for the future.

Background

Climate change is one of the greatest threats facing our planet. According to the World Resource Institutei, global temperatures have so far risen by 1.1°C, and already the planet has seen an increase in natural disasters such as flooding, hurricanes, and other extreme natural events.

[1]NASA announced in September 2023 that this summer (June, July, August) was the hottest summer on record. The months of June, July, and August combined were 0.23°C warmer than any other summer in NASA's record, and 1.2°C warmer than the average summer between 1951 and 1980. August alone was 1.2°C warmer than the average.

According to the World Resource Institute[2], global temperatures have so far risen by 1.1°C, and already the planet has seen an increase in natural disasters such as flooding, hurricanes, and other extreme natural events.

The 2023 IPCC Report[3] warned that the world is set to reach 1.5°C above pre-industrial levels within the next two decades and stated that only the most drastic cuts in carbon emissions would help prevent an environmental disaster. The IPCC declared in their latest report that,

> "Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people. Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected "

[1] NASA Announces Summer 2023 Hottest on Record – Climate Change: Vital Signs of the Planet
[2] https://www.wri.org/climate
[3] https://www.ipcc.ch/report/ar6/wg2/

Council Motion.

This report has been produced in response to a City of York Council motion (21st October 2021)4 that requested the Executive provide a report on the city's climate resilience:

- *Council therefore resolves: To ask Executive to report on the City's climate resilience by assessing the risks from the eight priority risk areas of the UK Climate Change Risk Assessment (June 2021) https://www.theccc.org.uk/publication/independentassessment-ofuk-climate-risk/, plan for enhancement of the city's climate resilience and management of the unavoidable impacts of climate change.*

The assessment of York's risks set against the eight priority risk areas has been published with the Executive Member Decision report in November 2023. Working with the region as part of the Yorkshire and Humber Climate Commission Adaptation Programme, it is clear that there are additional, more localised risks that need to be considered, which this report sets out.

The City of York Council is also signed up to the CDP, formally known as the Carbon Disclosure Project, and is a signatory to the Global Covenant of Mayors. This sets an expectation that York will regularly report on York's climate risks and vulnerabilities.

Aim and Objectives.

This report sets out to improve our understanding of climate change risks and vulnerabilities to York through:

- Identifying the most significant threats to York due to climate change
- Presenting initial findings and recommendations of the most significant risks
- Clarifying the ambition set in the York Climate Change Strategy 2022-2032

What is resilience?

According to the IPPC: "Resilience is defined as the capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity, and structure as well as biodiversity in case of ecosystems while also maintaining the capacity for adaptation, learning and transformation. Resilience is a positive attribute when it maintains such a capacity for adaptation, learning, and/or transformation".

Essentially, resilience means how well a complex system (like an ecosystem or a city) can 'bounce back' from adverse events and return to a place where the system functions as normal. Resilience is a dynamic process in which the system actors constantly learn and evolve to build resilience against future events.

[4] https://modgov.york.gov.uk/documents/g12805/Printed%20minutes%20Thursday%2021-Oct-2021%2018.30%20Council.pdf?T=1

ANNEX D

York has significant expertise in “resilience” with successive flood events managed through multi-agency response that includes learning from the event and adapting pressure points across the city to ensure floor resilience measures are appropriate and reduce the risk to businesses, households and York’s infrastructure and related systems.

UK Third Climate Change Risk Assessment.

Recent resilience strategies use the Third UK Climate Change Risk Assessment (UKCCRA3) as a reference point. Within the UKCCRA3, a variety of risks and opportunities from the effects of climate change were analysed under various scenarios (e.g. 2°C of warming by 2050, 4°C by 2080 etc.), with the report concluding that there were eight priority risk areas where the UK required more action to meet the magnitude of the risk.

Priority Risk Area	Magnitude of Risk	Key policy areas
Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards.	High	Biodiversity ; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to soil health from increased flooding and drought.	Medium but will increase to high by 2050.	Biodiversity; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions.	Medium but will increase to high by 2050.	Biodiversity; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to crops, livestock and commercial trees from multiple hazards.	Medium but will increase to high by 2050.	Biodiversity; Soil and water protection and restoration; Environmental land management; Sustainable farming and forestry; Net Zero; Green finance
Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks	Medium but will increase to high by 2050.	Public procurement; Business resilience; Environmental land management; Trade
Risks to people and the economy from climate-related failure of the power system	High	Infrastructure; Energy; Net Zero

Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings	High	Building regulations and strategies Planning reform
Multiple risks to the UK from climate change impacts overseas	High	National resilience; Overseas aid; Research and capacity building

Table 1: The 8 national priority risk areas to UK, according to the UKCCRA3

Whilst these eight priority risk areas have relevance to York within the national context, more localised risks are not considered and as a result, through work with the YHCC Adaptation Programme, and engagement with city partners, the risk areas have been expanded to cover additional risks and vulnerabilities.

UKCCRA3 Risks not considered.

Not all risks and opportunities included in the UKCCRA3 have local relevance to York. The following risks and opportunities were excluded from the analysis.

International Dimensions.
Whilst international dimensions are a key part of the climate change problem, some of risks have been excluded from the analysis as they encompass issues that are unlikely to be able to be affected by Council policy e.g., "ID4 Risks to the UK from international violent conflict resulting from climate change on the UK", was excluded as it is more in the scope of the national governments remit, as seen in the Ukraine/Russia conflict.

Update: Whilst international dimensions are largely outside of the Council's control, they can and will impact York and should be explored further in future reports. E.g. migration from conflict could put pressure on housing and other services etc.

Risks to education and prison services.
This risk was omitted as:

i) York does not have a prison within its boundary.
ii) The effect on education that the UKCCRA3 Technical Report details concerns issues that are not regionally dependent or affected by location e.g., the effect on concentration levels of children due to warmer classroom conditions. As this risk applies largely equally across all local authorities, no new information can be gained that isn't already contained in the UKCCRA3.

Update: HMP Askham Grange is within York's administrative boundary. City of York Council influences choices within the education sector, such as insulating school buildings, fitting renewables etc. On this basis prisons and education risks should be considered as part of ongoing risk assessment work and will be picked up within the buildings risk measures.

Coastal and Marine.
The risks in Table 4 were omitted because they only referred to coastal and marine related threats. York does not have a coastline and is therefore not relevant in trying to inform local resilience strategy decisions.

Update: This risk should be considered in ongoing risk assessment work, due to potential impacts on the city in the coming decades, including likely impact of sea level rise on the wider region, land becoming salinated, East Coast storm surges and increasing migration.

Risk ID	Risk
N14	Risks to marine species, habitats, and fisheries from changing climatic conditions, including ocean acidification and higher water temperatures
N15	Opportunities to marine species, habitats, and fisheries from changing climatic conditions
N16	Risks to marine species and habitats from pests, pathogens, and invasive species
N17	Risks and opportunities to coastal species and habitats due to coastal flooding, erosion, and climate factors
I3	Risks to infrastructure services from coastal flooding and erosion
H3b	Risks to people, communities, and buildings from coastal flooding
H4	Risks to the viability of coastal communities from sea level rise

Table 2.: Excluded Risks

Met Office risk impacts on urban areas.

The Met Office produced the below graphic of the expected impacts on urban areas as a result of climate change.

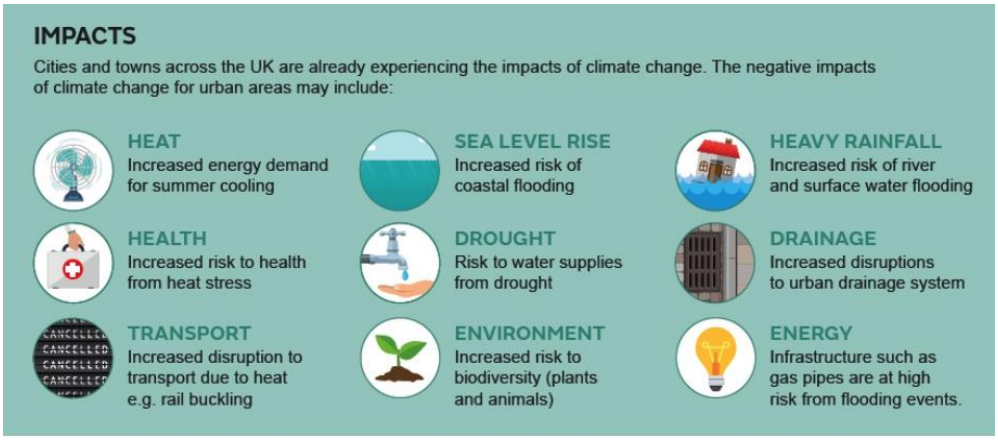


Figure 1: Negative impacts in urban areas from climate change

These impacts will not impact all countries or areas equally; therefore, understanding the local impacts of climate change are an important consideration when developing an appropriate response.

Approach

ANNEX D

To understand the risks and vulnerabilities likely to present challenges to York's ecosystems and infrastructure, the following steps were taken:

- Evidence about the future risk of climate hazards collated from the YHCC Adaptation Programme and other published sources.
- A review of the assessment of the UKRCC risks, by inviting subject matter experts to assess the magnitude.
- An understanding of the risks of disruption to the city, summarising evidence and best practice collated during the YHCC Adaptations Programme together with involvement in the DEFRA 4th Adaptations and Actions Plan pilot and engagement with city partners.
- An assessment of risks to council services developed through engagement with council officers.
- An understanding that some residents and community groups are more vulnerable to climate change than others.

It is recognised that the risk of extreme weather events will continuously change and evolve, at some times heightened and at others, less severe than predicted.
This report is set out as a basis for ongoing discussion and reflection on council services and the city to support risk management and business continuity planning. It is not an exhaustive list of risks which will vary between services, organisations, systems and individuals.

1. Future risk of climate hazards – UK Climate projections: headline Findings[5]

- All the top ten warmest years for the UK, in the series from 1884, have occurred since 2002.

- A recording of 38.7 °C at Cambridge Botanic Garden on 25th July 2019 became the highest summer temperature officially recorded in the UK, exceeding the previous record of 38.5 °C recorded at Faversham, Kent, in August 2003.

- The most recent decade (2009-2018) has been on average 1% wetter than 1981-2010 and 5% wetter than 1961-1990 for the UK overall.

- Winters in the UK, for the most recent decade (2009-2018), have been on average 5% wetter than 1981- 2010 and 12% wetter than 1961-1990. Summers in the UK have also been wetter, by 11% and 13% respectively.

- By the end of the 21st century, all areas of the UK are projected to be warmer, more so in summer than in winter. This projected temperature rise in the UK is consistent with future warming globally.

- The temperature of hot summer days, by the 2070s, show increases of 3.8 °C to 6.8 °C4, under a high emissions scenario, along with an increase in the frequency of hot spells.

5 https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v4_aug22.pdf

- Hot spells, typically defined as maximum daytime temperatures exceeding 30 °C for two or more consecutive days5, are largely confined to the south-east UK in the present-day. In the future (by 2070s), under a high emissions scenario, the frequency of hot spells increases.

- Rainfall patterns across the UK are not uniform and vary on seasonal and regional scales and will continue to vary in the future. By 2070, in the high emission scenario, this range amounts to -45% to +5% in summer, and -3% to +39% in winter (where a negative change indicates less precipitation and a positive change indicates more precipitation)

- Despite overall summer drying trends in the future, new data from UKCP Local (2.2km) suggests future increases in the intensity of heavy summer rainfall events. Future climate change is projected to bring about a change in the seasonality of extremes. UKCP Local (2.2km) projects an extension of the convective season from summer into autumn, with significant increases in heavy hourly rainfall intensity in the autumn.

- UKCP Global (60km), Regional (12km) and Local (2.2km) all project a decrease in soil moisture during summers in the future, consistent with the reduction in summer rainfall. Locally this could lead to an exacerbation of the severity of hot spells.

