Cambridge City Council

Environment and Community Scrutiny Committee

Date: Thursday, 26 September 2024

Time: 6.00 pm

Venue: Council Chamber, The Guildhall, Market Square, Cambridge, CB2 3QJ [access the building via Peashill entrance]

Contact: democratic.services@cambridge.gov.uk, tel:01223 457000

Agenda

1 Apologies for Absence

2 Declarations of Interest

3 Minutes (Pages 3 - 18)

4 Public Questions

Decisions for the Executive Councillor for Climate Action and Environment

5 Climate Change Strategy and Carbon Management Plan Annual Report 2023/24 (Pages 19 - 82)

6 Consultation on the Expansion of the Smoke Control Area (SCA) (Pages 83 - 160)

Environment and Community Scrutiny Committee Members: Pounds (Chair), Nestor (Vice-Chair), Ashton, Divkovic, Glasberg, Hauk, Payne and Swift

Alternates: Flaubert, Griffin, Martinelli, Sheil and Tong

Executive Councillors: Gilderdale (Statutory Deputy Leader with Executive Responsibility for Economy and Skills), Holloway (Executive Councillor for Community Safety, Homelessness and Wellbeing), Moore (Executive Councillor for Climate Action and Environment), Smart (Executive Councillor for Open Spaces and City Services) and Wade (Executive Councillor for Communities)

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Further information on public speaking will be supplied once registration and the written question / statement has been received.

ENVIRONMENT AND COMMUNITY SCRUTINY COMMITTEE 27 June 2024
6.00 - 7.30 pm

Present: Councillors Nestor (Vice-Chair), Ashton, Divkovic, Glasberg, Griffin, Hauk, Payne and Swift

Executive Councillors: Carling (Executive Councillor for Open Spaces and City Services), Davey (Leader of the Council) and Holloway (Executive Councillor for Community Safety, Homelessness and Wellbeing)

Officers:
Assistant Chief Executive, Chief Executive's Office: Andrew Limb
Director, Communities Group: Sam Scharf
Community Funding and Voluntary Sector Manager: Julie Cornwell
Community, Sport & Recreation Manager: Ian Ross
Technical & Specialist Services Manager: John Richards
Urban Growth Project Manager: Tim Wetherfield
Equality & Anti-Poverty Officer: Helen Crowther
Committee Manager: James Goddard
Meeting Producer: Boris Herzog

FOR THE INFORMATION OF THE COUNCIL

24/27/EnC Apologies for Absence

Apologies were received from Councillor Pounds, Councillor Griffin attended as her Alternate.

24/28/EnC Declarations of Interest

No declarations of interest were made.

24/29/EnC Minutes

The minutes of the meeting held on 21 March and 23 May 2024 were approved as a correct record and signed by the Chair.

24/30/EnC Public Questions

Public Questions - Pesticide Free Cambridge

1. During the most recent Herbicide-Reduction Working Group in March 2024 (1), it was agreed that working group meetings would continue on a regular basis. Since March we had been trying repeatedly to schedule a follow-up meeting, to no avail. Could the council confirm please whether there were still plans to continue the Working Group and when the next meeting would be held? There were a number of action points from the last meeting which remain stalled, and on which we would like an update please.
2. It was agreed that the City Council would launch an effective communications plan to inform residents about the dangers of personal use of pesticides, how this might conflict with current policy; how residents and businesses should not, for instance, be using pesticides on the pavement or road outside private properties (not only does this compromise the Herbicide Reduction Plan (HRP), it was also, in our understanding, illegal); and to share information about non-synthetic alternatives. The comms plan also included plans for signage/information boards on selected unsprayed verges to explain and celebrate the HRP, so as to avoid potential negative feedback of the kind that led to the reversal of the County Council's own herbicide-free policy earlier this year. Could the council clarify what was happening with the Comms plan and whether Pesticide-Free Cambridge would, as agreed, be offered the opportunity to collaborate on this?
3. Further to what was agreed at the March meeting, had the City Council communicated with other stakeholders such as the County Council, the County Highways Green Team, University of Cambridge Colleges, and contractors from energy firms and so on? We contacted you several times earlier in the Spring to report on evidence that herbicide was still being used in various locations around the city in complete contradiction to the city council's policy, and we were concerned not to had received a response from you.
4. In March, the City Council announced that they had approved the budget for the purchase of new machinery with which to better manage vegetation on roads and pavements in a range of environments (2). Had this equipment been purchased and was it now in use around the city? In this regard, it was notable that there were large quantities of vegetation, including some big plants, that had built up on roads (e.g. in Trumpington) which does little to inspire confidence in the HRP.
5. We would greatly appreciate clarification as to following the roll out of herbicide-free methods across the city in March 2024, whether City

Council housing ~~out~~with the original four trial wards was now also being managed in a herbicide-free way or if, as was stated in spring 2023, they continue to be treated twice-yearly with herbicides. It would seem completely anomalous, not to mention a wasted opportunity, should they not be subsumed within the herbicide-free management programme.

References:
1. https://www.pesticidefreecambridge.org/post/record-of-our-meetings-with-councillors-schools-and-partners-groups
2. https://www.pesticidefreecambridge.org/post/press-release-following-cambs-county-council-return-to-use-of-herbicides

The Executive Councillor for Open Spaces and City Services responded:

i. The last meeting with stakeholders was in March 2024. Due to the pre-election period before May and July elections, it had not been possible to timetable meetings since. The intention was to timetable Herbicide Working Groups on a quarterly basis.
ii. The City Council had an active communications plan to inform residents about being herbicide free and this was the priority. Was happy to liaise about this outside of the meeting.
iii. The County Council had left the city off the list of areas where herbicide would be used. The City Council would mange this area instead according to its own policies.
iv. The budget for new machinery had been approved, and the City Council were in the process of procuring equipment. Understood the importance of effective vegetation management and were expediting this process. Some of the new machinery was operational and had been used in a variety of locations such as Anstey Way and Lovell Road. It was being used in a programmed schedule of streets, ward by ward.
v. Following the roll-out of herbicide-free methods citywide in March 2024, the Council had assessed the inclusion of City Council housing beyond the initial four trial wards in this program. It was agreed in March that expanding herbicide-free management to all housing was a valuable opportunity.

24/31/EnC To Note Record of Urgent Decision Taken by the Executive Councillor for Climate Action and Environment

24/31/EnCa Material Recycling Facility (MRF) Contract 2024

The decision was noted.

Councillor Ashton recognised the need for out of cycle decisions for operational reasons. He asked, that where possible, decisions should be brought to committee for scrutiny in future.

24/31/EnCb Redevelopment of Silver Street Public Toilets – Construction
The decision was noted.

24/32/EnC SOS Funding Round - Streets & Open Spaces

Matter for Decision
The Council helped to mitigate the impact of housing development on local facilities and amenities using S106 contributions from developers. The Executive Councillor oversaw the use of S106 funds secured under the contribution types relating to informal open spaces, play provision for children and teenagers and public realm improvements.

The March 2024 S106 report to this Committee highlighted the need to develop a future programme of S106-funded projects in consultation with local councillors. The aim was to make effective and timely use of remaining generic S106 funds alongside newer specific contributions related to particular locations. The intention had been to present the proposed programme (particularly in relation to the Council's outdoor play areas) in June. However, as this meeting now coincides with the General Election run-up period, it would be more appropriate to report this to the Committee in September instead.

In the meantime, this June 2024 report focused on those generic S106 contributions across the informal open spaces, play provision and public realm contribution types that need to be spent or contractually committed to relevant projects within the next year or so. It also considered, in the case of play provision, how the use of relevant specific S106 contributions could support the use of these time-limited S106 funds. Allocating these S106 funds to projects now would provide more time for project planning, consultation and procurement.

Decision of Executive Councillor for Open Spaces and City Services

i. Agreed to allocate at least £55,000 of generic informal open spaces S106 funds to supplement the Cambridgeshire and Peterborough Combined Authority's grant for a strategic biodiversity improvement project at Logan's Meadow Local Nature Reserve (East Chesterton

ward), subject to business case approval (see section 4 of the Officer's report);

ii. Agreed to allocate £13,054 of play provision S106 funding for improvements to Lichfield Road play area in Coleridge ward (based on £3,987 of generic contributions and £9,067 of specific contributions), subject to local consultation and business case approval (see section 5 of the Officer's report);

iii. Agreed to allocate £37,941 of play provision S106 funding for improvements to King George V Recreation Ground in Trumpington ward (based on £21,671 of generic contributions and £16,270 of specific contributions), subject to local consultation and business case approval (see section 5 of the Officer's report); and

iv. Agreed to allocate £69,018 of public realm S106 funds from a development in Harvest Way (Abbey ward) towards public realm improvements in the vicinity of that development, subject to business case approval (see Section 6 of the Officer's report).

Reason for the Decision
As set out in the Officer's report.

Any Alternative Options Considered and Rejected
Not applicable.

Scrutiny Considerations
The Technical & Specialist Services Manager said the following in response to Members' questions:

i. The intention was to make all new play provision inclusive for all users. Different items of equipment would be provided for people with different/particular needs. Details were listed in the Equalities Impact Assessment in Appendix C of the Officer's report.

ii. Officers recommended allocating funding to projects scheduled to be delivered soonest to make the most effective use of funds. Short timescales for delivery meant that consultation with residents/councillors must be appropriate/proportionate for delivery time.

iii. Officers were keen to engage local councillors on how best to use funding (as much as possible). Updates on scheme delivery were published on City Council webpages.

iv. Officers were aware of, and reviewing, various play provision accessibility issues such as surface of play areas and joints between materials.

The Committee unanimously resolved to endorse the recommendations.

The Executive Councillor approved the recommendations.

Conflicts of Interest Declared by the Executive Councillor (and any Dispensations Granted)
No conflicts of interest were declared by the Executive Councillor.

24/33/EnC 2024/25 S106 Allocations for Community and Sports Facility Improvements - Part 3

Matter for Decision
In 2023/24, officers presented a range of projects submitted through two previous S106 funding rounds for investment in local community and sports facilities. These rounds had identified 30 projects with allocations of over £500,000 of S106 contributions that were approved by the (then) Executive Councillors for improving equipment and/or storage at a range of sports venues or community facilities across Cambridge.

Many of these projects had now been completed or are in the process of being delivered. This latest follow-up round (also being referred to as the 'third phase') drew on on-going dialogue with community groups and sports clubs, schools and other partner organisations. It picked up some sports projects that were not quite ready or developed enough for submission before now. The report also recommends S106 funding for strategic sports projects and investment in the light of further assessments of City Council facilities and new community and sports facilities coming on board this coming year.

The Officer's report recommended allocating £360,000 of S106 funds to fourteen proposals relating to the community facilities, outdoor/indoor sports and swimming pool facilities contribution types. This was mostly about making timely use of those remaining generic S106 contributions that need to be contractually committed or spent, particularly within the next year. Officers envisaged that the projects proposed in this report could be delivered within six months, albeit that the implementation start dates may need to be phased.

Decision of Executive Councillor for Community Safety, Homelessness and Wellbeing

i. Noted that £73,276 of outdoor sports S106 funds and £28,935 of community facilities S106 funds had been deallocated from projects to which they were previously assigned and were now available for

allocating to relevant new projects (see paragraph 3.7 of the Officer's report); and

ii. Allocated generic S106 funding from the relevant S106 contribution types, subject to business case approval and community use agreements (as appropriate), to the following project proposals (see Section 4 of the Officer's report and the Appendix):

	Project proposals	**Amount**	**S106 type**
A	Grant to Chesterton Indoor Bowls Club: Indoor sports equipment	£7,000	Indoor Sports
B	Grant to Cambridge Gymnastics Academy for new gym training equipment	£20,000	Indoor Sports
C	Abbey Leisure Complex: sports changing room upgrades	£20,000	Indoor Sports
D	Grant to Kelsey Kerridge Sports Centre: new gym equipment	£35,000	Indoor Sports
E	Grant to CamSkate for indoor skate equipment at RailPen sites at Newmarket Road Retail Park	£45,000	Indoor Sports
F	Pickleball markings at tennis courts in South, East & West/Central areas	£10,000	Outdoor Sports
G	Nightingale Recreation Ground: upgrade tennis courts	£65,000	Outdoor Sports
H	Nightingale Recreation Ground: playing pitch improvements	£30,000	Outdoor Sports
I	Abbey Astroturf pitch: new benches and team shelters around the new 3G pitch	£20,000	Outdoor Sports
J	Coldham's Common: new Gaelic football posts	£3,000	Outdoor Sports
K	Additional tables and chairs at four Bowls Clubs within Cambridge	£10,000	Outdoor Sports
L	Jesus Green skate park: flood lighting and	£20,000	Outdoor

	Project proposals	Amount	S106 type
	CCTV coverage		Sports
M	New community meeting room at Abbey Leisure Complex (related to a joint project funding with NHS England for mental health space)	£50,000	Community Facilities
N	Kings Hedges Learner Pool: light & sound equipment for pool users	£25,000	Swimming Pool

Reason for the Decision
As set out in the Officer's report.

Any Alternative Options Considered and Rejected
Not applicable.

Scrutiny Considerations
The Committee received a report from the Community, Sport & Recreation Manager.

The Community, Sport & Recreation Manager said the following in response to Members' questions:

i. Officers evaluated the community benefit of projects. If funding went to 'closed clubs' then community access agreements would be put in places so facilities were available to all.
ii. Jesus Green Association and local councillors were consulted on the CCTV and lighting installed at Jesus Green.
iii. Undertook to update Councillor Swift about Donkey Common skate ramps after the meeting.

The Committee unanimously resolved to endorse the recommendations.

The Executive Councillor approved the recommendations.

Conflicts of Interest Declared by the Executive Councillor (and any Dispensations Granted)
No conflicts of interest were declared by the Executive Councillor.

24/34/EnC Annual Report on the Council's Key Strategic Partnerships (E&C)

Matter for Decision
The Officer's report provided an annual report on the work of the key strategic partnerships that the Council was involved in; and covers the recent decisions on the Cambridge & Peterborough Combined Authority.

Decision of Executive Councillor for Health and Community Safety

i. Agreed to work more closely with the Health and Wellbeing Board and Integrated Care Partnership and its sub-system (as detailed in paragraphs 3.42 – 3.46 of the Officer's report) to ensure that the City Council's role in prevention and wellbeing working in partnership with other public agencies could address the health needs and concerns of Cambridge residents.
ii. Agreed to continue to work with partners within the framework of the Cambridge Community Safety Partnership (as detailed in paragraphs 3.47 – 3.53 of the Officer's report), identifying local priorities and taking action that would make a positive difference to the safety of communities in the city.