- By the end of the 21st century, lying snow decreases by almost 100% over much of the UK, although smaller decreases are seen over mountainous regions in the north and west.

2. An assessment of UKRCC risks

To understand the UKRCC risk assessment, subject matter experts were invited to assess 46 risks and opportunities, with each assigned a magnitude by experts. Of these, the 6 most significant were progressed to stage 2[6]:

Risk	Average Magnitude Score	No. Responses	UKCCRA3 Magnitude Results (based on 2°C warming pathway by 2050)
N4 Risk to soils from changing climatic conditions, including seasonal aridity and wetness	2.93	3	High
H9 Risks to food safety and food security	2.92	2	High
N1 Risks to terrestrial species and habitats from changing climatic conditions and extreme	2.64	2	High

[6] NB. The report notes limitations in the expert survey response rate, and for this reason makes clear that ALL UKRCC3 risks should be considered in future risk assessment.

events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology			
N3 Opportunities from new species colonisations in terrestrial habitats	2.57	2	Medium (Opportunity)
H3a Risks to people, communities and buildings from river and surface flooding	2.57	1	High
H5 Risks to building fabric	2.45	3	Medium

Table 3.: Top Risks as a Result of Climate Change

These are not the only risks and opportunities that should be considered in resilience planning, with additional risks documented in the following report.

Limitations to the approach of this study and available responses provided a low level of confidence in the assignment of severity, however, they do provide the basis for an ongoing discussion about risks and vulnerabilities to inform business continuity planning and risk management. It is recommended that All UKRCC3 risks are considered as part of ongoing risk assessment.

3 Risks of disruption to the city

The risk of disruption to different aspects of the city are listed below. These have not been assessed to determine the severity, and instead are shared to form the basis of risk management discussions and business continuity plans:

Water:
- Water supply interruptions/restriction.
- Increase in daily peak demand.
- Waste seepage into water supply
- Poor water quality.
- Flooding, including damage to property, threat to life, displacement.

Waste:
- Increase in wet waste.
- Increase in weight of waste.
- Reduction in the efficiency of energy plants (cooling steam to generate electricity).
- Bin collections disrupted.

Culture, tourism and leisure:
- Flooding of leisure services and provisions.
- Overheating of playgrounds and outdoor sports facilities with no shade.
- Closure of businesses (e.g., damaged buildings or not being retrofitted).

Agriculture and the natural environment:
- Risk to terrestrial species and habitats.

- Increase in pests, pathogens and invasive species.
- Damage to Sites of Special Scientific Interests.
- Damage to soils e.g. due to periods of drought.
- Bare peat from past industrial pollution at risk of erosion/being washed away.
- Limitations in the window for peatland restoration work.

Health and wellbeing (incl. adult care, children and young people):

- Increased incidences of heat exhaustion and dehydration.
- Increased anxiety.
- Increase in vector borne diseases.
- Further risks to homeless communities without safe shelter.
- Unsafe working conditions for site, outdoor workers and frontline workers.
- Population and demographic changes (e.g. increased migration) placing increased demands on services

Buildings and property:

- Overheating.
- Increased requirement for retrofitting properties with cooling systems.
- Risk to household energy demands from increased cooling/heating requirements.
- Increase in risk of condensation, damp, mould growth, mildew.
- Flooding
- Changes in ground water levels.
- Increase in risk of subsidence.

Energy and infrastructure:

- Damage to energy assets and supply infrastructure (e.g., wind turbines, energy plant).
- Energy security, including supply disruption, price spikes etc.
- Damage to IT infrastructure.
- Damage to transport infrastructure (e.g. road melt).
- Increase in local accidents on motorways and major trunk roads.

Services:

- Damage to service buildings and assets - such as schools, prisons, care homes.
- Increase in demand for health and social care services.
- Damage to specialist equipment.
- Increase in response time / wait times.
- Disruption to delivery of services (e.g., due to road closures etc.).

4 Climate change impacts on council services.

Risks to council services were collated and discussed by council officer workshops, and evidence drawn from regional partners in the YHCC Adaptations Programme:

Service area	Key impacts

ANNEX D

Adult Services and public health	• Excess deaths due to heatwaves, mental health issues due to flooding, new or more infectious diseases affecting the population. • Overload on health support services during extreme events • Increases in migration impacting services. • Food security, including price spikes and supply – increased need for support services.
Housing and buildings	• Damage and disruption form flooding and extreme weather. • Overheating. Impact on health and wellbeing of residents. • Damage and disruption due to subsistence. Insurance costs etc. • Materials supply and costs • Proximity to shade / access to green space • Risk to water and energy supply. Water saving and energy efficiency.
Emergency planning, civil contingencies and Fire	• Increased frequency and diversity of events including fires on open ground, flooding, damage to major local infrastructure, increasing antisocial behaviour during hot weather. • Overall population resilience to repeated events may be eroded.
Transport and Highways	• Existing infrastructure not sufficient to manage flood waters. • Damage to infrastructure due to heat impacts and excess rainfall and the need to increase and maintain drainage. • Increased risk from trees. • Potential need to re-route longer term to avoid flood zones. • Air quality, especially during hot, still weather affecting public health.
Children's Services and schools	• Suitability of existing buildings to provide a comfortable learning environment in the longer term this includes could include location and building design/adaptations. • Increased migration placing additional demands on services
The natural environment, parks, farms and open spaces	• Changes to eco systems and the viability of flora and fauna. • Drought conditions impacting tenanted farms. • Flooding of country parks and impact on business activities. • Damage to trees through repeated cycles of drought and wet weather.
Waste disposal	• Disruption to collections due to weather. • Rising water tables could impact landfill sites and lead to leeching of contaminants. • Higher temperatures leading to odours, pests and public nuisance

Planning	• Ability of built structures to withstand heat and provide a comfortable environment. • Location of new settlements and facilities to avoid flood plains etc. • Management of surface water through sustainable drainage systems. • Preservation of water resources and water quality. • Sustainable landscaping. • Planning applications and local development plans will need to consider climate impacts and resilience measures.
Corporate	• Increased costs such as insurance for buildings or construction contracts. • Impact on staff working in extreme weather conditions

4.1 Climate change impacts on other services.

Service	Responsibility	Key impacts
Utilities	Utility companies (water, wastewater, electricity, gas and communications)	• Infrastructure damaged by extreme weather (most likely flooding) leading to service disruption and public health issues. • Speedy recovery from any incidents is important due to the disruption caused and public health impacts.
Drainage and watercourses	Landowners, drainage boards, canal trusts	• Capacity, replacement and maintenance of facilities. • Managing the flow of flood waters is essential to ensuring that damage and disruption is minimised.
Sport/leisure	Private operators and trusts	• Swimming pools may be difficult to fill during drought. • Long term suitability of grass pitches or allotments in some locations. • Increased cost of heating pools
Health	Health Board	• Increasing patient numbers due to extreme heat or flooding. • New infectious diseases. • Rising water tables can impact existing burial grounds.
Transport	Network Rail, train operators, Highways England	• Damage to infrastructure due to extreme weather. • Long term suitability of existing routes. • Ability to maintain/deliver services
Economy	Manufacturing and service sector	• Changes in demand for goods and services • Disruption to supply chains • Productivity • Staff

5 Vulnerable Population Groups[7]:

Climate change can affect anyone. However, vulnerable population groups expected to be most affected by future hazards, as outlined in the CDP and Global Covenant of Mayors (GCoM) reporting frameworks, include:

- **Women and girls** are more vulnerable to climate change based on biophysical characteristics as well as a result of their position in society (often being of lower socioeconomic status in society).
- The **elderly** population are more likely to be increasingly physically, financially and emotionally at risk to the impact of climate change, largely due to changes in mobility, physiology and restricted access to resources.
- **Young children and babies** also face disproportionate health effects particularly from heat related impacts as they are dependent on adults to help them adapt in their behaviour and clothing, this can have a detrimental impact on mental health and wellbeing.
- **Marginalised/minority communities** can be disproportionately affected by climate change. This is generally linked to the vulnerabilities associated with people on lower incomes due to historic and systemic inequalities faced by these communities.
- **People with reduced personal mobility**, can experience significant levels of vulnerability to changes in climate as a result of limitations presented across local infrastructure and services.
- **Existing medical conditions** can make individuals more sensitive to climatic changes, increasing the potential for health impacts and worsening symptoms.
- **People on low income** are less able to deal with climate events as they lack the economic or financial capacity to invest in measures to make their home more resilient or to obtain e.g. flood insurance.
- **Tenants in the social and private rented sector** are likely to have a lower ability to adapt to climate change and extreme weather events compared to homeowners.
- **Outdoor workers** are vulnerable to extreme heat and weather events, impacting their occupational health and safety as well as influencing their line of work.
- **Health, education and emergency service workers** become increasingly vulnerable as climate change exacerbates conditions as they have increased exposure to people suffering from climate induced health problems (e.g., vector-borne diseases), as well as an increase in strain on services due to demand impacting the physical and mental health of frontline workers.

Limitations

There are several limitations associated with this report which need to be considered when managing risks and preparing business continuity plans:

[7] Kirklees CCRVA 2022

- The future climate hazards are unpredictable, and with the impacts of global warming happening faster than previously predicted it is impossible to confidently assess what significant changes to the complex interrelated weather, ocean and biosphere systems will lead to.
- The Assessment of the UKRCC risks has a relatively low confidence with low number of subject matter expert responses.
- The risks of disruption to the city is the starting point for a discussion. Evidence is collated from multiple sources, including workshops and discussions with partners, however, to assess using risk methodology of likelihood vs severity will be expensive and not likely to add more to the discussion.
- The risks to council services will remain under review as per the usual council business continuity process. It is anticipated this will evolve over time as severity and intensity of extreme weather results create more disruption across wider supply chains, such as sourcing materials from abroad.

Next steps

Understanding the risks resulting from climate change is just the start. Learning from neighbouring authorities and to help York build on the positive catchment area flooding programme, the York Climate Change ambition will be strengthened such that by 2030, by adding that **by 2030 York will have set the conditions to be Climate Ready**.

Several steps will be taken to strengthen York's climate resilience:

i. The climate change action plan will be updated to indicate when actions are mitigating carbon admissions or adapting to weather climate change events, or both, continuing to keep climate adaption to the fore of planning and delivery.

ii. A task and finish group will identify opportunities and requirements for additional action against identified priority risks.

iii. Emerging strategies and policies, such as the draft Local Transport Strategy, will take into account the speed of global warming and build in provision for climate adaptation from the outset.

iv. The Community Infrastructure Levy criteria will be reviewed to include supporting preparations for climate resilience, whether that's new developments or supporting existing developments, transport, education or economic activity.

v. The Council will continue to engage with regional and local partners, sharing good practice and lessons learned to help build a library of adaptation expertise.

vi. The Council will continue to work with DEFRA to share understanding of the risks and actions and opportunities to strengthen local authority

powers to deliver adaptation activities across different systems and infrastructures.

vii. The Council will review *York's Climate Change Risks and Vulnerabilities report* annually, updating it to ensure it remains comprehensive and relevant.

Evidence base:

- York Climate Risk and Vulnerability Assessment Stakeholder Sessions:
  - Place Leadership 2022/23
  - Place officers / directorate management team (September 2023)
- City Leaders workshops 2022/23
- CDP Disclosure Insight Action (https://www.cdp.net/en)
- Global Covenant of Mayors for Climate and Energy Global Covenant of Mayors for Climate and Energy (https://www.globalcovenantofmayors.org/)
- HM Government (2022) UK Climate Change Risk Assessment 2022 (https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2022#:~:text=The%20risk%20assessment%20considers%20sixty,and%20species%20from%20multiple%20hazards)
- Met Office (2019) UK Climate Projections 2018 (UKCP18) (https://www.metoffice.gov.uk/research/approach/collaboration/ukcp)
- YHCC Adaptations Programme (https://yorksandhumberclimate.org.uk/)
- Defra 4th annual adaptation and reporting (https://consult.defra.gov.uk/climate-change-adaptation/fourth-round-adaptation-reporting-power/)
- Kirklees Climate Change Risks and Vulnerability Assessment https://www.kirklees.gov.uk/beta/climate-emergency/pdf/kirklees-climate-change-risk-vulnerability-assessment.pdf

ANNEX D

Appendix A: Full Council Motion

Government Must Work with Councils to Tackle Worsening Heatwaves and Extreme Weather

Council notes:

- *The work currently being done by City of York Council to progress towards our 2030 zero carbon ambition including the community woodland, new zero carbon housing and energy efficiency retrofit schemes as well as a draft city-wide strategy.*
- *That progress in most areas is nonetheless held back by a lack of substantial and consistent Government investment and closer working with local councils.*
- *The signs in York over the last few years that climate change has already begun in earnest, with hotter drier summers, warmer wetter winters and increased frequency of extreme weather and flooding.*
- *That in 2018 at COP24 the UK Government signed up to working with local communities to deliver the UK's 'Nationally Determined Contributions' in the 2015 Paris Climate Agreement.*
- *That, in May 2021, the Rt. Hon. Alok Sharma MP, President of COP26, said collaboration would be a key objective of the COP26 Climate Summit in November - "Governments, business and civic society need to work together to transform the ways we power our homes and businesses, grow our food, develop infrastructure and move ourselves and goods around".*

Council believes:

- *That despite these agreements and statements, there is still no formal relationship allowing joint partnership working between Local and National Government to take mitigation and adaptation actions against the climate emergency.*
- *That greater collaboration and action are required if we are to mitigate our greenhouse gas emissions and meet our commitments under the Paris Climate Agreement;18*
- *That mitigation strategies should be accompanied by effective adaptation measures to ensure that we are equipped to deal with the changes in our climate that have already begun. These include the potential for heatwaves and extreme weather that will threaten the health and wellbeing of our most vulnerable residents and may also impact on food security.*

Council therefore resolves:

- *To ask Executive to report on the City's climate resilience by assessing the risks from the eight priority risk areas of the UK Climate Change Risk Assessment (June 2021) https://www.theccc.org.uk/publication/independentassessment-ofuk-climate-risk/ , plan for enhancement of the city's climate resilience and management of the unavoidable impacts of climate change.*
- *To add this Council's voice to calls by the Local Government Association and the Association of Directors of Environment, Economy, Planning and*

Transport, and others, for a joint local and national government taskforce to plan action to reach 'net zero' emissions.

- *To call for such a partnership to set appropriate regulations, benchmarks and targets and create the much-needed long-term funding to enable local council areas, communities, and economies to decarbonise whilst remaining resilient and able to realise the benefits of decarbonisation in terms of new green jobs and a healthier environment.*
- *To therefore ask the Chief Operating Officer to write to Alok Sharma MP, President for COP26, the Prime Minister, and the Leadership Board of the LGA, informing them of our support for a joint Local/National Government Climate Change Partnership Taskforce and asking for one to be established as soon as possible.*

[i] https://www.wri.org/climate

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Meeting:	Decision Session - Executive Member for Environment and Climate Emergency
Meeting date:	21/11/2023
Report of:	Claire Foale, Assistant Director of Policy and Strategy
Portfolio of:	Executive Member for Environment and Climate Emergency

Decision Report: Annual Carbon Emissions Report 2022/23

Subject of Report

Summary

1. City of York Council (the Council) has set a target to reduce carbon emissions from corporate activity to net zero by 2030. An Annual Carbon Emissions Report is produced every year to monitor progress against this target and identify areas of improvement.

2. The data collected covers the Council's Scope 1 and 2 emissions for 2022/23. For the first time, we have incorporated elements of the Council's Scope 3 emissions associated with staff travel, homeworking and material usage. The Council's corporate emissions account for less than 3% of city-wide greenhouse gas emissions[1].

3. The Council's 2022/23 emissions are reported using the Local Government Authority's Greenhouse Gas Accounting Tool. An operational boundary was adopted to account for sites the Council has ownership of, or maintenance responsibility over.

[1] *UK local authority and regional greenhouse gas emissions national statistics_York 2020.xlsx*

4. 2022/23 represents the third year of reporting carbon emissions from our own buildings and operations. In some areas, we have data going back to 2015/16 which is used for historical comparison.

Policy Basis for Decision

Council Plan and 10-year Climate Strategy

5. Climate is a core commitment in the Council Plan, requiring the Council to understand the impact our actions have on the environment.

6. The Council has set out a priority to understand and take consideration of climate impacts when making Council decisions. This report demonstrates the carbon impact associated with Council operations.

7. In 2019, the Council declared a Climate Emergency and set the ambition for York to reach net zero by 2030. The York Climate Change Strategy (2022-2032) sets the framework required to meet this ambition. This report demonstrates the Council's progress towards net zero.

Financial Strategy Implications

8. The report identifies a number of actions that the carbon reduction team propose to undertake over the coming year. The majority require officer time and can be contained within agreed budgets. The Council has been successful in sourcing external funding and will continue to maximise such funding to match fund Council contributions.

9. The Council has set capital funds aside to upgrade the fleet with electric vehicles where practical. There are also budgets set aside for replacing lights in Council buildings with LED.

Recommendation and Reasons

10. The Executive Member is asked to:

    i) Approve the Corporate Emissions Report for publication.

Reason: Monitor progress against the ambition for the Council to be net zero by 2030.

Background

Annual Emissions 2022/2023

11. The Council's operational emissions totalled 5,490 tCO_2e in 2022/23.

12. Direct (Scope 1) emissions account for 78% of the Council's total emissions. Scope 2 emissions (from purchased and metered electricity) are deemed to be zero due to our green tariff[2]. Indirect (Scope 3) emissions are calculated from the wider supply chain.

Scope	***Scope Definition***	***Emissions Type***	***Emissions (tCO_2e)***
Scope 1	Direct GHG emissions from buildings, plant and vehicles owned or controlled by City of York Council	Heating	2,607
		Authority's Fleet	1,669
Scope 2	Indirect emissions associated with purchased energy consumed by City of York Council	Electricity	0
Scope 3	All other indirect emissions that occur in the Council's supply chain.	Staff Business Travel	42
		Staff Commuting	10
		Working From Home	723
		Transmission and Distribution Losses	248
		Material Use	177
		Waste	15
			Total Emissions 5,491

[2] Since April 2020, we purchase 100% renewable electricity, reducing our emissions by 2,711tCO_2e this year. 5tCO_2e have been produced by electricity for cars and vans in our fleet.

13. This year's reporting incorporates data from schools and museum sites which has not previously been included. Increasing the scope of data collection allows us to identify key areas for emission reduction; we will continue to expand the scope of reporting where feasible.

14. The extent of this year's reporting has expanded to include some of the Council's Scope 3 activities; including material usage, transmission and distribution (T&D losses)[3], staff commuting and home working.

15. An additional 2,200 tCO_2e has been accounted from these data sources.

16. Removing the additional data sources shows that comparable emissions have reduced by almost 10% between 2021/22 and 2022/23 (-342tCO_2e).

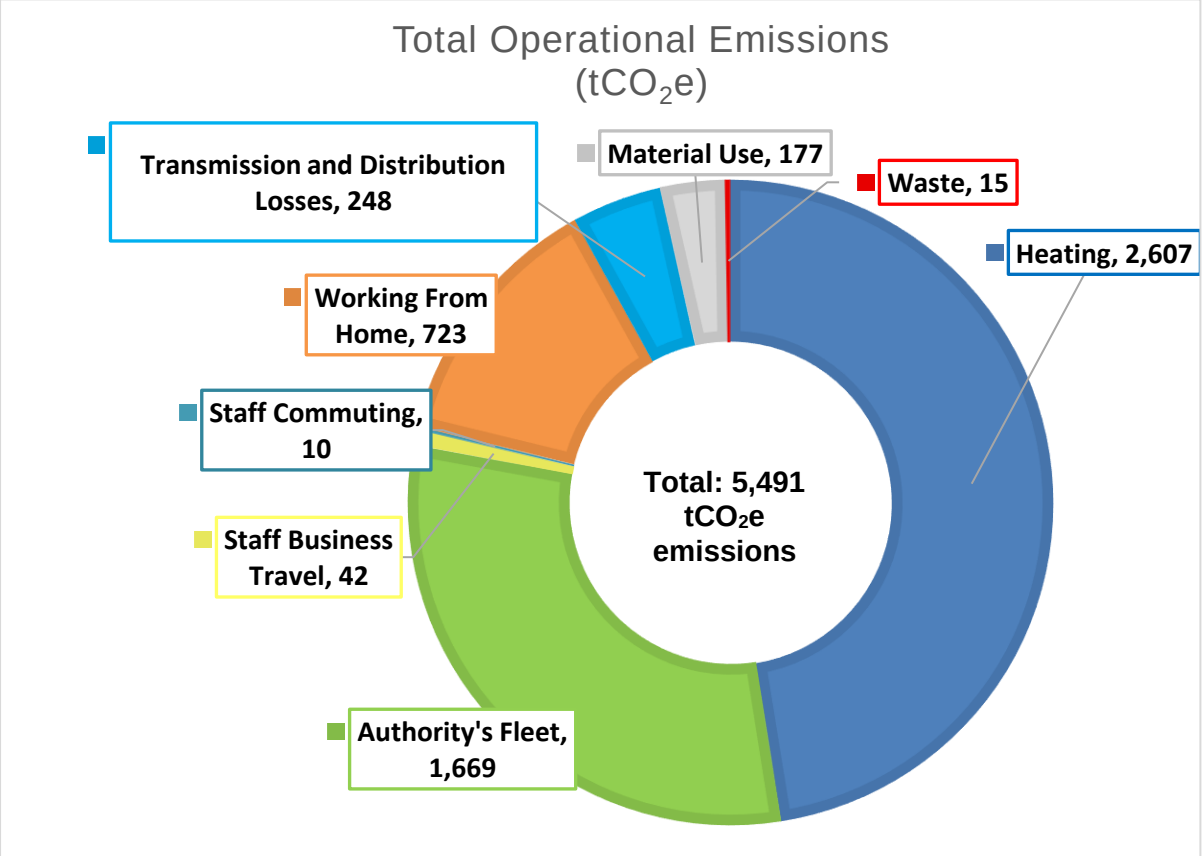
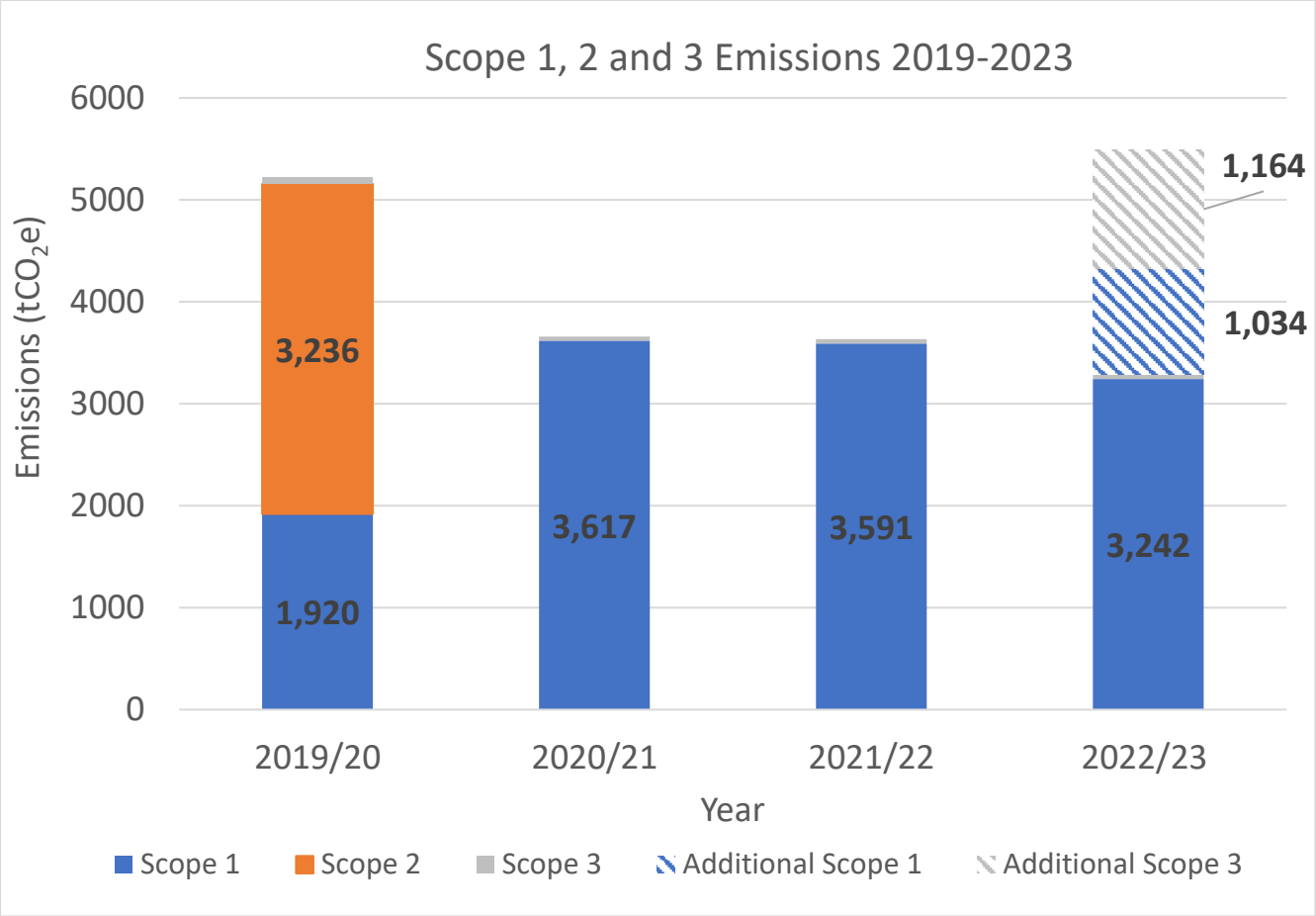