Reason for the Decision
As set out in the Officer's report.

Any Alternative Options Considered and Rejected
Not applicable.

Scrutiny Considerations
The Committee received a report from the Assistant Chief Executive.

In response to the report Councillors asked for details about partnerships covered by sections of the report to be discussed by Strategy and Resources Scrutiny Committee 1 July. The Assistant Chief Executive and Leader of the Council undertook to respond to questions at Strategy and Resources Scrutiny Committee 1 July.

The Committee unanimously resolved to endorse the recommendations.

The Executive Councillor approved the recommendations.

Conflicts of Interest Declared by the Executive Councillor (and any Dispensations Granted)

No conflicts of interest were declared by the Executive Councillor.

24/35/EnC Community Funding Programme 2025/26

Matter for Decision
The Community Grants scheme priorities were reviewed periodically to ensure they remained relevant and align with the Councils Corporate Plan and wider objectives. Similarly, the grant procedures were reviewed annually as part of a continuous improvement process, considering feedback from applicants and the experience of the Grants Team.

In addition to this, a full community grants review was started in 2022 with the introduction of a 'light touch' small grants application process for awards of up to £2,000. There was also agreement to begin the broader work required which would be developed alongside the 'Our Cambridge Transformation Programme'. This included exploring the introduction of longer-term funding arrangements for organisations delivering ongoing essential services and infrastructure support to the voluntary sector; considering the challenges presented by the Area Committee grants process; and the potential to move to a digital grants platform.

The Community Grants Review was not driven by the need to make financial savings, but instead recognised the issues that were facing the voluntary and community sector (VCS). It reflected Officer's understanding of the challenges the sector faced in responding to inequalities and prolonged financial hardship and how the Council could better work alongside VCS partners to deliver positive change for our communities.

Discussions were currently underway within Cambridgeshire about the potential to agree a set of shared principles across all public sector partners which would foster collaboration. Although these conversations were in the early stages, the community grants review provided an opportunity to embed these principles now.

There were three strands to the proposed new approach to community funding set out in section 4 of the Officer's report. Running alongside this Officers were exploring with statutory partners whether funding schemes could align more closely together, both in terms of grant making and grant monitoring.

Decision of Leader

i. Approved the introduction of a twice-yearly Small Community Grants scheme replacing the previous Small Community Grants scheme and

Area Committee Grants scheme, for applications with a value of £5,000 or less.

ii. Approved the continuation of the annual Main Community Grants scheme, for applications with a value over £5,000.

iii. Approved the introduction of multi-year funding agreements for specific provision within the City.

Reason for the Decision
As set out in the Officer's report.

Any Alternative Options Considered and Rejected
Not applicable.

Scrutiny Considerations
The Committee received a report from the Community Funding and Voluntary Sector Manager.

The Community Funding and Voluntary Sector Manager said the following in response to Members' questions:

i. There were sufficient staff resources in place to process the bi-annual grant cycle assessments.

ii. Moving to a digital grants platform would free up staff resources that could be reallocated to administration as required.

The Committee unanimously resolved to endorse the recommendations.

The Leader approved the recommendations.

Conflicts of Interest Declared by the Leader (and any Dispensations Granted)
No conflicts of interest were declared by the Executive Councillor.

24/36/EnC The Council's Future Approach to Grant Fund Management

Matter for Decision
Grant funding to community groups was a core component of the council's approach to community wealth building, with funding of approximately £2m available annually to support the community and voluntary sector.

The Council Grants Team managed most of these grants and had a reputation for providing an exemplary service to community groups across the city.

The current grant management approach relied heavily on manual data entry systems, and there were fragmented grant streams available across the council, with different systems and processes for applicants to navigate to be able to access funding.

There were some risks and constraints with the current management approach for the council and applicants, and a comprehensive options appraisal had been completed to assess alternative approaches the council could consider.

Having assessed the strengths, weaknesses, and risks for a range of options detailed at Appendix 1 of the Officer's report, the appraisal recommended that the council considered implementing a digital grant management platform. This would help to minimise risk, maximise efficiency and improve the applicant experience.

The appraisal further recommends completing an end-to-end systems audit and considered managing all community and voluntary grant funding streams included in the matrix at Appendix 2 of the Officer's report, via a digital grant's platform, which would effectively become the new Grants Gateway.

Decision of Leader

i. Agreed to implement a digital grant platform.
ii. Agreed to delegate responsibility to the Director of Communities to oversee the procurement of a digital grant's platform and a smooth transition to implementation.

Reason for the Decision

As set out in the Officer's report.

Any Alternative Options Considered and Rejected

Not applicable.

Scrutiny Considerations

The Committee received a report from the Community Funding and Voluntary Sector Manager.

The Community Funding and Voluntary Sector Manager said the following in response to Members' questions:

i. Measurements on the impact of grants had to be proportionate to the amount of funding awarded such as fewer measures for smaller grants.

There was no one size fits all approach. Officers could look at different types of measures such as pictures not just written records.

ii. The expected timeframe was to undertake procurement in the autumn then make a decision in spring 2025 on the successful digital platform candidate.

iii. Two meetings had been held, one with the Digital Lead, and one with the Procurement Officer regarding the procurement process. They agreed the timescales were reasonable and offered advice on how to undertake the procurement.

iv. Grant Officers would offer support to grant applicants online and in person to help them with the application process and ensure funding goes to appropriate recipients.

The Committee unanimously resolved to endorse the recommendations.

The Leader approved the recommendations.

Conflicts of Interest Declared by the Leader (and any Dispensations Granted)

No conflicts of interest were declared by the Leader.

24/37/EnC Single Equality Scheme Annual Report 2023/24

Matter for Decision

The Officer's report gave an annual update on the Council's Single Equality Scheme, which covered the period from 2021 to 2024 and set five objectives to promote equality, diversity, and inclusion. The report provided an update on the delivery of key actions during 2023/24 set against the objectives. It also set out the activities that were new for 2024/25 and details of how larger ongoing projects would progress in 2024/25.

Additionally, the report included a recommendation to extend the end date for the current Single Equality Scheme for a further year, to March 2025.

Decision of Leader

i. Noted the progress in actions promoting equality, diversity, and inclusion during 2023/24.

ii. Approved new actions proposed for delivery during 2024/25.

iii. Agreed to extend the end date of the existing Single Equality Scheme from March 2024 to March 2025.

Reason for the Decision
As set out in the Officer's report.

Any Alternative Options Considered and Rejected
Not applicable.

Scrutiny Considerations
The Committee received a report from the Equality & Anti-Poverty Officer.

The Equality & Anti-Poverty Officer said the following in response to Members' questions:

i. Equality Impact Assessments were undertaken on parks and open spaces. Offered to liaise with Councillor Hauk after committee regarding concerns that vegetation over growing paths and open spaces could be an obstruction.
ii. The Equality in Employment Report going to Equalities Panel 2 July set out statistics on BME members in the City Council workforce. The Equality & Anti-Poverty Officer suggested interested parties could attend to ask for further details there. Circa 20% of the city population were BME so the City Council aimed to recruit 20% of its work force from the same community in future to reflect this.
iii. Training had been commissioned for school staff to engage young people on their needs. Officers would engage with schools and the community/voluntary sector who engage with schools.
iv. Equality Impact Assessments were undertaken by departments/services. They sought advice from the Equality & Anti-Poverty Officer as required. She would liaise with City Services to ask if they had undertaken an Equality Impact Assessment on Voi Scooters and the process for approval of location sites; also if Local Councillors had been consulted.

    The Executive Councillor for Community Safety, Homelessness and Wellbeing agreed with concerns that Voi Scooters could sometime block the pavement when parked. People could contact Voi to request removal of scooters. Responsibility for the Equality Impact Assessment may rest with the Combined Authority as they provided the scooters.

The Committee unanimously resolved to endorse the recommendations.

The Leader approved the recommendations.

Conflicts of Interest Declared by the Leader (and any Dispensations Granted)

No conflicts of interest were declared by the Leader.

24/38/EnC To Note Record of Urgent Decision Taken by the Chief Executive

24/38/EnCa Appointment of Councillor representatives to the Conservators of the River Cam
The decision was noted.

The meeting ended at 7.30 pm

CHAIR

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Item

ANNUAL CLIMATE CHANGE STRATEGY AND CARBON MANAGEMENT PLAN UPDATE REPORT

To:
Councillor Rosy Moore, Executive Councillor for Climate Action and Environment
Environment and Community Scrutiny Committee 26/09/2024

Report by:
Janet Fogg and Danette O'Hara, Climate Change Officers
Tel: 01223 457176, Email: janet.fogg@cambridge.gov.uk

Wards affected:
Abbey, Arbury, Castle, Cherry Hinton, Coleridge, East Chesterton, King's Hedges, Market, Newnham, Petersfield, Queen Edith's, Romsey, Trumpington, West Chesterton

Not a Key Decision

1. Executive Summary

1.1 This report provides an update on progress on the 2023/24 actions of the Council's Climate Change Strategy 2021-26. As part of this, the report includes: an update on progress in implementing the projects to reduce our direct carbon emissions from our corporate buildings, fleet vehicles and business travel as detailed in the Council's Carbon Management Plan 2021-26.

1.2 The report also provides an update on the council's Greenhouse Gas Emissions for 2023/24 and a new Climate Risk and Vulnerability Assessment (CR&VA) and Adaptation Plan, which prioritises the climate change risks for the Council and the city and details the actions the council is taking to adapt and improve resilience.

2. Recommendations

The Executive Councillor is recommended to:

1. Note the progress achieved in implementing the actions in the Climate Change Strategy and Carbon Management Plan (Appendix B).
2. Approve the updated Climate Change Strategy Action Plan presented in Appendix A.
3. Note the risks identified and actions being taken in the Climate Risk and Vulnerability Assessment (CR&VA) and Adaptation Plan.

3. Background

Climate Change Strategy

3.1 The Council's current Climate Change Strategy covers the period from 2021-26. It shares a vision for Cambridge to be net zero carbon by 2030, subject to Government, industry and regulators implementing the necessary changes to enable the city and the rest of the UK to achieve this. This vision recognises that, while the Council can take the actions identified in the strategy's Action Plan and use its policies and regulatory powers to influence emissions in some sectors, the actions and choices of national government, businesses, organisations and individuals have a very significant impact on emissions in the city.

3.2 The Council's strategy sets out six key objectives for how we will address the causes and consequences of climate change:

1. Reducing carbon emissions from city council buildings, land, vehicles and services
2. Reducing energy consumption and carbon emissions from homes and buildings in Cambridge
3. Reducing carbon emissions from transport in Cambridge
4. Reducing consumption of resources, reducing waste, and increasing recycling in Cambridge
5. Promoting sustainable food
6. Supporting Council services, residents and businesses to adapt to

the impacts of climate change.

3.3 The Council is taking a wide range of direct actions, set out in the Climate Change Strategy Action Plan, which will contribute to reducing emissions in Cambridge and help to deliver the vision for Cambridge to be net zero carbon by 2030.

3.4 A revised and updated Action Plan is presented for approval at Appendix A.

Climate Change Strategy benchmarking

3.5 Cambridge has been named an 'A' List City by the Carbon Disclosure Project (CDP)[1] following action that Cambridge City Council has been taking to reduce carbon emissions and prepare for climate change and has reported to CDP to its annual disclosure process for cities.

3.6 Cambridge is one of 119 cities globally to receive an 'A' score and to be recognized by CDP for taking bold leadership on environmental action and transparency. Only 13% of cities out of the 939 globally that disclosed environmental data in 2023 to the annual questionnaire received an 'A' score, demonstrating the Council's climate leadership through effective action: "A: Leadership jurisdiction demonstrates best practice standards across adaptation and mitigation, has set ambitious goals and made progress towards achieving those goals".

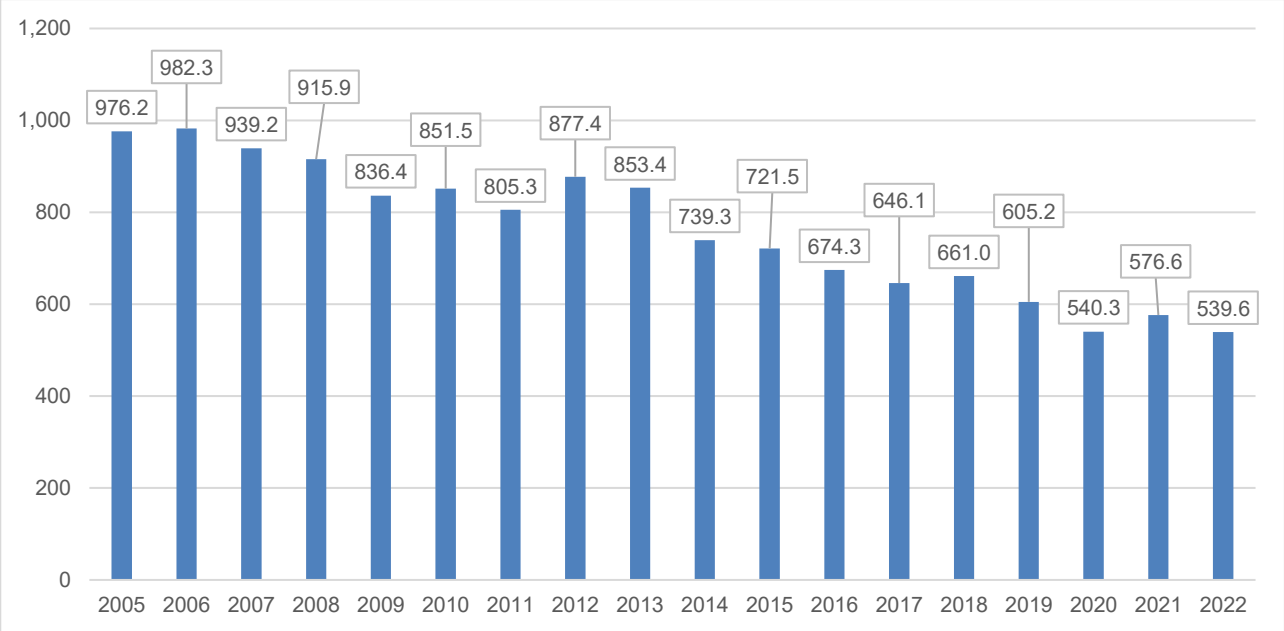
3.7 In November 2023 the Council was ranked second (out of all 186 districts councils) on the Council Climate Action Scorecards[2] with a score of 57% overall, exceeding the average score for district councils, which was 29%. The scorecards were produced by Climate Emergency UK, who assessed all UK councils on the actions they have taken towards net zero. The Council's highest scores were for the: Collaboration and Engagement (79%), Building and Heating (71%), and Waste Reduction and Food (69%) sections.