Figure 1: Total emissions produced across the Council's operations 2022/23.

[3] Transmission and distribution losses occur during the generation of electricity, steam, heating, and cooling.



[4]

Figure 2: Total Scope 1, 2 and 3 emissions across the Council's operations.

Corporate Buildings

Gas and Electricity

17. Gas use from corporate buildings and schools is responsible for over half (55%) of total CO_2e emissions and accounts for annual expenditure of £1,753,583. Gas use from corporate buildings alone is responsible for 33% of emissions and accounts for an annual expenditure of £1,172,073.

18. The Council has purchased 100% renewable electricity since 2020, making our net emissions in this area zero. However, the annual

[4] Due to our green tariff all Scope 2 emissions total 0tCO_2e from 2020/21 onwards. The hatched lines in 2022/23 illustrate the additional data included in this year's reporting.

cost of our building's electricity use in 2022/23 was £2,777,953; as such, reducing electricity consumption remains a priority.

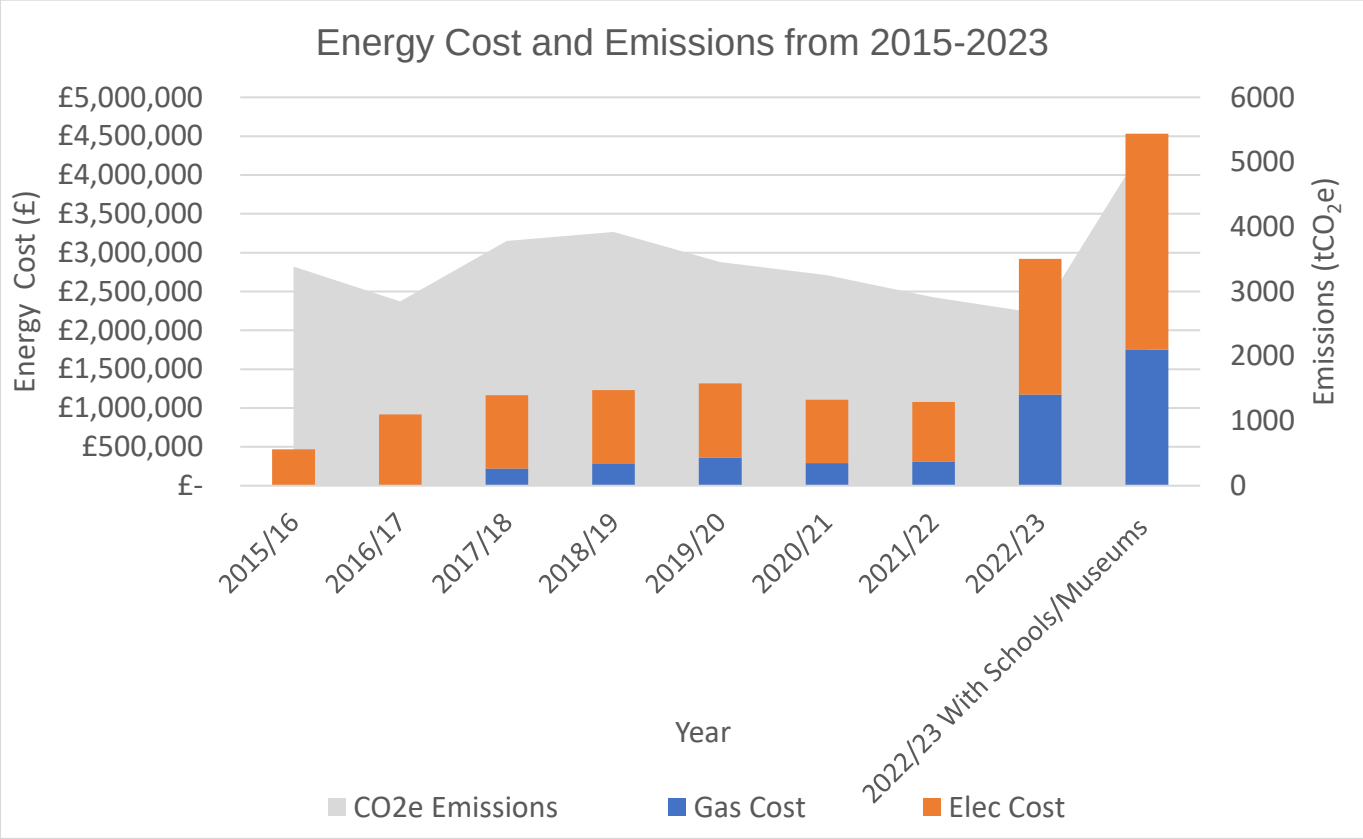


Figure 1: Total energy cost and emissions from Council operations from 2015-2023. (Gas data collection begins in 2017/18).

19. The Council adopts the energy hierarchy 'Be Lean', 'Be Clean', 'Be Green' and 'Be Seen' approach to use less energy, maximise the efficiency of the existing infrastructure, and encourage low and zero carbon technologies to deliver the best outcomes in emissions reduction from our buildings[5].

20. To implement this hierarchical approach, decarbonisation plans for 21 schools and 5 leisure centres were completed in March 2023 through the Low Carbon Skills Fund, in addition to the plans for our 7 highest-emitting corporate sites that were completed in October 2022. These plans identify key building fabric upgrades and opportunities for low and zero carbon technologies. We aim to

[5] City of York Local Plan Consolidated Main Modifications January 2023: https://www.york.gov.uk/downloads/file/8756/proposed-main-modifications-schedule

progress these plans into capital works through the Public Sector Decarbonisation Scheme.

21. The Council's partnership with Solar for Schools has seen solar panels installed in two CYC schools. Two further schools are due to receive solar panels in 2023/24.

22. The COVID-19 pandemic has altered working patterns in West Offices, with building occupancy approximately 675-800 people less than pre-pandemic levels. This has contributed to the decline in gas and electricity consumption post-pandemic.

Street Lighting

23. Street lighting accounted for 20% of total electricity use in 2022/23. The nature of street lighting means this consumption is unmetered and is estimated by our supplier based on the total number of streetlamps in use.

24. Since 2015/16 estimated electricity consumption for street lighting has decreased by 30%. Electricity consumption for street lighting has decreased by 10% since 2021/22.

25. York has approximately 21,500 lighting columns; approximately 60% of the lamps in these columns have been upgraded to LED, however there are an additional 6,400 which are yet to be replaced.

26. The Council has received funding for a streetlight LED conversion project for 1,200 of these columns through the York and North Yorkshire Net Zero Fund. Replacement of these lamps with LED will reduce annual emissions by over 50%, resulting in a carbon saving of 74tCO_2e/yr.

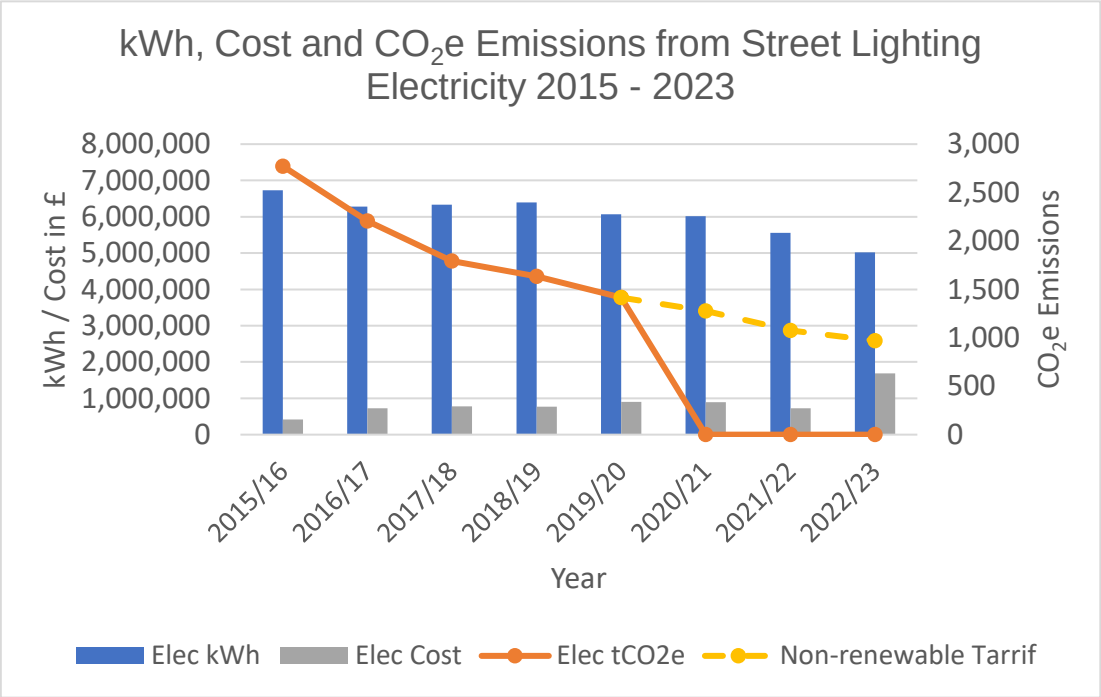


Figure 4: Consumption, cost and emissions associated with street lighting from 2015 to 2023.

Water

27. We were unable to access water consumption data from Yorkshire Water and as a result are unable to calculate emissions for 2022/23. However, the 2020/21 emissions accounted for just 0.6% of our corporate emissions.

Fleet

28. Emissions associated with our fleet reduced by 9% in 2022/23 and reflects the impact of the 4-year fleet replacement programme. As part of this plan, all combustion engine vehicles up to 3.5t will be replaced by electric vehicles. Once complete, emissions associated with our fleet are expected to reduce by around 800tCO_2e.