[1] www.cdp.net/en. CDP run the global disclosure system that enables companies, cities, states and regions to measure and manage their environmental impacts.
[2] https://councilclimatescorecards.uk/scoring/district/

Carbon emissions in Cambridge

3.8 As shown in Chart 1, below, the latest available national greenhouse gas emissions estimates, published by the Department for Energy Security and Net Zero (DESNZ), show that total emissions in Cambridge have reduced by 44.7% over the last 17 years, from 976.2 $ktCO_2e$ in 2005 to 539.6 $ktCO_2e$ in 2022.

Chart 1: Total Greenhouse Gas Emissions in Cambridge 2005-2022 ($ktCO_2e$)

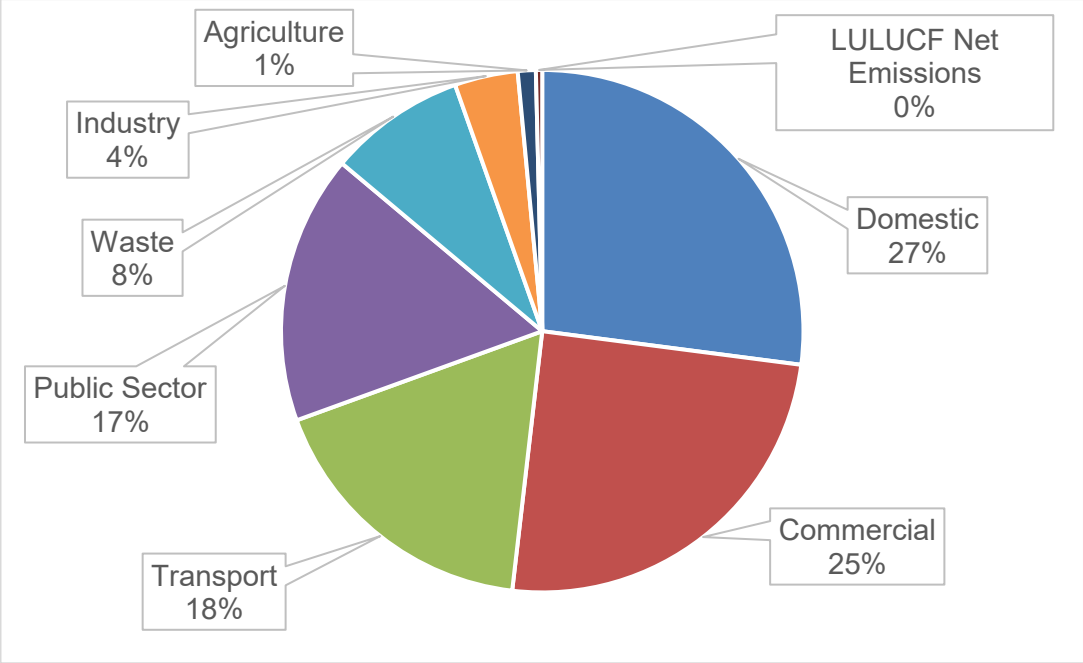


3.9 While the Council, residents and partners in the city have taken a range of actions over this period, the reduction in emissions from Cambridge (and other cities) in more recent years has been driven primarily by reduced use of coal in electricity generation and the inclusion of higher levels of renewable energy in the national electricity mix.

3.10 The Council's Climate Change Strategy focusses on reducing carbon emissions from the key sources of emissions in the city and where the Council has most influence. As shown by Chart 2, on the next page, the greatest source of greenhouse emissions in Cambridge in 2022 was from energy consumption in domestic properties (heating and powering homes) at 27% (the UK average was 22%), which is almost a third of the city's emissions, emphasising the importance in reducing emissions through retrofit and influencing residents' behaviour in this sector.

3.11 Emissions from commercial sources (shops and businesses) contributes the second highest proportion of emissions in Cambridge at 25%, which is much higher than the UK average of 9% for local authority (LA) areas. In contrast, emissions from industry were the third lowest proportion of emissions in Cambridge at 4%, compared to a UK average of 17%.

Chart 2: Sources of Greenhouse Gas Emissions in Cambridge in 2022 ($ktCO_2e$)



3.12 Transport was responsible for the third highest proportion of emissions in Cambridge at 18%, which is lower than the UK average of 31%. This suggests that actions to reduce emissions from transport are also important in reducing carbon emissions in the city.

3.13 The fourth highest sector contributing to the city's emissions is from the public sector which contributes 17%, a much higher proportion than the UK average of 3% from this emissions source. This reflects the number and size of councils, health and education bodies in the city.

3.14 Cambridge City Council was only directly responsible for 0.87% of total carbon emissions in the city in 2022, so there is a need for significant action by residents, businesses and other public organisations in the

city, to reduce their emissions, if Cambridge is to become net zero carbon.

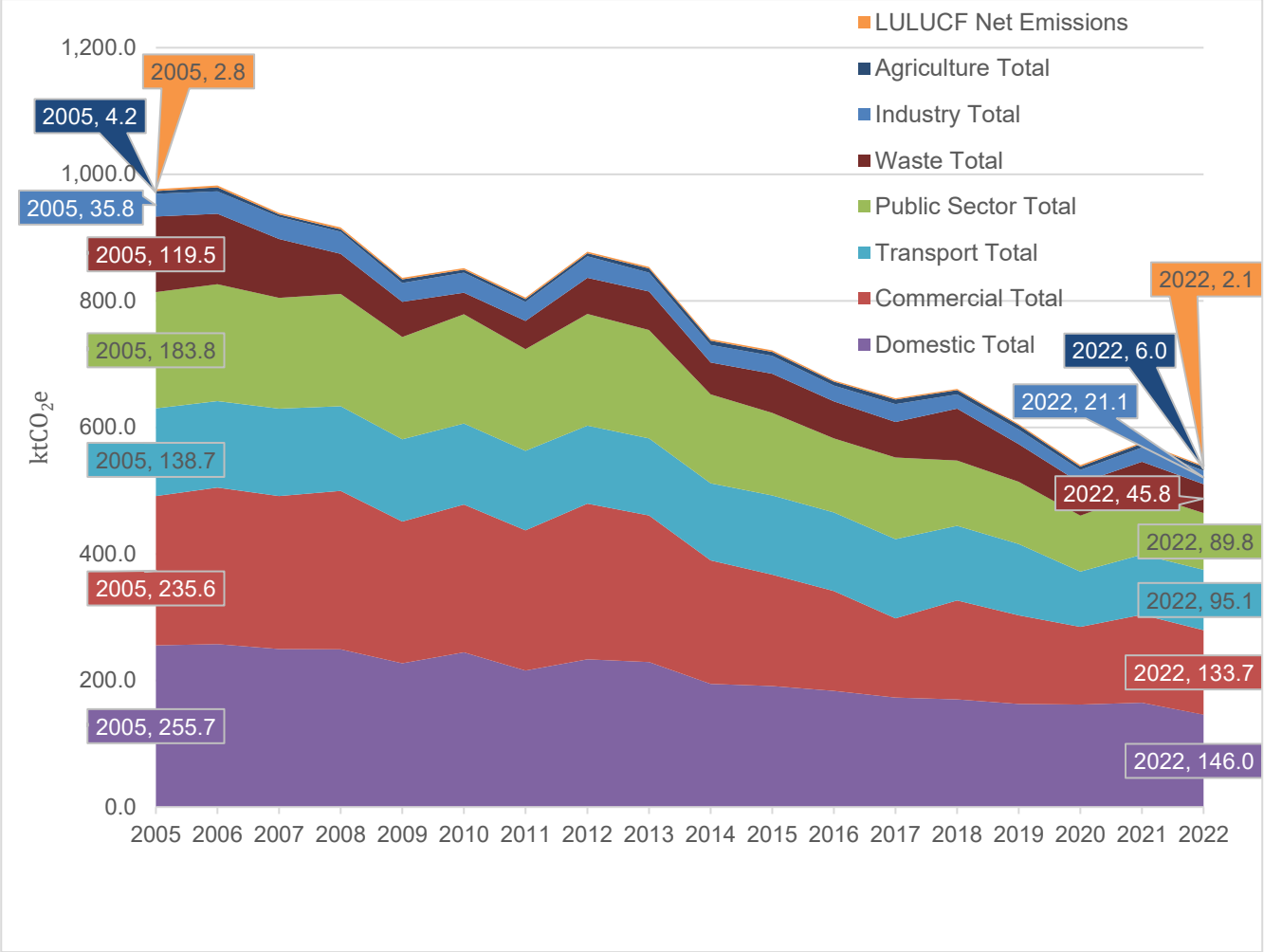
3.15 Waste (8% of Cambridge's emissions) and agriculture (1%) were included in the emissions estimates[3] for the first time in 2020. The emissions estimates therefore now also cover territorial emissions of methane (CH_4) and nitrous oxide (N_2O) as well as carbon dioxide (CO_2) and so the statistics are now estimates of greenhouse gas emissions, and not just carbon.

3.16 LULUCF (Land Use, Land-Use Change and Forestry) Net Emissions covers emissions and removals of greenhouse gases resulting from direct human-induced land use, land-use change and forestry activities and at 2.1 $ktCO_2$ the percentage contribution in Cambridge is about 0.4%, which does not show on Chart 2.

3.17 As shown by Chart 3 on the next page, emissions associated with all sectors have reduced between 2005 and 2022, although some sectors have seen a greater reduction than others, and although there was an increase in 2021, as activity returned to normal after Covid restrictions eased, reductions have then continued in 2022.

[3] www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

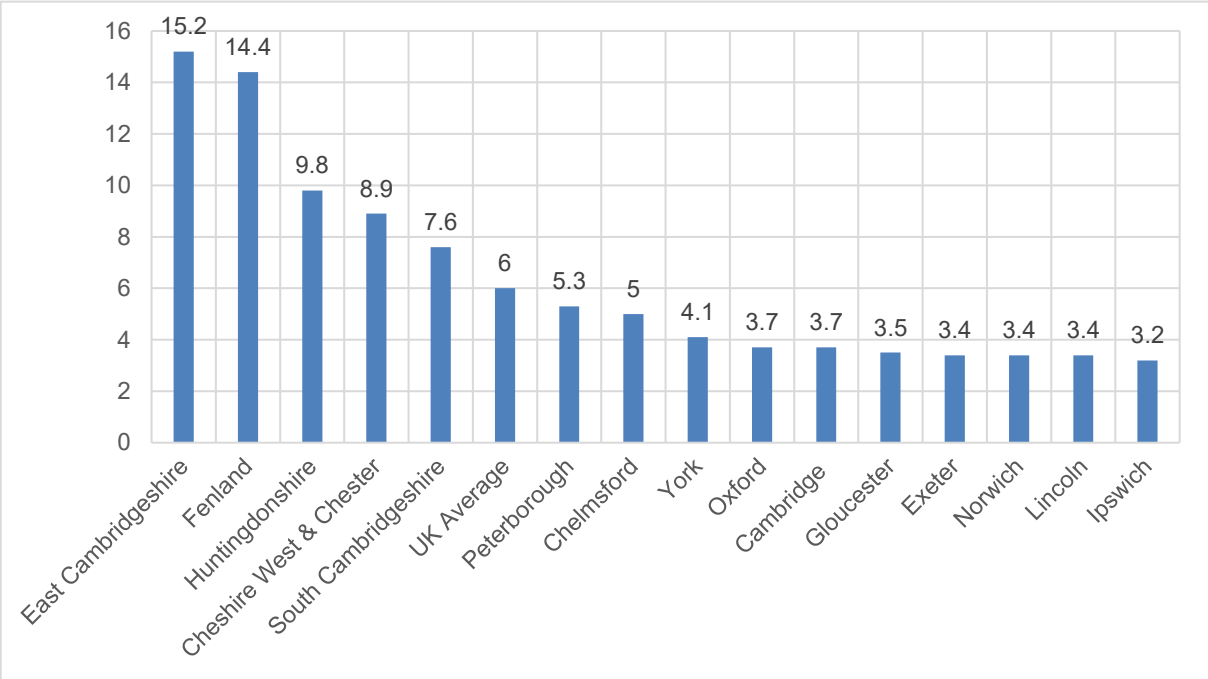
Chart 3: Sources of Greenhouse Gas Emissions 2005-2022 ($ktCO_2e$)[4]



3.18 Chart 4 on the next page shows per capita emissions estimates (emissions per unit of population) in Cambridge compared to other local authorities in Cambridgeshire and also cities in England with comparable populations (ranging from 99,000 to 195,000) and functions.

[4] LULUCF: land use, land use change and forestry activities. The LULUCF Sector differs from other sectors in the Greenhouse Gas Inventory in that it contains both sources and sinks of greenhouse gases. The sources, or emissions to the atmosphere, are given as positive values; the sinks, or removals from the atmosphere, are given as negative values, source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1087003/lulucf-local-authority-mapping-report-2020.pdf.

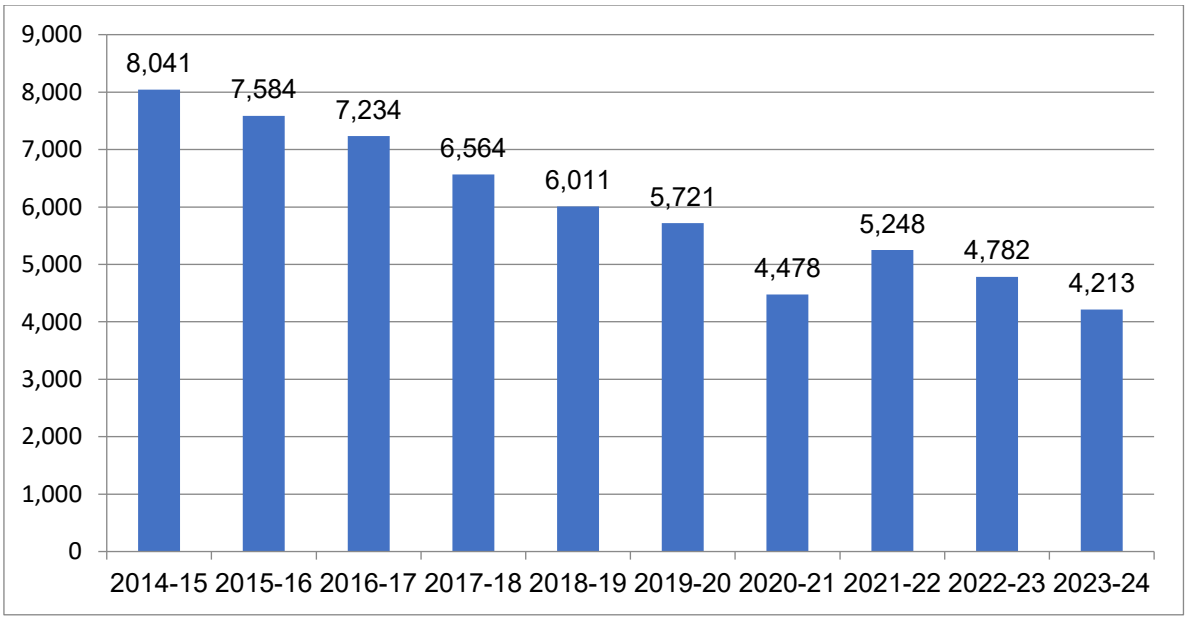
Chart 4: 2022 Per Capita Emissions Estimates (tCO_2e)



Cambridge City Council's carbon emissions

3.19 The Council calculates its carbon emissions from its estate and operations, and reports these to Government in our annual Greenhouse Gas Report. The report for 2023/24 is available on the Council's website here: www.cambridge.gov.uk/carbon-management-plan.

Chart 5. Council's Total Carbon Emissions (tCO_2e)

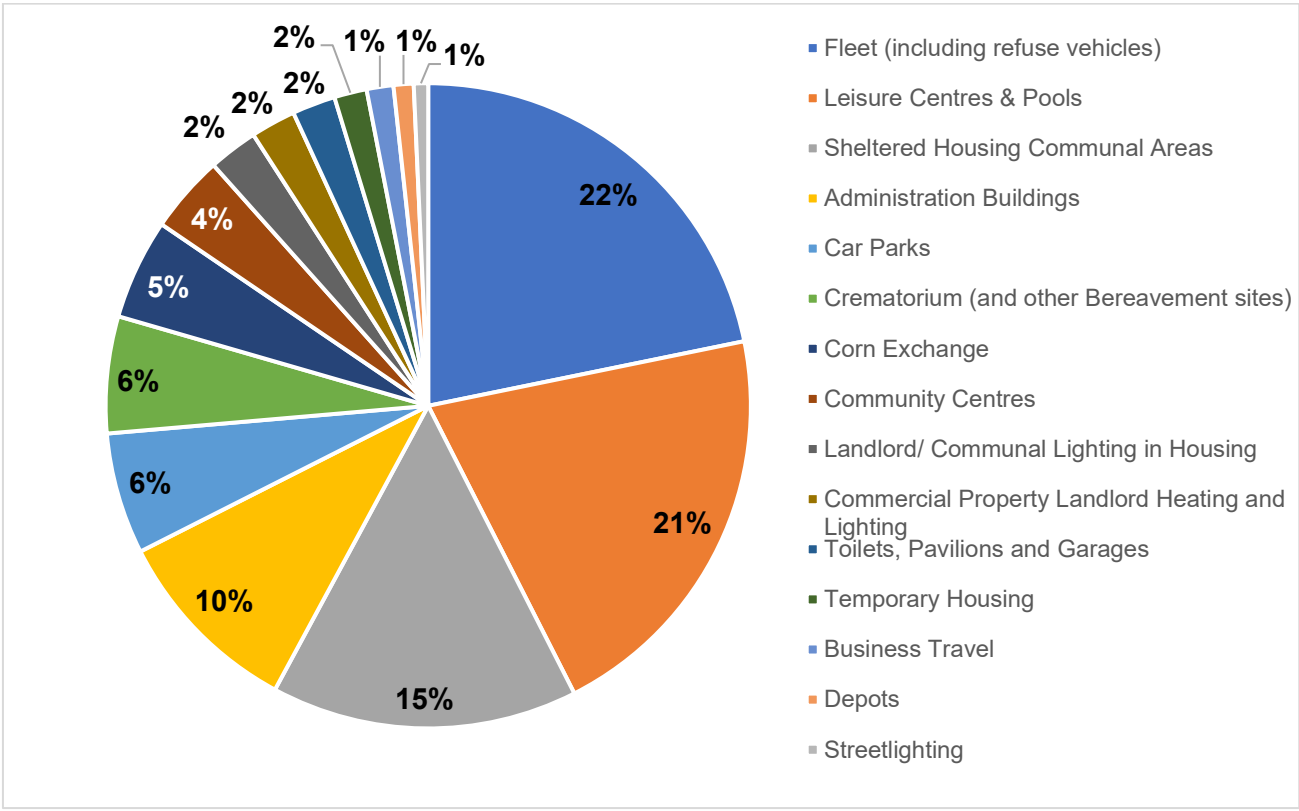


3.20 As shown by Chart 5 on the previous page, from 2014/15 to 2023/24 the Council's carbon emissions have reduced by 47.6% to 4,213 tCO_2e. This reduction was partly due to steps that the Council has taken, including rationalising its office accommodation, investing in energy efficiency and renewable energy measures in its buildings, and reducing carbon emissions from its fleet vehicles. A significant proportion of the reduction since 2014/15 has been due to the decarbonisation of electricity generation at a national level, through the progressive closure of coal-fired power stations and increasing renewable electricity generation.

3.21 However, a reduction in the Council's emissions has been achieved in 2023/24 despite the carbon factors used to calculate the emissions for electricity for 2023 increasing and not reducing (by 7% compared to the 2022 update) for the first time since 2014, due to an increase in natural gas use in electricity generation nationally and decrease in renewable energy generation nationally.

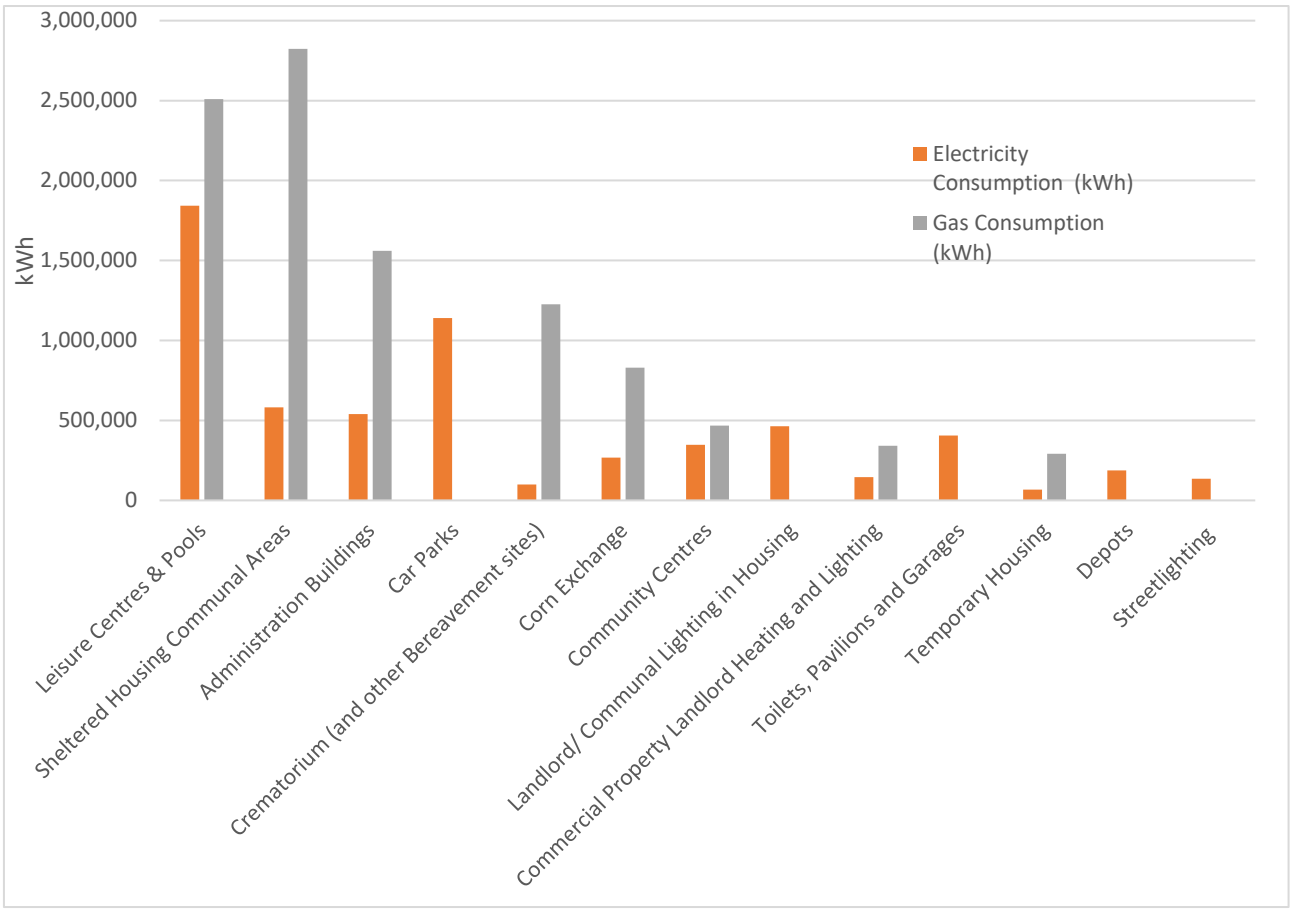
3.22 As shown by Chart 6, on the next page, in 2023/24 the greatest proportion of emissions came from the Council's fleet (22%) followed by leisure centres and pools (21%), sheltered housing communal areas (15%), administration buildings (10%), car parks (6%), crematorium (6%), Corn Exchange (6%), community centres (5%). In 2022/23, leisure centres and pools and fleet generated 50% of the Council's emissions, however, due to measures implemented in both areas in the last financial year (detailed in Section 5) this proportion has reduced to 43%.

Chart 6: Council's Carbon Emissions by Source (tCO_2e) in 2023/24



3.23 Some of the main sources of the council's emissions are the sites that use a significant amount of gas, including the leisure sites, sheltered housing communal areas, administration buildings, Corn Exchange and crematorium. The Council's leisure sites consumed the most gas of all the groups of sites in 2023/24 (2,508,535 kWh compared to 4,538,931 kWh last year) and the highest amount of electricity (1,842,399 compared to 1,509,286 kWh last year) as shown in Chart 7 on the next page. These changes are a result of the installation of ASHPs to decarbonise the heating at a number of the leisure sites, which use electricity instead of gas.

Chart 7: Electricity and Gas Consumption by Source (kWh) in 2023/24



Carbon Management Plan 2021-26

3.24 The Council has set a target in the Climate Change Strategy to reduce direct carbon emissions from our corporate buildings (including swimming pools, office buildings, car parks, sheltered housing schemes, community centres, arts venues and the crematorium), fleet vehicles (including vans, trucks and refuse vehicles), and business travel, to net zero by 2030.

3.25 The Council has produced a Carbon Management Plan for 2021-26[5], which sets out the projects that will help reduced carbon emissions from our corporate buildings, fleet vehicles and business travel. Details of the carbon reduction projects that have been delivered during 2022/23 are provided in section 5, and a table providing further information on these

[5] https://www.cambridge.gov.uk/media/9580/carbon-management-plan-2021-26.pdf

projects or 2023/24 and beyond, is included in the Carbon Management Plan at Appendix B.

4. Communications, engagement and collaboration

4.1 Raising awareness of climate change and encouraging action to help the city to reach net zero carbon emissions is a key priority for the Council. During 2023/24, we have taken forward a range of communications and engagement actions with staff and residents, and we have continued collaborative activities with local businesses, institutions and organisations.

4.2 In March 2023 the council released an infographic depicting the key milestones of the council's journey to Net Zero Carbon to date. An update to this is being planned for 2024/25.

Staff training and awareness

4.3 In 2021/22 a 30-minute online CPD Certified Environmental Awareness course was added to the staff induction programme and all existing staff were asked to complete it. As of August 2024, 598 members of staff had completed the training.

4.4 In addition, a 1.5 hour 'Climate Change – Net Zero training' session was developed and delivered by the Council's Climate Change Officers to groups of senior managers and councillors. Sixteen training sessions were held from January 2022 – June 2024 and 34 councillors and 105 managers have been trained to date.

4.5 The Council's Active Lifestyles team championed National Walking Month in May with the Annual "Step Challenge" for staff. 58 staff members registered over 21.0 million steps during the 4-week challenge. The team also promoted September's national cycling campaign "Love to Ride" to encourage more staff to cycle to work.

Communications and awareness-raising for residents

4.6 During 2023/24 the Council engaged residents through a number of different ways to inspire and empower residents to make well-informed low carbon choices. This included providing practical tips and signposting to resources and information to make it easy for residents to adopt more sustainable behaviours, including holding a stall Cambridge Zero's Community Day event in February 2024. The Communications team also raised awareness of Council action and projects to address climate change.

4.7 In early 2024/25, The Council procured Cambridge Carbon Footprint (CCF) to develop and deliver a second iteration of the climate change training course for residents. This aims to support residents and motivate, empower and enable them to take practical, impactful climate action to reduce their carbon footprint.

4.8 There have also been regular articles in Cambridge Matters communicating practical information to support residents to make low-carbon choices in their home. Articles provided information and signposted residents to resources to help them save water and make their home more energy efficient, including promoting the Cambridge Retrofit Guide and free thermal imaging camera training run by CCF.

4.9 The Council's Streets and Open Spaces Community Engagement team continue to deliver educational classroom talks and fun interactive activities to city primary schools as part of their Environmental Education Programme. In 2023/24 they delivered 7 school talks (about environmental crime including litter, graffiti, and dog fouling; and more recently biodiversity and trees). The team have organised some community litter picks for the groups and 5 biodiversity events including improvement of school grounds and creating insect habitats. This has helped to communicate environmental messages to children, their families and throughout the wider community and can form part of the Keep Britian Tidy Eco-Schools program.

Communications and engagement with organisations:

4.10 City Leaders Climate Change Group: Since 2017, the Council has convened the City Leaders Climate Change group, which brings together key partners, including businesses, universities, and public sector organisations to explore how carbon emissions in the city can be reduced and to identify ways to collectively amplify impact across the carbon system of Cambridge. During 2023/24 the Council has jointly convened two meetings of the group in partnership with the University of Cambridge's Cambridge Institute of Sustainability Leadership (CISL) and Cambridge Zero. Both events were hosted at CISL's retrofitted building Entopia. The events focused on creating tangible outputs which accelerate progress towards net zero:

- In July 2023, the group progressed the five co-created solutions by collaboratively developing them further and identifying the next steps for each solution.
- In November 2023, the group refined each of the five areas, looking at the why, the what, the how and the who. A decision was then reached to focus in on scaling retrofit.
- In June 2024, the group had a further workshop, which explored potential solutions to three key barriers: finance and funding, supply chain / contractor capacity and public confidence. Key actions and next steps were identified.
- The steering group met following this, in July and August, with the next workshop likely to take place in autumn 2024.