29. We are also reducing emissions and fuel costs by increasing vehicle efficiency through route planning and driver training.

Business Travel

Staff Travel

30. Business travel data measures emissions linked to the Council's use of hotels, flights, and trains. Emissions associated with business travel have experienced a 27% increase on last year ($11CO_2$/yr). The increase in emissions was largely due to an increase in train journeys in 2022/23 and one UK domestic flight.

31. While flights were uncommon for business travel pre-pandemic, they significantly increase corporate emissions. During the Covid-19 pandemic there were no flights recorded for business travel purposes and this continued into 2021/22. One corporate flight this year produced $0.5tCO_2$/yr.

32. Emissions from train journeys increased by 30% from 2021/22. This is due to the increasing return to in-person meetings following the pandemic. The continuation of remote working and meeting attendance still means that emissions from employee train travel in 2022/23 are 66% lower than pre-pandemic levels ($25.5tCO_2$/yr).

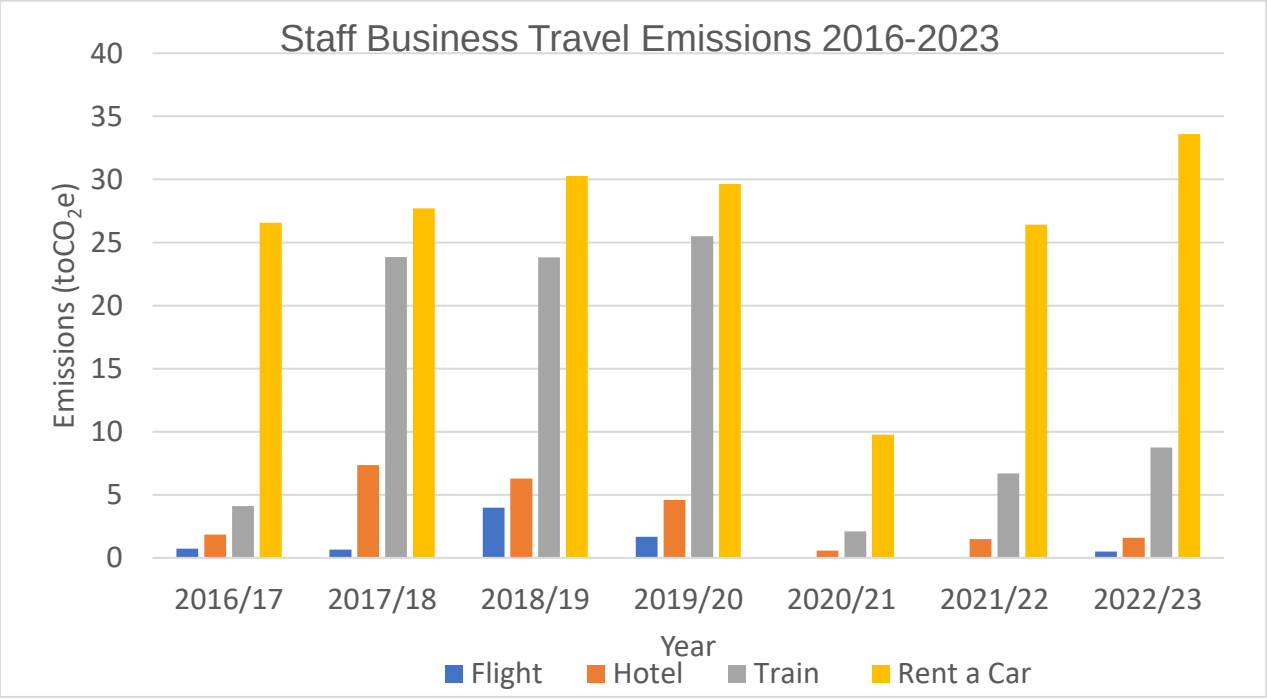


Figure 5: Emissions associated with staff business travel from 2016 to 2023.

Car Club

33. From 2017, the Council began using Enterprise Car Club pool vehicles. The fleet consists of vehicles that run on unleaded petrol, diesel, hybrid electric and full electric. Currently, nearly 60% of journeys have used unleaded petrol, 30% journeys have been with hybrid vehicles and electric and diesel make up less than 10% of journeys.

34. Emissions associated with business travel have experienced a 24% increase on last year (33.6tCO_2/yr). To reduce emissions from the Car Club, the proportion of hybrid and electric vehicles is increasing, and staff are encouraged to use electric and hybrid vehicles rather than petrol or diesel. Enterprise use a preventative maintenance scheme which helps to keep vehicles running more efficiently.

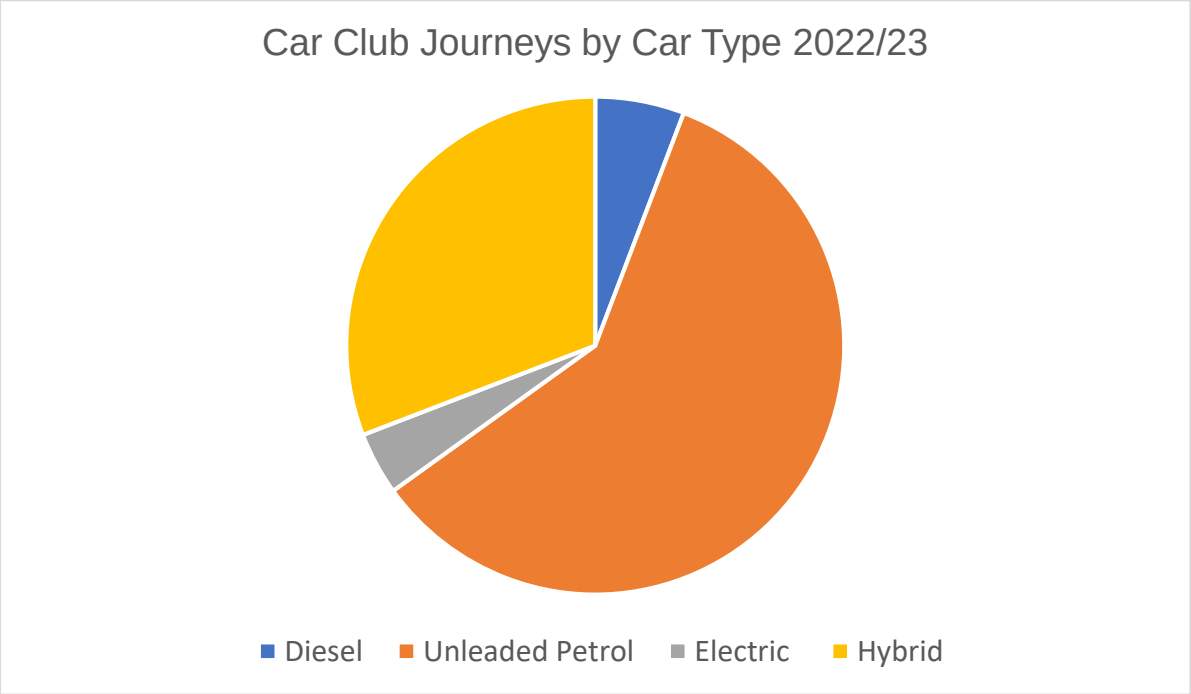


Figure 6: Journeys taken by different car types in the CYC car club during 2022/23.

Waste/Recycling

35. Waste from our corporate buildings accounted for 6.5tCO_2e in 2022/23, a 10% decrease from 2021/22 figures.

36. Waste from our school sites accounted for 7.8tCO_2e of our total emissions in 2022/23.

37. The recycling rate at our corporate sites is 21%, increasing by 2.5% from 2021/22. Additional recyclable materials and food waste may be removed from the general waste during processing at Allerton Waste Recovery Park. Electricity is created from the general waste through incineration as an alternative to landfill.

38. In 2023, the Council formed a Circular Economy group and is set to become a signatory of the York and North Yorkshire LEP's Circular Towns pledge. Emphasising circularity within our waste management practices will help to reduce the amount of waste produced.

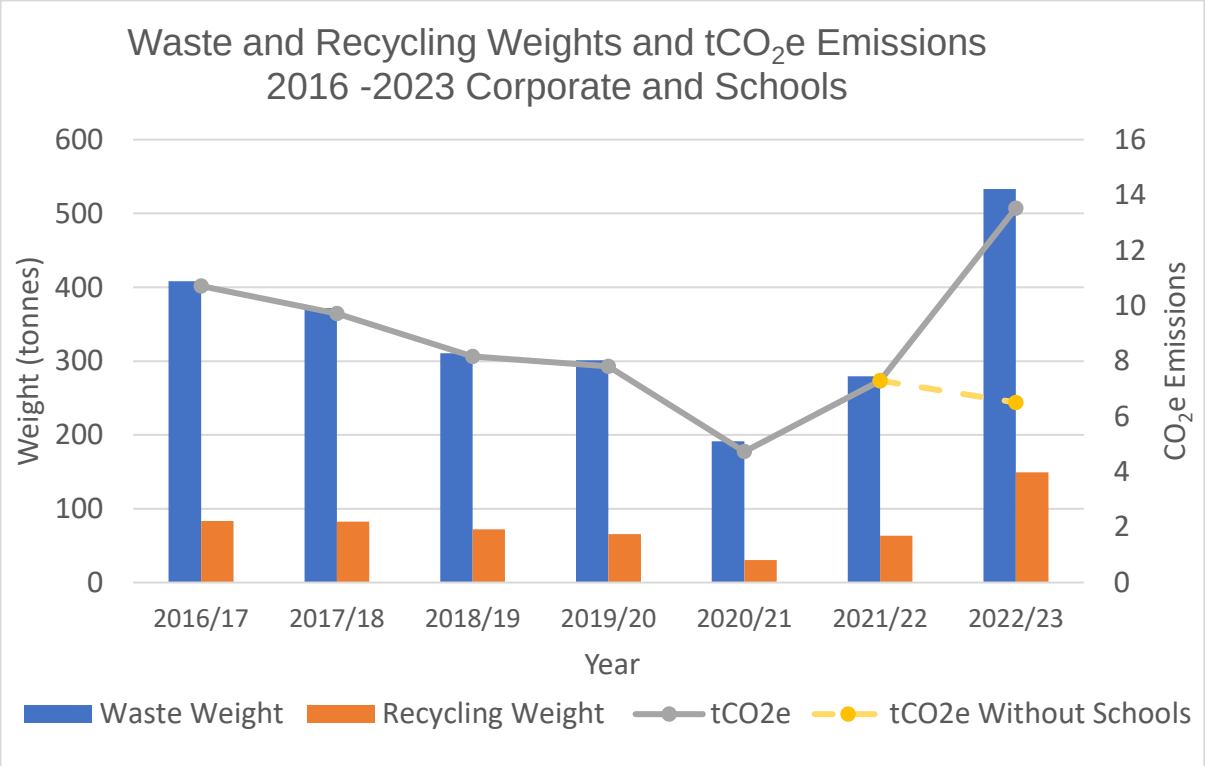


Figure 7 The emissions produced by waste and recycling from 2016-2023.

Procurement

39. Emissions associated with procured goods and services are not included in this report. However, we are working with the York & North Yorkshire LEP to calculate our Scope 3 emissions.

40. As part of this work, a template sustainable procurement policy has been produced. This template will be considered in the next review of our procurement policy.

Material Use

41. Expanding the extent of our reporting to cover a wider range Scope 3 emissions sources allow the Council to build a greater picture of corporate emissions in our wider supply chain. Consequently, we have incorporated the emissions associated with our Building Services.

42. Material usage from our corporate activities accounted for 365tCO_2e in 2022/23. Metals, sanitaryware and boilers represent the Council's most carbon intensive material usage, accounting for 68% of emissions in this area.

43. Data collected for this period accounted for 32% of the products used. We will continue to expand the number of materials accounted for in our supply chain in order to build a more comprehensive picture of our Scope 3 emissions.