4.11 Green Business Programme: The Council is working in partnership with Huntingdonshire District Council, South Cambridgeshire District Council and the Cambridgeshire and Peterborough Growth Hub, to develop a new support programme for local businesses located in Cambridge City, Huntingdonshire and South Cambridgeshire. The Green Business Programme is part funded by the UK Government through the UK Shared Prosperity Fund (UK-SPF) and overseen by the Cambridgeshire and Peterborough Combined Authority.

4.12 The programme will support small to medium sized businesses (SMEs) and offer access to expert advice to develop a practical, tailored net

zero road map. Businesses can also apply for a capital grant of up to £5,000 to part-fund investment in carbon-saving technology, equipment or improvements.

4.13 Local Climate Change Forum: During 2023/24 the Council convened 5 meetings of the Local Climate Change Forum, which brings together the Council and local voluntary and community groups (including Cambridge Carbon Footprint, Cambridge Sustainable Food, Carbon Neutral Cambridge, Friends of the Earth and Transition Cambridge) to explore opportunities for collaborative activities to help address climate change.

5. Progress in delivering the key actions under Objective 1

Emissions from the Council's corporate estate:

5.1 Action 1.1: Reducing emissions from the Council's building estate
Objective 1 of the Climate Change Strategy, 'Reducing carbon emissions from the City Council's buildings, land, vehicles and services', is being delivered through carbon and energy reduction projects as part of the Council's Carbon Management Plan 2021-26, an update for which is at Appendix B. During 2023/24, the following projects which will reduce the Council's emissions were progressed on the Council's estate:

5.2 Asset Management Plan: Following approval of the Asset Management & Decarbonisation Plan, at Environment and Community Scrutiny Committee in March 2023, the first round of work has identified appropriate heat decarbonisation measures for the Council's corporate buildings, which are not included in the Civic Quarter and new Operational Hub projects (Crematorium, Kelsey Kerridge Sports Centre linked to Parkside Pool, Brown's Field Community Centre, Barnwell House and Trumpington Pavilion). The Council will be applying for the Department for Energy Security and Net Zero's Public Sector Decarbonisation Scheme Phase 4 (PSDS) funding for these buildings, which Salix is due to open for applications in mid-October 2024.

5.3 Eligible projects will progress to RIBA stage II heat decarbonisation feasibility studies, aligned with Salix PSDS Phase 4, and the remainder will progress to a comprehensive heat decarbonisation plan to be completed by summer 2025. The recruitment for the corporate Retrofit Project Manager required to deliver the developed programmes was restarted in August 2024.

5.4 Civic Quarter Project: The Council is working with a development consultancy team to reimagine Cambridge's Market Square, Guildhall, and Corn Exchange and create a new civic quarter for the city. There are three primary objectives for the project:

1. Creating a more attractive central Cambridge destination for residents that would increase visitor numbers for the market, the Corn Exchange, and businesses in the area, whilst providing modern flexible office facilities for its own staff to improve staff retention.
2. Enhancing revenue streams across theses three sites and reducing operational costs to ensure we can preserve services that our residents need and value most.
3. Helping the council to meet its net zero carbon by 2030 target.

5.5 We are aiming for exemplar project outcomes, targeting Operational Net Zero, water neutrality and a Biodiversity Net Gain of 20% across the Civic Quarter. The design work to date includes consideration of fabric upgrades and alignment with ENERPHIT and LETI standards, introduction of water saving measures, PV panels and enabling a future connection to the proposed city centre District Heating Network.

5.6 The project will be delivered in phases with the Council having the opportunity to review outputs at key gateways before commitment to subsequent phases. The current phase relates to the completion of RIBA Stage 2 designs for the Civic Quarter and development of the associated financial business case which will be presented to Strategy and Resources Scrutiny Committee in November 2024. The Council are funding the project through £20m earmarked from reserves and income generated through the future development / sale of Mandela House offices, with further funding opportunities being considered.

5.7 City Centre District Heat Network[6]: Joint funding from the Government's Heat Networks Delivery Unit (HNDU), the City Council, Cambridge University, Anglia Ruskin and 10 contributing colleges mean that a budget of c£1,000,000 has been made available to fund the second stage feasibility study for a city centre heat network. To strengthen this commitment, a Memorandum of Understanding has been agreed by all parties and is currently being circulated for signature. This MoU enshrines the guiding objectives of the project and the cooperative approach adopted.

5.8 An expert advisory panel has been established, constituted of up to 15 senior professors from across the 17 colleges. This panel acts as an academic review panel which will consider specialist consultant outputs and provide comment for consideration to the Steering Group which ultimately make decisions on the project.

5.9 Given the increased budget available, we have also allowed for an additional work package looking at a broader Heat Zoning Study. This will help the project frame broader Planning policy across the City, requiring new developments to connect to existing networks in future; ensuring that any potentially delivered network can be expanded and reduces risk in the long term.

Improvements to Commercial Properties

5.10 Action 1.6 - Identify and assess the required improvements possible to remaining existing commercial properties (that will not be redeveloped as part of the commercial property redevelopment programme) to achieve net zero carbon, and obtain costs estimates for the improvement works: Since the beginning of 2023, a further 20 EPCs (energy performance certificate) assessments have been produced for Council-owned commercial properties, taking the total to 158. This has resulted in a small improvement in the overall picture as almost all of the Council's commercial properties that require EPCs now have them. Around 10% of the Council's commercial properties are now in bands A or B, meaning they already meet the proposed national minimum

[6] www.cambridge.gov.uk/city-centre-heat-network

standard of at least ‘B’ by 2030. These properties represent around 12.5% of total floor area. This information has been combined with existing EPC data, in order to identify improvements required. The information is also being used to inform an asset review, which will identify properties that are a priority for investment, as well as those to be redeveloped or disposed of. Capacity constraints within Property Services has limited the scope for further action on this issue.

Fleet Decarbonisation

5.11 Action 1.5 - Waste fleet replacement: Greater Cambridge Shared Waste Service, (GCSWS) a partnership between South Cambridgeshire District and Cambridge City Councils, is progressively replacing Refuse Collection Vehicles (RCV) with electric vehicles or low carbon alternatives at the point when they are due for replacement. There are now 4 eRCVs in operation. A 4th eRCV, a Dennis eCollect, went into service in June 2024 on the inner-city trade collections, which will further reduce the service’s diesel use and therefore carbon emissions during 2024/25. The service also operates 3 electric vans used by supervisors across South Cambridgeshire and Cambridge.

5.12 Following a successful trial in 2022, the GCSW Service have been using hydrotreated vegetable oil (HVO) as a direct replacement for mineral diesel fuel in 10 of the fleet vehicles that operate in the city (and 8 that operate in South Cambridgeshire) which results in at least a 90% reduction in carbon emissions when compared to running the same vehicles on diesel. The generators used at the Council’s events, such as the Folk Festival and the fireworks, now also use HVO instead of diesel.

5.13 Waterbeach Renewable Energy Network (WREN) solar project: An outline design for the scheme has been developed, and a professional team including an Employers Agent and Technical Advisor will be appointed to move the project to the procurement phase. This will ensure the most effective and optimal design, build and operate contracts are in place. The project team have had good engagement from UKPN (UK Power Networks), who are continuing to progress grid connection work. Land leases and licenses for the solar site and

construction zone are in progress and being finalised with the landowner. Following trials of eRCVs with larger batteries, 18 can be accommodated into the fleet and the WREN project scope. The WREN project team are working closely with Shared Waste Operations and Waste Policy to ensure changes to the Depot align with wider service requirements. The project team have established a link with Exeter City Council who have similar scheme of solar and storage on a closed landfill, to share learnings.

5.14 Council Fleet Vehicles: Our fleet currently comprises 120 vehicles and equipment, including panel vans, tipper vans, mobile plant such as tractors and ride-on mowers, large and small road sweepers, and two refuse collection vehicles. Of these, fifteen are electric vehicles (EVs), one is a petrol hybrid, and 104 are diesel-powered. The latest addition to the EV fleet arrived in March 2024.

5.15 The Fleet Services Team is preparing to embark on a comprehensive fleet replacement programme over a rolling three-year period, targeting the replacement of one-third of the fleet each year, except for the recently acquired EVs, with electric alternatives wherever feasible. The replacement project started in 2024, with the first new vehicles expected to arrive in 2026/27 and continuing with additional arrivals during 2027/28 and 2028/29.

5.16 Where EV solutions are not considered viable due to cost, technological limitations, or other factors, we will explore alternatives such as hydrotreated vegetable oil (HVO) and develop the business case.

6. Progress in delivering the key actions under Objective 2:

Retrofitting energy efficiency and low carbon energy measures in existing homes

6.1 The Council has assisted residents to reduce their carbon emissions through a range of measures in 2024 to improve the energy efficiency and increase low carbon and renewable energy generation in existing

homes in Cambridge.

6.2 Delivery of energy improvement works to council homes has proceeded in two phases, with part funding from the DESNZ Social Housing Decarbonisation Fund (SHDF). Phase one, for 40 homes, was procured under an existing contract with TSG, and completed in Autumn 2023. The tender for phase two, for approximately 270 homes, was awarded to Aran Insulation in December 2023, with a total value of approximately £8.6m. Phase two works commenced in January 2024 and are expected to complete in March 2025. 18 phase two homes were completed by March 2024, which means that a total of 58 homes were completed within the 23/24 financial year across both phases.

An additional 41 phase 2 homes were completed up to the end of July 2024, and progress is broadly in line with the grant KPIs. The retrofit improvement works, which bring the EPC rating of the homes up to at least a 'C', include external wall insulation, loft insulation and improved ventilation. New triple glazed windows and doors are also being installed in conjunction with the external insulation where existing windows and doors are close to the end of their service life. The Council team overseeing the works has grown from 1 to 4 staff to manage the increased delivery. The 3 new temporary roles are funded from the SHDF Wave 2.0 grant.

Looking ahead, the Council plan to apply for further funding from SHDF Wave 3.0 when it opens later this year. The Council is also working to set up a new framework to streamline the procurement of future energy improvement works.

6.3 <u>Action 2.9 – Deliver Net Zero Retrofit pilot to 50 Council homes</u>
In July 2022, the Council launched a Net Zero Retrofit pilot housing project, investing up to £5m to retrofit 50 Council homes to net zero carbon standards. The pilot will bring benefits to low-income tenants by reducing their energy bills and carbon emissions and will help to stimulate the market for zero carbon retrofit installers in Cambridge. Planning permission was received in August 2023. The tender was issued in October 2023 and awarded in March 2024 following four

rounds of clarifications. Works started on the first home in May 2024, with works on the final home anticipated to be completed in Spring 2025.

6.4 Action 2.5 - Funding to deliver retrofitting of energy efficiency measures to private homes in Cambridge: The Council continues to work with other Cambridgeshire local authorities in the Action on Energy partnership using Government grant funding to retrofit energy efficiency measures to private homes across Cambridgeshire.

6.5 In February 2024, The Council and other Cambridgeshire local authorities in the Action on Energy consortium signed off the £6.46m Sustainable Warmth Scheme (which includes LAD3 and HUG1). The scheme supported 141 properties across Cambridgeshire, with 200 measures being installed. 10 of these properties were located in Cambridge.

6.6 Following the successful bid for the Government's Home Upgrade Grant 2 (HUG2) in March 2023, which awarded £11.5m, the consortium has installed 235 energy efficiency and clean heat measures in 131 homes for low-income families across Cambridgeshire. 11 of these homes are in Cambridge. A further 232 Cambridge households were provided wider support through home energy interventions in partnership with others organisation working under the Action on Energy brand.

6.7 The council has also been successful is working with Government to adapt the scheme criteria to make the funding accessible to more residents going forwards.

6.8 The Council also procured a four-year framework relationship with six contractors to deliver energy efficiency measures in private homes. This framework agreement will help secure supplier capacity to deliver Government-funded schemes such as the Sustainable Warmth Scheme and HUG2. The framework is also accessible to residents, helping homeowners who are in a position to pay for measures to navigate the market for suppliers and find contractors to do retrofit work.

6.9 Action 2.3 - Promoting group-buying schemes for solar PV: The Council has worked with Cambridgeshire County Council to promote a solar PV collective purchase scheme which provides residents with solar PV and battery storage installations at a significantly reduced cost. The scheme is run as an auction, with interested residents registering with iChoosr (at no obligation) and installers then bidding to provide solar PV for the group of interested residents. The second round of the scheme was launched in February 2022 and was completed in August 2023. A total of 348 solar PV systems and 20 battery-only installations were completed in Cambridge. This amounted to 3,065 individual panels, generating a capacity of 1,196kw. There are no current plans for Cambridgeshire County Council to co-ordinate another round at this time, but the district Councils are looking into options to be able to support similar activity going forward.

6.10 Action 2.6 - Taking enforcement action against private landlords if their properties do not meet the national Minimum Energy Efficiency Standards: From April 2021, the national Minimum Energy Efficiency Standards (MEES) require landlords and property managers to ensure that privately rented homes reach a minimum EPC rating of E. The Council is taking enforcement action against private landlords whose properties do not meet these standards. The targeted intervention was completed in 2022/23 and is now integrated into business as usual.

Energy efficiency and low carbon energy in new homes

6.11 The Council has assisted residents to reduce their carbon emissions by taking steps to improve energy efficiency and increase low carbon and renewable energy generation in new homes in Cambridge.

6.12 Action 2.2 - Building up to 1000 new homes to Passivhaus standards: The Council now has an approved programme of 1976 homes being delivered across the current 10yr new homes programme and the preceding 500 homes programme. Of these, 998 are net new build council homes, with 525 completed to date.

6.13 Housing delivery is aligned to the Councils Sustainable Housing Design

Guide, setting a target for affordable homes to be delivered to Passivhaus standards, and targeting net zero delivery by 2030. The council now has 535 homes in development which are being delivered to- or are benchmarked against Passivhaus Performance levels. These include the Council's first 35 Passivhaus certified houses at Fen Rd, Ditton Fields and Borrowdale, completed earlier this year; 14 homes at Aragon and Sackville Close, scheduled for completion this Autumn; and Aylesborough Close, currently under construction and scheduled to deliver 70 completed flats in October 2025. The further sites of East Barnwell (120 homes) and Fanshawe (45 affordable homes) have also secured approval at planning committee, significantly bolstering the councils sustainable housing delivery.