44. The Council will reduce Scope 3 emissions from material usage by following its sustainable procurement policy, working with local suppliers and choosing less carbon intensive materials where feasible.

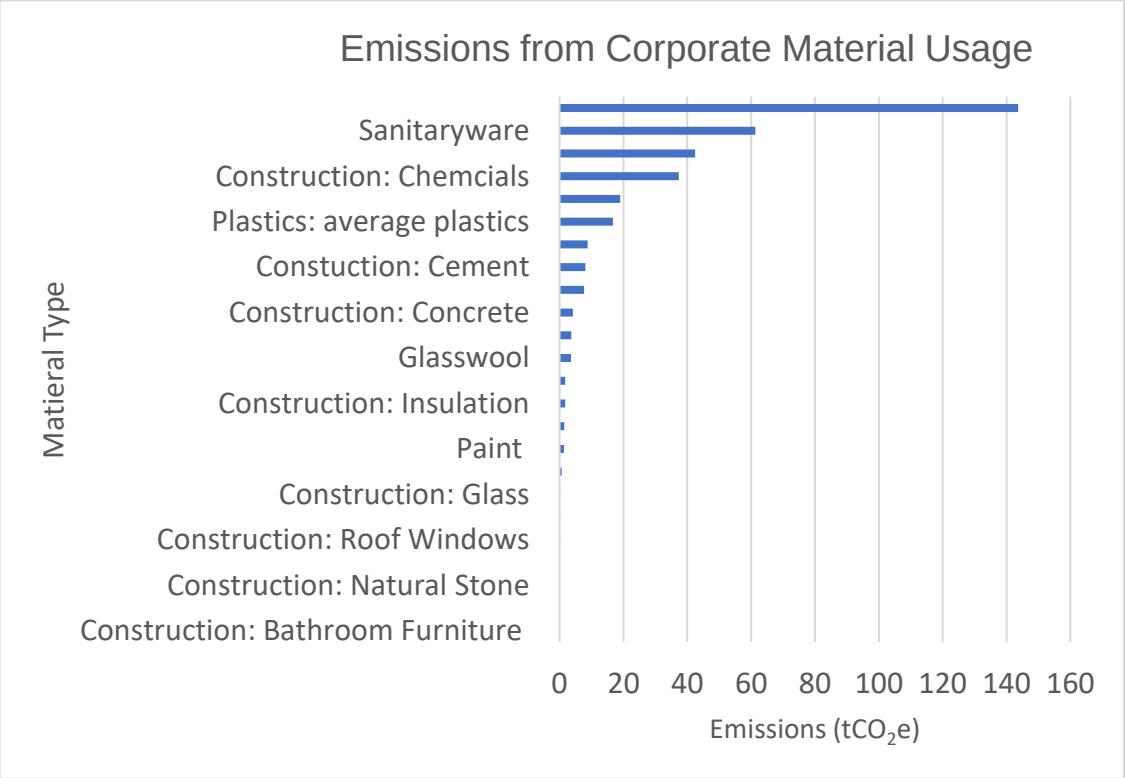


Figure 8: Emissions produced by corporate material usage in 2022/23.

Staff Commuting

45. A survey to assess emissions from staff commuting was distributed in September-October 2023. Emissions generated from staff travelling to and from work accounted for 10tCO_2e in 2022/23.

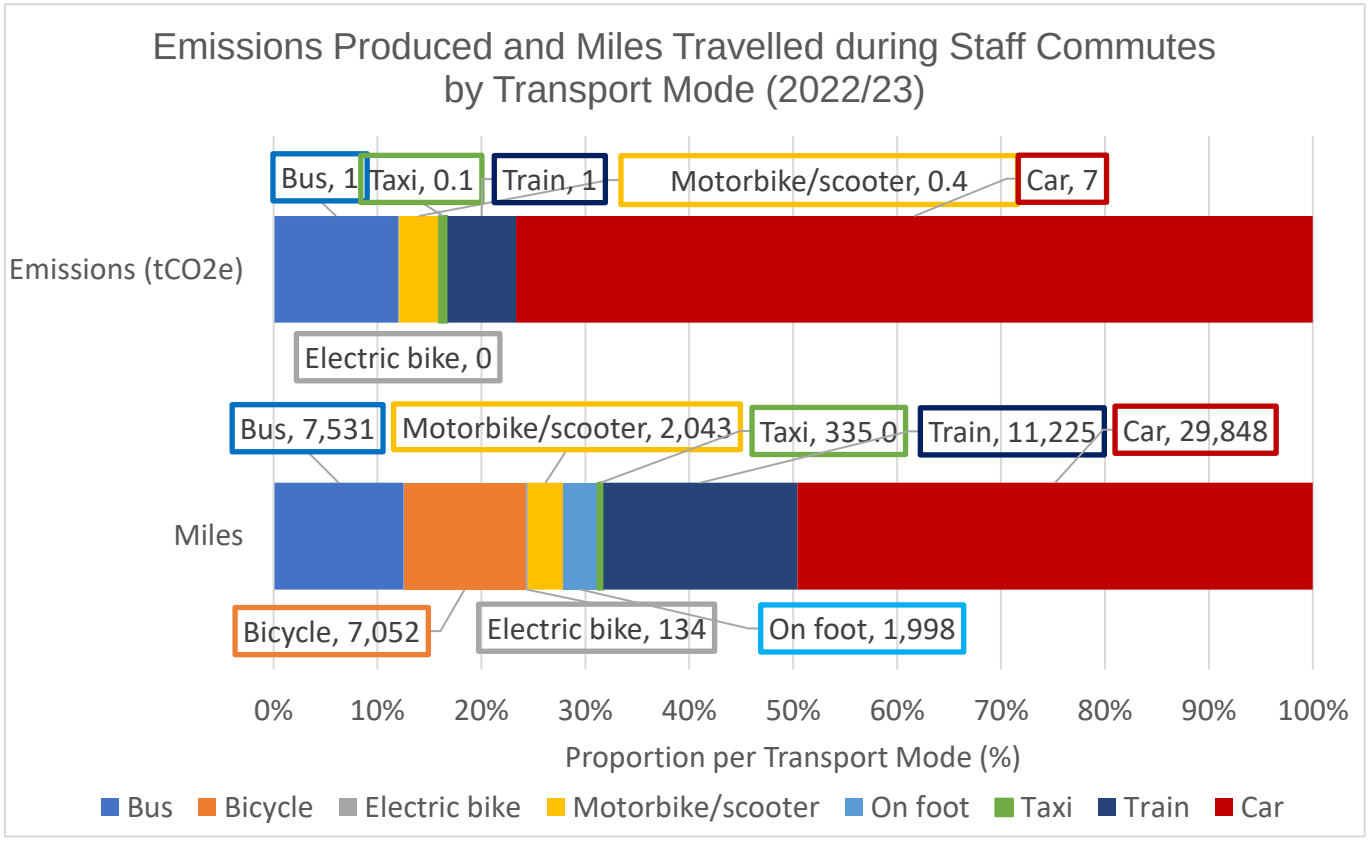


Figure 9: Emissions produced, and miles travelled across different transport types during staff commutes.

46. Car usage accounts for the largest proportion of commuter emissions (77%). These emissions are predominantly from petrol and diesel cars. Public transport (buses and trains) account for 18% of emissions from commuting (1.8tCO_2e).

47. 70% of survey respondents used active travel (cycling or walking), at some point in their commutes to and from work. Increasing the proportion of active travel in commutes would reduce emissions and enhance health outcomes for staff.

48. Nationally, only 2% of people travel to work using cycling as their main transport mode[6]. At the Council, over 16% of commuters cycled as their primary mode of transport. This rises to 36% when considering those who use bikes as a secondary mode of transport).

49. The Council encourage sustainable employee commuting through a car sharing scheme, pool bikes, a cycle scheme, secure cycle-parking and BetterPoints.

50. An updated Council Travel Plan is under development to encourage behaviour change towards active travel and increase uptake of public transport.

Working From Home

51. A survey to assess emissions generated from working from home was conducted in 2023. An estimated 723 tCO_2e were produced as a result of home working in 2022/23. This incorporates the use of office equipment, lighting and heating during the workday.

52. While energy consumption practices when working from home is beyond the Council's direct sphere of influence, we encourage energy saving behaviours amongst staff, and advertise our energy efficiency advice resources.[7]

Actions

53. The City of York Council: Annual Carbon Emissions Report 2021/22 provided several actions for reducing our corporate emissions. Since then, the Carbon Reduction team has worked across the Council and with other service areas to:
    - Produce heat decarbonisation plans for 21 schools, 5 leisure centres and 7 corporate buildings.
    - Work with Solar for Schools to install solar panels on two schools, with a further two schools due to have solar panels installed in 2023/24.

[6] 2021 Census Data https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/traveltoworkenglandandwales/census2021

1.1 [7] Energy Efficiency https://www.york.gov.uk/EnergyEfficiency

- Increased the proportion of hybrid and electric vehicles through the fleet electrification programme.
- Establish a Travel Plan Working Group to increase sustainable travel at the Council's workplaces across the fleet, staff business travel and staff commuting.
- Formed a Circular Economy group and is set to become a signatory of the York and North Yorkshire LEP's Circular Towns pledge.

54. Other actions identified to reduce corporate emissions include:

- Work across the Council and with other service areas to create interim targets towards our goal of net zero by 2030.
- Incorporate sustainable procurement and circular economy principles into our purchasing decisions.
- Work with YNY LEP to develop a methodology to calculate Scope 3 emissions associated with Council activity.
- Review the corporate waste contract and undertake a waste audit.

Consultation Analysis

55. The Council's internal Climate Change Programme Board was consulted to overview the corporate emissions data in its capacity to provide oversight, monitor progress, identify opportunities and manage risk relating to the Climate Change Programme.

56. The Climate Change Programme Board agreed priorities are to ensure increased visibility of the impact the Council is making on reducing carbon emissions and increased awareness of the understanding individual projects make to contribute to reduction in emissions.

Organisational Impact and Implications

57.

- **Financial** - The report identifies a number of actions that the carbon reduction team propose to undertake over the coming year. The majority require officer time and can be contained within agreed budgets. The Council has been successful in sourcing external funding and will continue to maximise such funding to match fund Council contributions.

The Council has set capital funds aside to upgrade the fleet with electric vehicles where practical. There are also budgets set aside for replacing lights in Council buildings with LED.

- **Human Resources (HR) –** No implications
- **Legal -** There are no legal implications linked to the recommendations specifically referred to within this report.

  Any issues requiring support from Legal Services will however need to be addressed as and when they arise.

- **Procurement** – No implications
- **Health and Wellbeing** – Public health support the continued policy of reducing carbon emissions in the City. Reducing carbon emissions and addressing climate change has a range of well evidenced and positive impacts on our resident's health and wellbeing. Not only does this impact on improved air quality, reducing carbon emissions it contributes to a reduction in urban heat and therefore potentially impacts on reducing heat-related illnesses. Promoting cycling and walking for commuter journeys promotes increased physical activity and better mental health, cleaner energy sources, enhanced food security, economic benefits, and the development of sustainable communities. These benefits highlight the interconnectedness of environmental improvement and improving human health.

- **Environment and Climate action** – Reducing corporate carbon emissions to net zero represents a key commitment within the council plan. This report represents progress against that ambition.
- **Affordability** – No implications
- **Equalities and Human Rights -** The Council recognises, and needs to take into account its Public Sector Equality Duty under Section 149 of the Equality Act 2010 (to have due regard to the need to eliminate discrimination, harassment, victimisation and any other prohibited conduct; advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it and foster good relations between persons who

share a relevant protected characteristic and persons who do not share it in the exercise of a public authority's functions).

At the time of writing there are no equalities implications identified in respect of the specific matters discussed in this report. However, an Equalities Impact Assessment has been carried out for the York Climate Change Strategy and recommendations in this report will identify any equalities implications on a case-by-case basis, and these will be addressed in future reports.