7. Progress in delivering the key actions under Objective 3:

Improving bus, cycling and walking routes

7.1 The Council has taken a number of steps in 2023/24 to support the improvement of transport infrastructure, increase the sustainability of transport, and encourage residents to shift to more sustainable modes of transport, such as bus travel and cycling. These actions include:

7.2 Action 3.1 - Supporting the Greater Cambridge Partnership (GCP) to deliver a range of walking, cycling and bus improvements on key routes into and across Cambridge: The Council is one of the key partners in the GCP, alongside Cambridgeshire County Council and South Cambridgeshire District Council. The GCP is delivering a comprehensive programme of sustainable transport initiatives. The Histon Road project, which included a dedicated bus lane, floating bus stops, and additional and wider cycle lanes to encourage more people to walk, cycle or take the bus along Histon Road, was completed at the end of 2021. Construction of new bus lanes and active travel links to create more reliable public transport trips and safer walking and cycling

journeys along Milton Road began in July 2022 and is due for completion in Q3 2024[7].

7.3 The Greenways scheme will provide radial cycling and walking routes connecting Cambridge and surrounding settlements and employment sites. Construction of the Horningsea Greenway is underway and due for completion in October 2024. The Bottisham and Swaffhams Greenways, both of which connect to the Horningsea Greenway, are in detailed design with construction due to start in 2025. Work is due to start onsite on three Greenways over the summer of 2024, the Meldreth link section of the Melbourne Greenway, early works on Barton Road as part of the Barton Greenway, and early works on Cowley Road as part of the Waterbeach Greenway. The Comberton Greenway early works will start later in the year. Fulbourn Greenway Phase 1 is due for construction late in 2024, with options for Phase 2 under development. Options for the final sections of the Linton Greenway are being examined, with the Newmarket Road (note: this is not Newmarket Road, Cambridge, which is covered under Cambridge Eastern Access project) section to be constructed this year.

7.4 Through to 2030, further improvements to walking, cycling, and bus travel will be made through the Cycling Plus Hills Road and A1134 projects, Chisholm Trail Phase 2, Madingley Road, Cambridge Eastern Access (Newmarket Road), and GCP Busway schemes. Taken together, these schemes represent a significant enhancement in Greater Cambridge's sustainable transport capacity that will enable many more people to walk, cycle or use public transport.

7.5 In September 2023, the GCP Executive Board decided to stop work on proposals for a Sustainable Travel Zone. Work to explore further solutions to Greater Cambridge's congestion issues and encourage mode shift to public transport and active travel will be taken forward through the Greater Cambridge Transport Strategy. This work is undertaken in the context of the emerging Greater Cambridge Local

[7] Greater Cambridge Partnership Joint Assembly Quarterly Progress Report (12 September 2024) for further information: Agenda Item No (cmis.uk.com)

Plan and will form a sub-strategy to the Cambridgeshire and Peterborough Local Transport and Connectivity Plan.

7.6 Walking and cycling promotion – Council services carried out a number of activities to support and promote cycling and walking. The Streets and Open Spaces team have continued awarding a programme of walking, cycling and active travel promotional grants, led the multi-partner work that has helped reduce reported cycle crime levels in and around Cambridge since 2019 by c56%, and supported partner agencies such as the Police and Camcycle with their events programmes, including cycle security registration and marking.

7.7 The Council's Active Lifestyles team have run 7 bicycle repair workshops at open spaces, pavilions and summer events in the city with around 100 people attending for workshop tutorials and security registrations. The Recreation team have also installed new cycle parking bays around Chesterton and Nightingale Pavilions to promote cycling to the facilities. Walking is also promoted as part of the Healthy You offer across the city with over 120 people attending a range of walks throughout the year from "mindful meanders" to led walks around the Botanical Gardens.

Supporting the take-up of electric vehicles

7.8 During 2023/24 the Council has taken forward a number of projects to support the transition from petrol and diesel vehicles to electric vehicles (EVs) and to provide new charge points for EVs.

7.9 Action 3.10 - Procuring a commercial partner by 2022 to deliver electric vehicle charging infrastructure in Council car parks and other Council-owned land and sites: The Council is working in partnership with Connected Kerb, one of the UK's largest providers of EV charging infrastructure, to provide a network of more than 600 publicly accessible EV charging points, at 14 public car parks across Cambridge. The programme aims to make it significantly easier for people in Cambridge to charge electric vehicles, with free parking available overnight between 6pm and 8am for users of the charge points.

7.10 During 2023 the first 27 EV charging points were activated in March 2023 at Adam and Eve Car Street Park (15) and Arbury Court (12). Another 60 new charging points have been installed so far during 2024 at Gwydir Street (8), Queen Anne Terrace multi-storey (40) and Campkin Road (12) car parks. Installation of the 23 charging points at Castle Hill car park is expected to be finalised in August 2024, as part of Phase 1 of the deployment plan, which will run until 2030.

7.11 Proposed work for circa 43 additional EV bays for Phase 2 is currently underway at the following locations: Petworth Street (5), Leete Road (6), Sleaford/ Ainsworth Road (6), Cherry Hinton Car Park (8), Gwydir Street Craft Workshop (6), Norfolk Street (6), St Bede's Crescent (6). Phase 3 will include charging points at Park Street, Grand Arcade and Grafton East car parks.

7.12 Action 3.8 - Requiring all new taxis registered in Cambridge to be Ultra Low Emission Vehicles (ULEVs) or zero emissions vehicles from 2020, and all taxis to be ULEVs or zero emissions vehicles by 2028: There are currently 60 fully electric (zero emission[8]) and 33 Ultra Low Emission[9] taxis that have been licensed, out of a total of approximately 389 licenced taxi vehicles in Cambridge, and numbers of electric taxis are increasing each year.

8. Progress in delivering the key actions under Objective 4:

8.1 The Council has delivered or funded a number of activities in 2023/24 to encourage and support residents and businesses to reduce their consumption of resources, reduce waste and increase recycling. These actions include:

8.2 Action 4.3 – Reducing plastics usage at Council-run events such as Cambridge Folk Festival and the Big Weekend: Following the ban on the use of single use plastics by on site caterers and backstage at

[8] Zero emission vehicles are those that emit no emissions during their operation. These include battery electric vehicles, hydrogen fuel cell vehicles, and electric vehicles.
[9] Plug-in hybrid vehicles or extended range electric vehicles (E-Rev) with CO_2 emissions less than 75g per km

Council-run events, there has been no single use plastic usage at Council festivals and events for over six years. In May 2023, events at the Corn Exchange and Guildhall also stopped using single-use plastic cups and swapped to reusable cups. Based on the estimate of two drinks per guest visiting the Corn Exchange per year, this is saving in the region of 330,000 single-use plastic cups being wasted each year.

In 2024, a Community Repair Corner was held at the Cambridge Folk Festival, allowing attendees to have items repaired there and then, to enable them to continue using them at the festival, and to want to take them home to reuse them again, as well as reducing the waste at the event. This resulted in 133 repairs over the 4 days (including camping chairs, air beds, tents, clothes and glasses), with just 3 items not being able to be repaired. The Council's next step will be to encourage attendees to bring their own reusable food containers to further increase the sustainability of Council-run events. This is estimated to take three years to fully implement. The Council also intends to provide resources at festivals that can be shared, such as pumps and mallets, to try to reduce the amount attendees need to carry and therefore reduce the need to drive to the festival and encourage them to consider a more sustainable form of transport to travel.

8.3 Action 4.5 - Continue communications campaigns as documented in Circular Resource Strategy to encourage residents to recycle more, generate less waste and contaminate less: 2023/24 has seen the continuation of the contamination campaign, aiming to improve the quality of recycling. This has included communication in Cambridge Matters magazine and on social media platforms. Targeted communication to residents was also undertaken. Other communication campaigns during 2023/24 have included waste prevention initiatives, as well as battery and small electrical recycling following the occurrence of fires in collection vehicles.

8.4 Recycling Champions supported 36 events through 2023/24, of which 19 were Community Action Days. These events help divert items that would otherwise go to landfill, including metal, wood and electricals, through educating about reuse and recycling. Furthermore, liveries

were installed on 3 RCVs to promote furniture re-use and repairing of electricals.

8.5 In addition, the team have supported and promoted 34 Repair Cafes across Greater Cambridge (55% increase on the previous year) with approx. 884 items mended (154 more than last year) and keeping approx. 2.5 tonnes of material in use and out of waste/recycling streams. Over 50% of these repair Cafes were in Cambridge. During 2023/24, 35 Swishes took place across Greater Cambridge (75% increase on previous year), 21 of which were in Cambridge, which helped to circulate an estimated 5 tonnes of clothing[10].

8.6 Action 4.1 – Funding activities through the Council's Sustainable City Grants by voluntary and community groups to reduce consumption and increase repair, re-use and recycling: The Council agreed to fund a number of activities during 2024/5 which will encourage residents and businesses to reduce consumption and repair, re-use and recycle goods. Cambridge Carbon Footprint will run a 'net zero climate engagement event' with a programme of talks (including how to run a repair workshop) and a Sustainable Fashion Campaign – providing continued support including by providing training sessions to allow more groups to run their own clothes swap events.

8.7 Action 4.6 Encouraging businesses to take-up recycling and food-waste collections provided by the Council on a commercial basis: 2023/24 has seen good growth with commercial recycling and food waste collections, with Q4 seeing 68 new customers. We continue to support commercial clients with their regulatory requirements, creating new communication material based on recent government consultation outcomes on the Environment Act.

8.8 Furthermore, the council has implemented a pilot of food waste collections at the two busiest council office sites (Mandela House and Cowley Road). This has also been rolled out with a wider campaign to encourage council staff to place their waste into the correct bins, looking to minimise general waste and increase recycling.

[10] All these figures are based on known averages for the events

9. Progress in delivering the key actions under Objective 5

9.1 The Council has taken a number of actions to help promote sustainable food in Cambridge in 2023/24. These actions include:

9.2 Action 5.4 - Working with the Cambridge Sustainable Food network towards achieving the Sustainable Food Cities Network Gold Award for Cambridge: Since achieving the Bronze Award in 2016, and the Silver Award in July 2021 from Sustainable Food Places (one of the first six cities in the UK to have achieved the award) the Cambridge Sustainable Food Partnership, which includes the Council, has been successful in becoming the UK's third Gold Award winner in March 2024[11]. Sustainable Food Places focusses on six key themes and two areas of excellence including 'Action on climate and biodiversity' and 'From food insecurity to food justice: developing a new approach to ensure good food for all'. There are plans in place to ensure ongoing assessments, infilling any gaps to ensure the various criterion of the award are still covered to ensure the Gold standard is maintained.

9.3 Action 5.8 - Working with local voluntary and community groups and other partners to promote sustainable food practices to local businesses: The Council has agreed to fund Cambridge Sustainable Food through the Sustainable City Grants to deliver a range of activities during 2023/24, including running events to provide support to people to grow sustainable food through 3 Growing Cafes and 5 Good to Grow events and to recruit participants to a 'Grow a Row' initiative. CoFarm have been funded to run open co-farming sessions engaging the community to produce sustainably grown food which is then distributed through community food hubs in the city.

9.4 Action 5.2 - Work in partnership with local voluntary and community groups to address food poverty, including working with Cambridge Food Poverty Alliance and Cambridge Sustainable Food to develop a food re-distribution hub: The food poverty alliance has begun to focus on its next 3-year action-plan. In addition, the Council has commenced a

[11] https://cambridgesustainablefood.org/goldfoodcambridge/about

feasibility study to look at what modifications would be required to bring a sustainable income into Cambridge Sustainable Food to continue food poverty and food education related work, with governance work still required. The Council hosted a food justice conference in October 2023, for which a lived experience video was created, capturing experiences of those using the food support systems within the city.

9.5 Action 5.1 - Incorporating sustainable food principles in council catering and at Council-run events where possible: The Council continues to incorporate sustainable food principles at Council-run events and in November 2023 the Cambridge Folk Festival again achieved Greener Festival 'Outstanding' Certification. The 'outstanding' classification signifies an exceptional event which has significantly reduced greenhouse gas emissions, has excellent travel, transport, food and waste management programmes, protects the environment and minimises water use - and communicates this to the public. In 2024, of the 23 food and drink venders at the Cambridge Folk Festival, 96% offered vegetarian options, and 87% offered vegan options.

9.6 With regards to sheltered housing, it is more difficult to incorporate sustainable food when residents' choices and requirements are taken into consideration. Therefore, it is important to include sustainable practices into other aspects where possible. At Ditchburn Place sheltered housing scheme, sustainability was high on the agenda when procuring the new contract. As a result, the current contractor sources fresh meat, bakery and greengrocery via local suppliers, and seasonal produce where applicable. All fish sourced and used carry the MSC Blue Label accreditation.

Wastage is kept to a minimum, with a good understanding of resident demographics, including preferential individual portion sizes for each resident within the scheme, and recipes created to make use of any leftovers and peelings. All waste that is created, is segregated and recycled, with food waste being composted. All of the waste cooking oil is also recycled into biofuel. Furthermore, there are opening and closing procedures to minimise electricity and water usage.

9.7 Council teams have also embedded sustainability requirements into contracts when seeking a new caterer including a requirement for the food offer to contain a good mix of plant-based products and that focus must be given to reduce the volume of meat products sold.

9.8 A plant-based food motion was passed by the Council in May 2022, which resolved to transition council catering at Council cafes and kiosks and City Council run events to providing more plant-based food. In January 2023 the Council agreed to increase the amount of plant-based options provided at civic events, recognising that plant-based foods generally creates less carbon emissions than other foods.

Catering at the Annual Full Council meeting and all other civic events now consist of 100% plant-based food options. We will continue to seek to procure services from social enterprises for civic events, recognising the social value social enterprises bring to the local community.

9.9 Action 5.5 Encouraging residents to choose sustainable, local food and to reduce meat consumption through corporate communications messages: The communications team have shared Cambridge Sustainable Food posts onto our social media accounts, sharing useful information and sessions to help promote more sustainable diets. In addition, they have also shared posts from the Shared Waste Service social media accounts, including posts promoting Food Waste Action Week. When Cambridge won the Gold Food Award, it was promoted on social media and Cambridge Matters, further amplifying better food and diet practices. Over Christmas, posts reminding people to only buy what they need and what to do with leftovers were also shared across social media platforms.

10. Progress in delivering the key actions under Objective 6 (adaptation)

10.1 The Council recognises that in addition to reducing carbon emissions, it is equally important to ensure that Cambridge adapts to the impacts of climate change, including increased summer temperatures and overheating; water shortages and droughts; and flood events.

10.2 Adaptation Plan: We have updated the Council's Adaptation Plan (originally produced in 2018) to develop a Climate Risk and Vulnerability Assessment (CR&VA) and Adaptation Plan, as recommended by the Carbon Disclosure Project. We have used Local Partnership's Climate Adaptation Risk Matrix and Risk Register tool[12], which includes a list of all 61 risks from the Government's third Climate Change Risk Assessment (CCRA3)[13], mapped against the different council service areas, and who they are a risk to e.g. businesses, residents, infrastructure and nature.

10.3 27 of the 61 risks were determined to be relevant risks for the Council to consider the impacts for the city and the Council's services. In discussion with relevant officers, the impact and likelihood of these risks were scored using the Council's Risk Management Scoring Matrix and a risk rating score produced. The Climate Risk and Vulnerability Assessment spreadsheet also captures the specifics of the risk, as it relates to the city and the Council's services, and the actions already being taken to mitigate the impacts and possible future actions that have been identified as part of the process. The full assessment and plan can be viewed on the Council's website: www.cambridge.gov.uk/adapt-to-climate-change.

10.4 The council has taken forward a number of actions in 2023/24 to support Council services, residents and businesses to adapt to the impacts of climate change, including heatwaves, water shortages and flooding.

10.5 Action 6.5 - Exploring opportunities to manage climate risks through policies in the new Local Plan: While the development of new policy related to climate change adaptation has been delayed, officers continue to ensure that existing policy is applied to all new development, with issues related to climate change adaptation regularly discussed as part of the pre-application discussions, notably in relation to design led approaches to reducing overheating in new homes and

[12] https://localpartnerships.gov.uk/resources/climate-adaptation-toolkit/
[13] UK Government's third Climate Change Risk Assessment - https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf.

meeting the requirements of Part O, and issues related to the urban heat island effect. A number of schemes in Cambridge are now using the Urban Greening Factor to demonstrate the role of urban greening in helping to mitigate the risk of the urban heat island effect (Clarendon House and the Beehive Centre for example). In-house training has also been delivered by the Principal Sustainability Officer to planning officers and planning committee members on Part O.

10.6 Following a request from residents, in November 2023 the Greater Cambridge Shared Planning Service (GCSPS) arranged for a presentation on the Urban Heat Island[14] as part of one of the services regular Cambridge Residents Association Meetings. This was in response to concerns being raised about the impact of developments in Cambridge on worsening the urban heat island. The presentation, given by Professor Marialena Nikopoulou, Professor of Sustainable Architecture from the University of Kent, introduced the idea of the urban heat island and ways in which its impact can be mitigated. Following on from this presentation, further work to develop in house resources on the Urban Heat Island is planned for the coming year. A recording of the presentation is available at: https://youtu.be/BdDbIg7FhoI?si=chFK8L2rqvYPbELv.

10.7 Action 6.6 – Increasing the tree canopy cover through tree planting and protection on public and private land, and using parks, open spaces and other green infrastructure in the city to help regulate temperatures: We have continued to plant trees, which help support biodiversity and increase resilience to a changing climate by providing shade and cooling during hot weather. During 2023/ 24, we planted 519 individual trees in our streets and parks and gave 194 trees away to residents through our Free Trees for Babies scheme. Working with the Community Engagement Team we have held 8 public tree planting events to raise awareness of the importance of tree cover.

10.8 Cambridge City Council has continued the partnership with the charity 'Trees for Streets' to make it easier for residents to fund tree planting in

[14] The increased temperature over urban areas compared to surrounding rural areas. It is called an island because in map view, it appears as though the urban area is an 'island' of heat in a colder 'sea' of the rural area surrounding it.

streets and parks across the city. Residents can choose to sponsor a 'Street Tree' outside their house or sponsor a 'Celebration Tree' in one of the parks or recreation grounds[15].

10.9 In the summer, Cambridge can be one of the hottest places in the UK. The shade provided by urban trees is valuable, especially to pedestrians and cyclists. Increasing this tree-shade can improve people's wellbeing and encourage more active travel. We commissioned a report[16] to map tree shade in the city – it assessed shade at 8am, midday and 4pm. It also looked at opportunities to plant trees on public land and in adjacent private gardens. It recommends concentrating tree planting and protection efforts in areas with lower levels of tree-shade. The report found that roads with more council-managed street trees had higher levels of shade. This suggests that our management of these trees has increased the shade on these roads and future protection of street trees should increase it further.

10.10 In conjunction with the Project Team, Drainage Team and County Highways we are undertaking feasibility and design works to plant trees along Coleridge Rd in engineered tree pits. The main aims of this project are to enhance shade provision and sustainable drainage (SUDS) along this road. Once the design is complete, we will seek internal and external funding to construct and plant. We plan to use our learning this project and other non-SUDS tree pits, in conjunction with the tree shade report to develop a long strategy to deliver more engineered tree pits across the city. The project contributes to the Council's urban forest approach to managing tree cover in the City. The approach is based on 3 themes: sustainable management of our own asset (including enhancement), raising awareness of the importance of trees on privately owned lands to encourage sustainability and enhancement; and our statutory controls (though DM planning conditions, TPOs and conservation areas) to require sustainability and enhancement over privately owned tree canopy.

[15] www.cambridge.gov.uk/sponsor-a-tree
[16] www.cambridge.gov.uk/media/h54nmxh0/mapping-tree-shade-in-cambridge.pdf

10.11 As part of the City's urban forest approach to managing tree canopy cover, we have published a series of tree canopy and land use profiles on our Tree data - Cambridge City Council webpage. There is one for each ward and one for the city as a whole. The aim of this project was to understand tree canopy distribution, composition, structure and change at a granular geographical scale for each ward; to create baseline evidence from which to measure future change, and; to aid decision-makers and stakeholders about tree canopy at a local/ neighbourhood scale.

10.12 Over the last four year we have planted significant more trees than usual as a result of grant funding from the Forestry Commission. The funding pays for the supply and planting of trees and 3 years watering. Forestry Commission grant funding is likely to finish this year which will result in a fall in tree numbers being planted next (we have budget for ~200 tree). There is no ring-fenced watering budget associated with our planting budget meaning we may have to plant even less (the budget is equivalent to 60 trees at FC rates) or expect increased rates of failure.

10.13 Action 6.9 - Delivering a measurable biodiversity net gain on the City Council's estate: The Council's strategic objectives in relation to biodiversity are set out in our Biodiversity Strategy[17]. During 2023/24, we carried out planned management and a number of projects to ensure designated sites and priority habitats are in good or favourable condition to act as corridors or stepping stones for species moving through the city. These projects will help increase resilience to a changing climate and contribute to the Cambridge Nature Network. We have continued to maximise the potential of our buildings, parks, open spaces, watercourses and tree stock to support biodiversity, whilst balancing their multifunctional needs. For example, we have:

- successfully planted over 130 metres of new native hedges in the Hedges for Kings Hedges Project
- increased the area of biodiversity managed grassland on our parks and verges

[17] Biodiversity Strategy 2022-2030 - Cambridge City Council

- reduced cattle numbers on the commons and trialling the use of ‘Nofence’ collars[18] to improve conservation outcomes form grazing.

The Logan's Meadow LNR (Local Nature Reserve) wetland creation project was delayed due to an Anglian Water sewer issue and is now on track to be delivered in September 2024.

10.14 Action 6.11 - Implementing projects to manage water courses and improve biodiversity, including a project to improve rare chalk stream habitats in Cambridge: We have secured approval for enhancement work on Cherry Hinton brook, scheduled for autumn 2024 and enhancement works continued along Coldham's Brook in partnership with Abbey People. We have developed the project plan to deliver evidenced based case studies for the Combined Authority funded Greater Cambridge Chalk Streams project over the next two years.

10.15 Action 6.12 - Move to cease the use of herbicide on grass road verges and trial using a new grass cutting and collecting machine, which will reduce cuttings left on verges, reduce the fertility of the soil for wildlife and support biodiversity: Following an evaluation of the trial of the four herbicide free wards (Newham, Arbury, West Chesterton and Trumpington) and the herbicide free street scheme, a new weed control methodology, where herbicide use is discontinued in routine operations and limited to scenarios where viable alternatives are exhausted or no other alternative available, was approved at committee in March 2024 which will help to improve biodiversity, soil health and water quality. Vegetation growth will be managed through methods like mechanical sweeping and hand tools such as hoes and spades. Residents can also get involved by adopting their street through the Happy Bee Street scheme and volunteering to help manage unwanted weeds and plants on the pavement by hand.

[18] virtual fencing system for grazing animals

11. Implications

a) Financial Implications

Funding for projects included in the Carbon Management Plan comes from a number of different funding sources, including the Council's Climate Change Fund and existing General Fund or Housing Revenue Account (HRA) budgets for delivering services. The Council plans to make further allocations to the Climate Change Fund to deliver Carbon Management Plan projects through the Council's annual budget setting process. The Council will also seek Government funding (e.g., from the Public Sector Decarbonisation Scheme) for projects in the Carbon Management Plan, as opportunities arise.

The actions contained in the wider Climate Change Strategy will be funded through primarily through existing budgets for delivering key services. These fall within the General Fund or the HRA depending on the services involved. We will also seek Government and other external funding sources for specific climate change initiatives, where this is available (e.g. from the Sustainable Warmth Scheme, Social Housing Decarbonisation Fund, Office for Zero Emissions Vehicles etc).

b) Staffing Implications

Lead officers have been identified for projects in the Climate Change Strategy and Carbon Management Plan who have the capacity to deliver the projects within the stated timescales. The Climate Change Officers co-ordinate the overall delivery of the Climate Change Strategy and Carbon Management Plan, with support from the Environment Policy and Project Group, which is a corporate group that includes many of the lead officers.

c) Equality and Poverty Implications

An Equalities Impact Assessment (EqIA) of the Climate Change Strategy and Carbon Management Plan has been carried out and is published on the Council's website: www.cambridge.gov.uk/equality-impact-assessments The EqIA did not identify any negative equality impacts from actions and projects identified in the strategy.

d) Net Zero Carbon, Climate Change and Environmental Implications

The Climate Change Strategy and the Carbon Management Plan will have

a high positive impact on the environment by setting out a planned approach to: reducing the Council's carbon emissions; setting high standards for residents, businesses and organisations to reduce their carbon emissions and manage climate risks; and working in partnership with, influencing and learning from other organisations to address the causes and effects of climate change.

e) Procurement Implications

Projects identified in the previous Carbon Management Plan have been delivered through the national REFIT 3 framework, which allowed us to access Bouygues Group PLC as a contractor to identify and deliver energy efficiency projects. The projects were delivered on an energy performance contracting basis, which meant that Bouygues guaranteed the energy savings predicted for the projects (subject to the new equipment being managed within defined limits). In April 2020, Cambridgeshire County Council led a consortium of local authorities, including Cambridge City Council to procure a partner for future energy efficiency and renewable energy schemes. Bouygues were appointed as the contractor through this process.

f) Community Safety Implications

The Climate Change Strategy and Carbon Management Plan have minimal impact on Community Safety.

12. Consultation and communication considerations

To inform the development of the Climate Change Strategy, we carried out: 5 online workshops in November 2020 attended by a total of 75 residents; an online consultation survey completed by 252 residents; a workshop with key businesses and institutions in Cambridge in January 2021; 3 Climate Change Forum meetings with local environmental groups; regular meetings with Cambridge Zero and other University of Cambridge and Anglia Ruskin University academics with climate change expertise.

The content of this report, and in particular the updated Action Plan, will be communicated to residents and businesses through a news release, articles in Cambridge Matters and made available on the council's website.

13. Background papers

No background papers were used in the preparation of this report.

14. Appendices

- Appendix A – Climate Change Strategy – Action Plan
- Appendix B – Carbon Management Plan - 2023/24

15. Inspection of papers

To inspect the background papers or if you have a query on the report please contact Janet Fogg, Climate Change Officer, tel: 01223 457176, email: janet.fogg@cambridge.gov.uk

Appendix A – Climate Change Strategy – Action Plan

Objective 1 Actions: Reducing carbon emissions from City Council buildings, land, vehicles and services

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
1.1	Deliver energy efficiency and renewable energy projects identified in the Council's Carbon Management Plan for 2021-2026 to reduce carbon emissions from corporate buildings (including swimming pools, sheltered and temporary housing, administrative buildings, car parks, community centres, the Corn Exchange and the crematorium).	Pawel.Goc@cambridge.gov.uk	Officers throughout the council. Climate Change Fund.	2021/22 Projects completed - March 2022	2022-26 projects identified, funding identified / applied for and measures installed/ implemented - March 2026		Ongoing to March 2026	Net zero carbon emissions by 2030 for our corporate buildings
1.2	Bid for future central government funding and other green energy funding available for investments in energy efficiency and decarbonisation measures in the Council's corporate buildings	Pawel.Goc@cambridge.gov.uk	Corporate Energy Manager within Asset Management Team	Identify and prepare information in preparation for future funding rounds - PSDS Funding Round 3C to Open Autumn 2023	Apply for PSDS round if appropriate project in Autumn 2023	Apply for PSDS or other funding round if appropriate I future years	Ongoing to March 2030	Reduce emissions in the Council's corporate buildings.
1.3	Review the Council's Office Accommodation Strategy, including an assessment of whether existing office buildings should be retained or rationalised	Paul.Boucher@cambridge.gov.uk	A project manager is appointed and additional resource for a Senior Development Manager and consultancy support was approved in July 2023 with recruitment/procurement underway.	Prepare business case/project documentation to agree approach, identify requirements in line with Business Transformation programme, actions, outcomes and resource	Business case and resources approved and in place - January 2024	Report to Committee with recommendations – early 2024	Mar 2024 for approval to business case and approach	TBC

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
				requirements. November 2023				
1.4	Purchase Ultra Low Emission Vehicles (ULEV) when replacing vans and trucks in the Council's fleet (where there is a suitable ULEV alternative and the infrastructure allows)	Peter.Birch@cambridge.gov.uk	General fund BSR	Project reliant on EV charging infrastructure 2024/25	Vehicle specifications agreed with end user April 2025and ongoing	Delivery of vehicles to spec September 2025 and ongoing	Annually to2030	4.39 $ktCO_2$
1.5	Purchase ultra-low emission vehicles (electric or hydrogen) when replacing refuse lorries	Michael.Parsons@scambs.gov.uk	Mainstream budget	June 2022 vehicle 2 and September 2022 vehicle 3 commissioned	March 2025 vehicle 4 commissioned	March 29 vehicle 5,6,7 commissioned	Annually to 2029	6 vehicles commissioned by 2029
1.6	Identify and assess the required improvements possible to remaining existing commercial properties (that will not be redeveloped as part of the commercial property redevelopment programme) to achieve net zero carbon, and obtain costs estimates for the improvement works	Philip.Taylor@cambridge.gov.uk	Property and Asset Management/Commercial Development teams will lead on this. Funding approved in July 2023 for additional resource for both commercial development and retrofit works to progress this.	An Asset Management Plan including meeting the Council's targets was approved in March 2023	Action plans for all properties to be prepared to identify prioritisation and asset management decisions for costed programme through to 2030 - November 2022 as set out in the Asset Management Plan.	Budget bids to be prepared for 2024/25 onwards for any costs not within existing allocated capital spend on commercial property - 2024/25 budget cycle	Annually through to 2030	TBC although savings may be to tenants in occupation
1.7	Identify and assess the performance standards to achieve net zero carbon for any new commercial buildings or redevelopment of existing buildings	Philip.Taylor@cambridge.gov.uk	Existing staff resource in Property and Asset Management/Commercial Development teams and working with designers on a scheme-by-scheme basis will develop proposals / approach	The Asset Management Plan setting out proposed timescales was approved in March 2023	As and when redevelopment schemes are proposed as each scheme may differ depending upon use/type		Ongoing for duration of General Fund redevelopment programme	Ongoing as schemes come forward and each scheme will be reported to Committee