- **Data Protection and Privacy** – No implications
- **Communications** – No implications
- **Economy**– No implications

Risks and Mitigations

58. There are no known risks associated with the above.

Wards Impacted

59. All wards.

Contact details

For further information please contact the authors of this Decision Report.

Author

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Report approved:	Yes
Date:	10/11/2023

Background papers

Council approve The Climate Change Strategy 2022-2032 Agenda for Council on Thursday, 15 December 2022, 6.30 pm (york.gov.uk) item 36

Council approve the Council Plan 2023-2027 Agenda for Council on Thursday, 21 September 2023, 6.30 pm (york.gov.uk) item 6

Corporate Emissions Report 2021/22
https://modgov.york.gov.uk/documents/s164307/EMDS_Corporate%20Emissions_Dec%202022_.pdf

Corporate Emissions Report 2020/21
https://modgov.york.gov.uk/documents/s153499/EMDS_Corporate%20Emissions%20Report_2021.pdf

Annexes: None

Meeting:	Decision Session - Executive Member for Environment and Climate Emergency
Meeting date:	21/11/2023
Report of:	Claire Foale, Assistant Director of Policy and Strategy
Portfolio of:	Executive Member for Environment and Climate Emergency

Decision Report: York Emissions Inventory Report 2023

Subject of Report

1. This report presents the Emissions Inventory for the city of York. The data is used to monitor progress against the council ambition to achieve net zero carbon for the city by 2030.

2. The emissions inventory was compiled using the Department for Energy, Security and Net Zero (DESNZ) UK local authority and regional greenhouse gas emissions dataset[1].

3. City-wide emissions accounted for 816ktCO_2e in 2020, a 12% decrease from 2019 (912ktCO_2e). This is partly due to the limitations on travel and services during the COVID-19 pandemic.

4. While the focus of our inventory reporting is Scope 1 and 2 emissions, as these fall directly under the control of actors within the city, we are exploring improved carbon accounting and management options to include scope 3 (indirect) emissions in the future.

5. The built environment and transport sector account for nearly 90% of our direct local emissions, with the council responsible for less than 3% of city-wide emissions.

[1] Local Authority and Regional Greenhouse Gas Data https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

Policy Basis for Decision

6. Climate is one of the four core commitments in the Council Plan (2023-2027), requiring the council to understand the impact our actions have on the environment.

7. In 2019, City of York Council declared a Climate Emergency and set the ambition for York to reach net zero by 2030. The York Climate Change Strategy (2022) sets the framework required to meet this ambition. This report demonstrates the city's progress towards net zero.

Financial Strategy Implications

8. This report identifies the value of emissions across the city and annual trends. There are no identifiable financial implications arising from the recommendations in the report.

Recommendation and Reasons

9. The Executive Member is asked to:

   i) Approve the York Emissions Inventory Report for publication.

   Reason: Provide transparency of progress against the ambition for York to be net zero by 2030.

Background

10. In 2019, City of York Council declared a Climate Emergency and set an ambition for York to be a net zero city by 2030. This ambition is reflected in the York Climate Change Strategy (2022) and the Council Plan (2023-2027). To monitor progress against this ambition, an annual report is produced for city-wide emissions.

11. This report presents the latest York Emissions Report Inventory (2023) for the reporting year 2020. It uses source data from the UK local authority and regional emissions dataset, which provides a spatial disaggregation of greenhouse gas emissions from the UK Greenhouse Gas Inventory (GHGI). Previous reports, available

from the council website[2], were compiled using the SCATTER tool[3]. The SCATTER tool was temporarily discontinued in 2023; therefore, this year's emissions report has been compiled using the GHGI. This does not significantly alter the outcome of the report, as GHGI is also used as the source data for SCATTER.

12. GHGI is updated annually on behalf of the Department for Energy Security and Net Zero (DESNZ) as part of the National Atmospheric Emissions Inventory (NAEI) programme. The most recent estimates published by DESNZ relate to two years earlier; as such, the data does not reflect the current level of emissions.

13. The data provided by DESNZ represents a disaggregation of national data metrics for area size, GDP and population. As such, this data does not include any unique emissions reduction as a result of York climate action, such as the bus electrification programme, the Home Upgrade Grant scheme or solar for schools.

14. The SCATTER tool will be reintroduced next year following recent funding from DESNZ. Once reintroduced SCATTER will continue inform the basis of the council's annual emissions inventory.

York's City-Wide Emissions

15. York's Scope 1 and 2 (Direct) emissions were in 816ktCO_2e in 2020[4], a 12% decrease from 2019 (912ktCO_2e).

16. The distribution of York's emissions is similar to previous years, with the built environment accounting for 56% and transport 32% of emissions. Argriculture and Land-Use, Industry and Waste each make up five 5% or less of city-wide emsisions.

[2] https://modgov.york.gov.uk/documents/s153498/EMDS_York%20Emissions%20Inventory%20Report_2021.pdf
[3] https://scattercities.com/
[4] *UK local authority and regional greenhouse gas emissions national statistics_York 2020.xlsx*

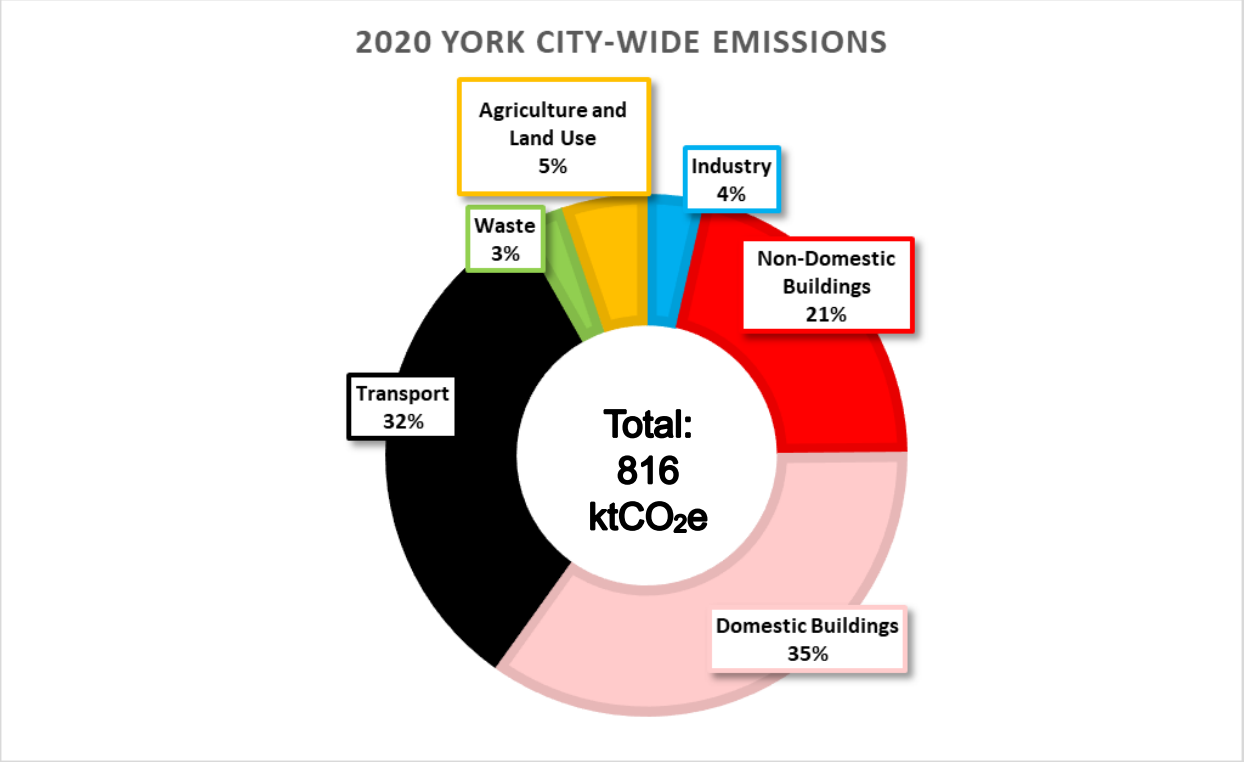

Figure 1 York's city-wide emissions in 2020 by sector.

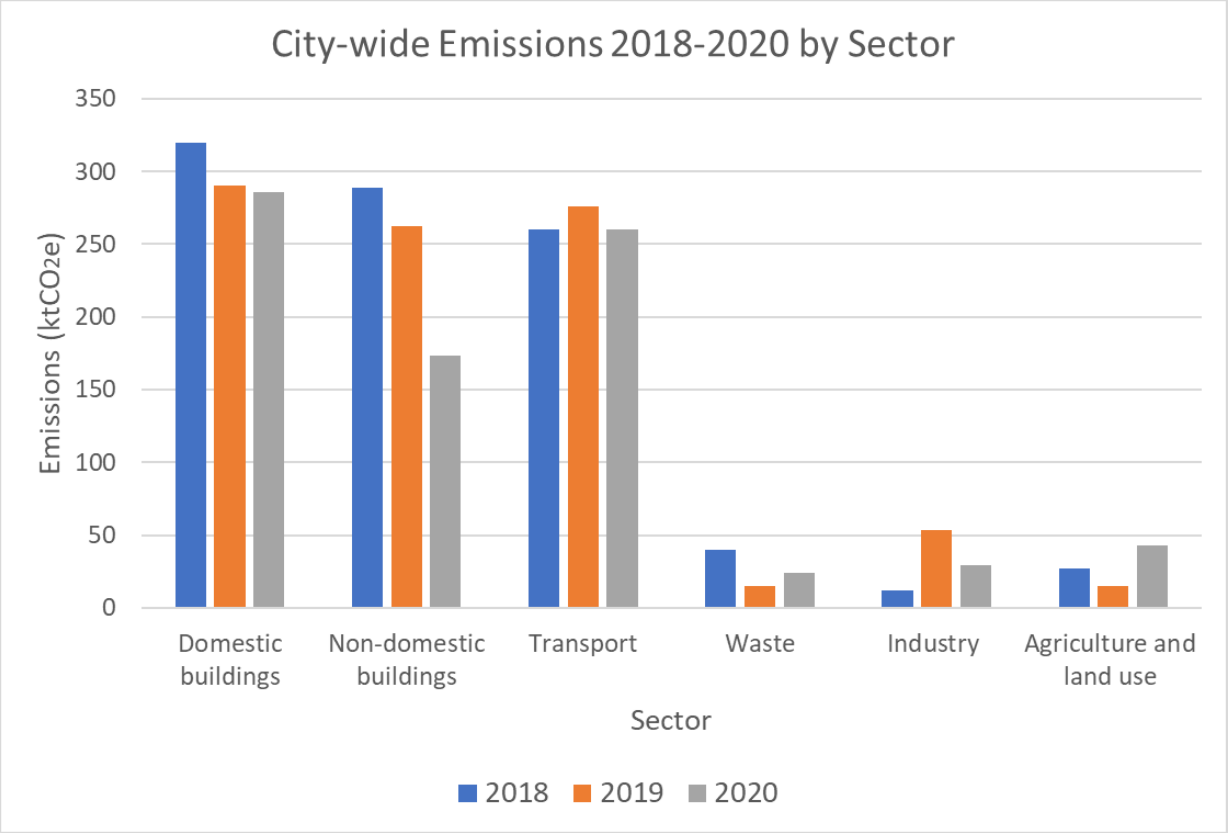

Figure 2: York's city-wide emissions profile from 2018 to 2020.

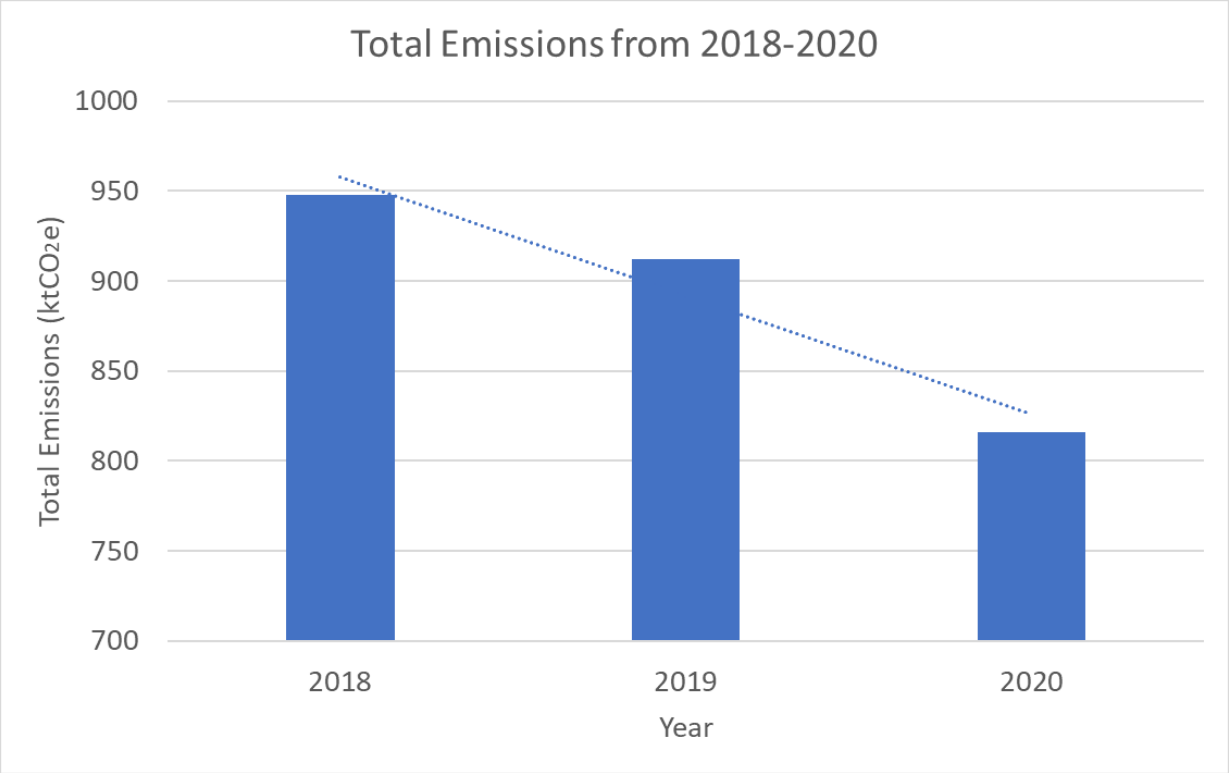

Figure 3: York's city-wide emissions from 2018 to 2020.

Built Environment

17. The decrease in emissions between 2019 and 2020 (-96ktCO$_2$e) can be partly attributed to the COVID-19 pandemic, which resulted in limitations for several sectors and prompted many workplaces to close[5].

18. Non-domestic emissions are 34% lower than in 2019; likely reflecting the shift towards home and hybrid working patterns due to the COVID-19 measures in 2020.

19. Domestic emissions have remained mostly unchanged since 2019.

Transport

20. Transport is the second largest contributor to York's city-wide emissions, representing 32% of total locally derived emsisions in 2020.

[5] https://www.jpl.nasa.gov/news/emission-reductions-from-pandemic-had-unexpected-effects-on-atmosphere

21. Emissions reduced by nearly 6% between 2019 and 2020, likely as a result of travel restrictions introduced during the COVID-19 pandemic and increased levels of homeworking.

Agriculture and Land-Use

22. Agriculture and Land Use represent 5% of city-wide emissions, with agriculture responsible for the majority of these (98%).

23. Most emissions produced through agricultural practices within York's local authority boundary are from livestock (30.7ktCO_2e), and farming soil practices (11ktCO_2e).

24. While some aspects of land-use represent carbon sinks[6], cropland and settlement emissions result in an overall net gain in carbon emissions (0.9ktCO_2e).

Consultation Analysis

25. The Council's internal Climate Change Programme Board was consulted to overview the city-wide emissions data in its capacity to provide oversight, monitor progress, identify opportunities and manage risk relating to the Climate Change Programme

Organisational Impact and Implications

26.

- **Financial** - This report identifies the value of emissions across the city and annual trends. There are no identifiable financial implications arising from the recommendations in the report.
- **Human Resources (HR)** – No implications
- **Legal** - There are no legal implications linked to the recommendations specifically referred to within this report.

  Any issues requiring support from Legal Services will however need to be addressed as and when they arise.
- **Procurement –** No implications

[6] Grasslands and Wetlands represented a -14.6ktCO_2e carbon sink in York during 2020. https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics-2005-to-2021

- **Health and Wellbeing** - The ambition to reduce emissions is beneficial for public health and the health of residents. Quite simply this results in cleaner air, decreased exposure to harmful pollutants, and a therefore a reduced risk for residents of various diseases and health conditions exacerbated by emissions. These improvements in health have wide-ranging benefits for society, including increased quality of life and reduced long term healthcare costs.
- **Environment and Climate action** – City-wide emissions reporting allows us to track progress against the Council ambition for York to be net zero by 2030.
- **Affordability** – No implications
- **Equalities and Human Rights** - The Council recognises, and needs to take into account its Public Sector Equality Duty under Section 149 of the Equality Act 2010 (to have due regard to the need to eliminate discrimination, harassment, victimisation and any other prohibited conduct; advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it and foster good relations between persons who share a relevant protected characteristic and persons who do not share it in the exercise of a public authority's functions).

  At the time of writing there are no equalities implications identified in respect of the specific matters discussed in this report. However, an Equalities Impact Assessment will be carried out in due course and the process of consulting on the recommendations in this report will identify any equalities implications on a case-by-case basis, and these will be addressed in future reports.
- **Data Protection and Privacy** – No implications
- **Communications** – No implications
- **Economy** – No implications

Risks and Mitigations

27. The following risks have been identified:

    - **Transparency**: Wider emissions reporting refers, in the main, to city partner and resident activity. Partners will use their own methodology to measure their carbon impact and there may be occasions when data is not aligned. City partners will work together to present a shared narrative about data as it is published.

- **Time**: With a 2.5 year time lag for the data, it will be some time before the impact of policies is really understood. This brings a risk that inadvertent and negative impacts are not acted on quickly enough. To mitigate this risk the council will work with city partners, and draw on available evidence to better understand impact until the accurate data is available.

- **Aggregation**: Both the Local Authority and Regional Greenhouse Gas Dataset and the SCATTER dataset rely on disaggregation of national data and apportionment to York's geography. While this is the best available indicator for sub-national area-wide emissions, it does not accurately reflect the emissions local to York. Work is ongoing to identify a bottom-up approach to emissions reporting that will more accurately represent York's area-wide emissions inventory.

Wards Impacted

28. All wards.

Contact details

For further information please contact the authors of this Decision Report.

Author

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Date:	10/11/2023

Background papers

Council approve The Climate Change Strategy 2022-2032 Agenda for Council on Thursday, 15 December 2022, 6.30 pm (york.gov.uk) item 36

Council approve the Council Plan 2023-2027 Agenda for Council on Thursday, 21 September 2023, 6.30 pm (york.gov.uk) item 6

York Emissions Inventory Report 2022
https://modgov.york.gov.uk/documents/s164308/EMDS%20City%20Emissions%20Dec%202022.pdf

York Emissions Inventory Report 2021
https://modgov.york.gov.uk/documents/s153498/EMDS_York%20Emissions%20Inventory%20Report_2021.pdf

Annexes

Annex A: UK local authority and regional greenhouse gas emissions national statistics York 2020

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Country	Country Code	Region	Region Code	Local Authority	Local Authority Code	Calendar Y	LA GHG Sector	LA GHG Sub-sector	Greenhou	Territorial	CO2 emiss	Mid-year F	Area (km2)
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Electricity	CO2	2.939094	2.939094	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Electricity	CH4	8.71E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Electricity	N2O	2.03E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Gas	CO2	0.705911	0.705911	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Gas	CH4	1.95E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Gas	N2O	4.86E-04	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Livestock	CH4	23.01106	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Livestock	N2O	7.645554	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture 'Other'	CO2	4.121004	4.121004	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture 'Other'	CH4	0.044747	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture 'Other'	N2O	5.01E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Soils	CO2	1.762476	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Agriculture	Agriculture Soils	N2O	9.27933	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial Electricity	CO2	32.88019	32.88019	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial Electricity	CH4	0.974402	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial Electricity	N2O	0.226605	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial Gas	CO2	20.385	20.385	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial Gas	CH4	0.563852	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial Gas	N2O	0.014043	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial 'Other'	CO2	0.454607	0.454607	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial 'Other'	CH4	4.07E-03	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Commercial	Commercial 'Other'	N2O	1.42E-03	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic Electricity	CO2	60.14721	60.14721	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic Electricity	CH4	1.782458	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic Electricity	N2O	0.414524	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic Gas	CO2	199.6343	199.6343	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic Gas	CH4	5.521913	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic Gas	N2O	0.13753	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic 'Other'	CO2	16.30237	16.30237	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic 'Other'	CH4	1.651844	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Domestic	Domestic 'Other'	N2O	0.282235	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry Electricity	CO2	19.7777	19.7777	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry Electricity	CH4	0.58611	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry Electricity	N2O	0.136305	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry Gas	CO2	56.28735	56.28735	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry Gas	CH4	1.556916	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry Gas	N2O	0.038777	0	202.101	272.0148

England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry 'Other'	CO2	23.6074	23.6074	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry 'Other'	CH4	0.269556	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Industry 'Other'	N2O	2.998196	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Large Industrial Installations	CO2	5.77E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Large Industrial Installations	CH4	6.80E-03	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Industry	Large Industrial Installations	N2O	6.43E-03	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Cropland	CO2	9.394308	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Cropland	CH4	0.029423	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Cropland	N2O	0.411677	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Forest land	CO2	-8.24805	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Forest land	CH4	0.00012	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Forest land	N2O	0.044628	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Grassland	CO2	-6.44898	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Grassland	CH4	0.010217	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Grassland	N2O	0.001369	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Indirect N2O	N2O	0.185531	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Settlements	CO2	5.159424	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Settlements	CH4	0.003174	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	LULUCF	LULUCF Net Emissions: Settlements	N2O	0.383063	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector Electricity	CO2	16.09118	16.09118	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector Electricity	CH4	0.476861	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector Electricity	N2O	0.110898	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector Gas	CO2	16.68654	16.68654	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector Gas	CH4	0.461552	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector Gas	N2O	1.15E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector 'Other'	CO2	3.73E-02	0.037293	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector 'Other'	CH4	1.24E-03	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Public Sector	Public Sector 'Other'	N2O	3.89E-04	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Diesel Railways	CO2	6.895688	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Diesel Railways	CH4	3.13E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Diesel Railways	N2O	1.92E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Road Transport (A roads)	CO2	140.8605	140.8605	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Road Transport (A roads)	CH4	0.707401	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Road Transport (A roads)	N2O	1.176795	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Road Transport (Minor roads)	CO2	105.0316	105.0316	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Road Transport (Minor roads)	CH4	0.601801	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Road Transport (Minor roads)	N2O	0.948431	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Transport 'Other'	CO2	4.031742	4.031742	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Transport 'Other'	CH4	5.91E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Transport	Transport 'Other'	N2O	2.72E-02	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Waste managemen	Landfill	CH4	14.56724	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Waste managemen	Waste management 'Other'	CO2	0.184618	0.184618	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Waste managemen	Waste management 'Other'	CH4	6.009355	0	202.101	272.0148
England	E92000001	Yorkshire and the Humber	E12000003	York	E06000014	2020	Waste managemen	Waste management 'Other'	N2O	3.545558	0	202.101	272.0148