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
1.8	Consider the use of the Council's reserves to invest in innovative "green investments" to facilitate measures to offset climate change.	Jody.Etheringtton@cambridge.gov.uk	General Fund Reserves	MTFS 2021 - will identify prudent minimum balance of reserves and the amount of reserves required to support the transformation programme. The balance would be available for investment.	MTFS 2022 - will identify prudent minimum balance of reserves and the amount of reserves required to support the transformation programme. The balance would be available for investment	N/A	As and when suitable green investments come forward for funding	N/A
1.9	Review standard tender packs to include the Councils expectations around climate change.	Janet.Fogg@cambridge.gov.uk	Climate Change Officer	Instruction to Bidders document (which forms part of the Tender Pack) - Environmental Factors section reviewed and updated - August 2021.	Updated Environmental Factors section included in Instruction to Bidders document – August 2021		August 2021 and then reviewed annually	Reduce emissions from future council contracts.
1.10	Provide written guidance for contract managers on climate change measures that could be included in contracts and include this information in procurement and contract management training for staff.	Janet.Fogg@cambridge.gov.uk	Climate Change Officer	Provision of guidance and inclusion in procurement and contract management training for staff - November 2021			November 2021 and then reviewed annually	Reduce emissions from future council contracts.
1.11	Explore the potential for a review of climate change and sustainability commitments by the Council's existing suppliers, and work with these suppliers to improve their performance.	Janet.Fogg@cambridge.gov.uk	Climate Change Officer				Starting July and working through a programme	Reduce emissions from current council contracts.

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
1.12	Revise and update the existing Climate Change Assessment tool to include net zero carbon considerations and use this to assess the climate change impacts of budget bids, business cases for capital projects and committee reports	Janet.Fogg@cambridge.gov.uk	Climate Change Officer	Tool updated and communicated to staff - August 2021			August 2021	

Objective 2 Actions: Reducing energy consumption and emissions from homes and buildings in Cambridge

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
2.1	Investing £2.5 million in energy efficiency improvements to Council homes with poor energy efficiency ratings (predominantly Energy Performance Certificate D to G rated stock) from 2020/21 to 2021/22.	Will.Barfield@cambridge.gov.uk	Energy Assessor/surveyor role and part of Corporate Energy Manager time	August 2021 Phase 1 of works completed.	March 2022 completion of project	n/a	March 2022	To reach a minimum of EPC C (B where possible) in at least 140 Council Properties that are currently an EPC D or below. Can provide $ktCO_2$ on completion of post EPCs.
2.2	Building 1000 new homes to Passivhaus standard or equivalent low carbon standard (where technically feasible and subject to funding) and targeting net zero carbon standards for Council homes built from 2030 onwards.	Ross.Jones@cambridge.gov.uk	Housing Development Agency (HDA) project teams	Planning permission: Passivhaus pilot schemes - November to December 2021 for Fen Road, Ditton & Borrowdale. February 2023 for Aragon & Sackville. Equivalent standard schemes - Aylesborough February 2023. Fanshawe	Start on site: Passivhaus pilot schemes - Fen Road August 2022, Ditton & Borrowdale October 2022. Aragon & Sackville September 2023. Equivalent standard schemes - Aylesborough June 2023, Fanshawe	N/A	Practical completion: Passivhaus pilot schemes - Fen Road, Ditton & Borrowdale February 2024. Aragon & Sackville targeted October 2024. Equivalent standard schemes Aylesborough targeted October 2025, Fanshawe	To achieve Passivhaus Certification for 21 properties. To achieve equivalent sustainability standards measured using the Passivhaus Planning Package (PHPP) modelling on 'non-certified' schemes. To undertake TM54 Assessments of Operational Energy Use at design stage to review specification impacts on energy bills.
2.3	Promoting group-buying schemes, including working with Cambridgeshire County Council to promote the Solar Together collective scheme to homeowners, which provides residents with solar	Justin.Smith@cambridge.gov.uk	Environmental Projects Team Leader	First auction held in September 2020	A further round is being considered for later in 2021.	A second round of Solar Together was run in February 2022	Ongoing to March 2026	150 properties supported

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
	PV and battery storage installations at a significantly reduced cost							
2.4	Commissioning a study to identify measures needed to retrofit private homes in Cambridge to net zero carbon standards and producing detailed guidance for homeowners and landlords	David.Kidston@cambridge.gov.uk	Allocated – Climate Change Research and Projects budget	Procurement completed and contract awarded – September 2021	Final report – December 2021	Guidance for homeowners and landlords – March 2022	March 2022	N/A
2.5	Bidding for central government funding available for retrofitting energy efficiency measures to private homes, including future rounds of the Green Homes Grant Local Authority Delivery (LAD) scheme.	Justin.Smith@cambridge.gov.uk	Environmental Projects Team Leader & Project Officer recruited from funding.	October 2021 - Cambridgeshire local authority consortium LAD3 and HUG1 bid is successful Consortium delivering £6.46m of support from April 2022 – March 2023 under the Sustainable Warmth Scheme.	March 2023 – Sustainable Warmth scheme managed closure agreed to extend delivery of signed up jobs	March 2023 - Cambridgeshire local authority consortium awarded £11.5m of HUG2 funding. A Delivery Assurance Check passed in May 2023 to allow delivery to start	Ongoing, dependent on funding	50 properties to be supported through funding each year in Cambridge
2.6	Targeted enforcement of Minimum Energy Efficiency Standards Regulations where appropriate (EPC F and G rated private rented housing stock)	Claire.Adelizzi@cambridge.gov.uk	Existing Team staff resources	2021 / 22 - 150 MEES interventions any follow up action taken in line with Regulations, officer procedure & corporate enforcement policy.	Milestone 1 rolled over for action / completion within 2022/23		Ongoing review milestones end 2022/23	2022/23 - targeted intervention in relation to 150 private rented sector properties and seeking to improve energy efficiency standards of these.

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
2.7	Developing new policies requiring high standards on carbon emissions reduction and environmental sustainability for new homes and non-residential developments as part of the new Greater Cambridge Local Plan, taking into account the outcomes of the net zero evidence base study and other evidence informing the plan, as well as the national planning policy framework	Emma.Davies@greatercambridgeplanning.org / Jonathan.Dixon@greatercambridgeplanning.org	Existing Greater Cambridge Shared Planning Service budgets	Autumn 2021 - consultation on preferred options including policies related to net zero carbon buildings	Achieve Gateway 1 of the new plan making system by autumn/winter 2025	TBC	Following examination	All new homes/non-residential buildings to meet the net zero carbon buildings requirements set out in the new Local Plan
2.8	Building control retrofit advice	Steve.Fulcher@3csharedservices.org / James.Chesher@3csharedservices.org	Existing Team staff resources	A pilot will start in autumn 2021 to provide residents with retrofitting advice.	Team updated websites, adverts in both CCC and SCDC magazines. Email contact have been responded to with advice. Process in place for this.	Phase 2 – purchasing of thermal imaging cameras, template of advice for residents including signposting and images of properties	2023	For domestic projects (i.e. new homes, extensions and refurbishments) 60% utilising Council building control teams
2.9	Develop and deliver Net Zero Retrofit pilot to 50 Council homes	James.Purkiss@cambridge.gov.uk	Existing Team staff resources (dedicated Net Zero Retrofit Officer)	December 2022 – 50 homes were signed up to programme, project design kick off	September 2023 – project to receive planning, detailed design phase to be completed and be issued for tender	May 2024 - construction works to start	Spring 2025 (To be followed by extended monitoring and evaluation)	Net zero operational energy. Target space heat demand 25-50 kwh/m2/yr (existing homes are between 210-325 kwh/m2/yr)

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
2.10	Deliver External Wall Insulation (EWI) to 289 solid-walled Council homes, of which 185 are part-funded by Social Housing Decarbonisation Fund (SHDF) Wave 2.1 grant The work will take a street-by-street approach to retrofitting council homes to a minimum of EPC C. Works will include EWI, and where required loft insulation and replacement of glazing at end of life with new triple glazing.	Will.Barfield@cambridge.gov.uk / James.Purkiss@cambridge.gov.uk	Existing Team staff resources, includes hiring additional Retrofit Project Manager, Retrofit Project Officer and Retrofit Project Assistant for 2 years	April 2023 – commencement of works to first 44 homes using an existing contract	November 2023 – sign contract for second phase of works to 245 homes	March – September 2025 – completion of programme, monitoring to take place over winter period	2025	Minimum EPC C – in line with 2035 council target

Objective 3 Actions: Reducing carbon emissions from transport in Cambridge

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
3.1	Supporting the Greater Cambridge Partnership (GCP) to deliver a range of walking, cycling and bus improvements on key routes into and across Cambridge, including: • The Chisholm Trail cycling route connecting Cambridge and Cambridge North Stations • 12 Greenways, providing radial cycling and walking routes connecting Cambridge and surrounding settlements and employment sites. • Bus, cycling and walking priority schemes on Histon Road and Milton Road • Public transport corridor schemes to connect growing communities to employment hubs	Isobel.Wade@cambridgeshire.gov.uk	GCP Officer time, CCC support where required	Completion of initial projects, Histon Road and Chisholm Trail Phase 1 completed in late 2021	Approval of construction for Milton Road, Greenways and other cycling, walking and bus improvements by end of 2025	Construction of schemes ongoing to March 2026	Ongoing to March 2026	These schemes represent a significant increase in sustainable transport capacity that will support more people to walk, cycle or take public transport.
3.2	Implementing the Local Lettings Plan framework for new Council housing developments, which will give priority to people working within an agreed geographical radius of the development. This measure is intended to help reduce commuting by car from tenants of new Council housing developments	Helen.Reed@cambridge.gov.uk	Existing staff resources	Darwin Green Local Lettings Plan developed as a pilot – published May/June 2021	Consultation with Registered Providers (RPs) of social housing on wider framework by December 2021	Publication by March 2022	August 2022, then ongoing	10% of homes on strategic sites to be prioritised for applicants living within an agreed radius of the development; and 5% on non-strategic sites

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
3.3	Building new Council housing developments in Cambridge with a target of less than one car parking space per home to encourage sustainable travel subject to individual development requirements and to provide electrical vehicle charging facilities.	Ross.Jones@cambridge.gov.uk	Existing staff resources	New sustainable housing design guide to include car parking ratios	New sustainable design guide issued – Summer 2021	Review of car parking on delivered schemes April 2023 to March 2024	Ongoing	Parking spaces per home & number of electric vehicle charging points
3.4	Promote sustainable modes of transport through the planning system by: • Applying policies in the current Local Plan to support housing and non-residential development which prioritises access by walking, cycling and public transport. • Develop new policies related to promoting sustainable transport and ensure that the accessibility of new development sites to sustainable transport infrastructure is a key aspect in decision making in preparing the Greater Cambridge Local Plan.	Emma.Davies@greatercambridgeplanning.org / Jonathan.Dixon@greatercambridgeplanning.org	Existing services budgets (note that for planning applications, advice related to sustainable transport is led by Cambridgeshire County Council)	Autumn 2021 - consultation on preferred options including policies related to sustainable transport	Achieve Gateway 1 of the new plan making system by autumn/winter 2025		Following examination	Sustainable transport policies identified in new Local Plan implemented in new developments
3.5	Developing and undertaking a programme of activities in the city to promote walking, cycling and the use of public transport across a range of settings and communities (through Council funding for active travel and the Active Lifestyles Team). This will support and complement parallel	Alistair.Wilson@cambridge.gov.uk / Ian.Ross@cambridge.gov.uk	The former Active Travel Officer (vacant) is no longer intended to be recruited to, with the role and main responsibilities	The Council's programme of promotional grants for walking, cycling and active travel has been revisited with updated	Consultation paper on changes within City Services group management structure published. Complete – July 2023.	Consultation paper on OC2 (Organisational Change 2) structural changes within City Services	From 2021 onwards.	Formal transformation changes to City Services, and Communities, groups expected to be embedded

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
	work stream being delivered via partner organisations including the County Council, Combined Authority, GCP and voluntary sector.		absorbed within the wider Streets & Open Spaces Development Unit team. Programme of activities promoting walking, cycling and use of public transport will be developed and undertaken working across the Council.	publicity communications , web page and process for inviting and considering applications. Complete – July 2023.		published – anticipated from April 2024. This will help inform how the Council supports and resources active travel promotional work in the years ahead.		during 2024.
3.6	Encouraging attendees and contractors at Council run events, including the Cambridge Folk Festival and Corn Exchange, to consider more sustainable transport options when travelling to events, and working with the County Council transport team to ensure the city evening economy is served by sufficient bus transport taking people back out to outlying towns and villages.	Frances.Alderton@cambridge.gov.uk / Rebecca.Stewart@cambridge.gov.uk	Existing budget and staff resources.	Oct 21 and ongoing - Devise and implement a marketing campaign within the event marketing to communicate sustainable transport options.	Oct 21 and ongoing - Establish a joint marketing and services with Stagecoach and other public transport providers i.e. Shuttlebus from the station to Big Weekend.	Increase cycle parking at Bonfire Night and Big Weekend.	Ongoing to March 2026	
3.7	Completing installation of 18 rapid and 3 fast electric charge points for taxis in Cambridge by 2021	Jo.Dicks@cambridge.gov.uk	£100k City Capital; £100k GCP capital: £426k OLEV Grant Funding	Four Sites (8 Rapids by March 2019) Completed	Remaining 13 Chargers installed by end of December 2021 (4 of 13 are installed and operating)	19 will be completed due to cost over-run and delays.	September 2024	

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
3.8	Requiring all new taxis registered in Cambridge to be Ultra Low Emission Vehicles (ULEVs) or zero emissions vehicles from 2020, and all taxis to be ULEVs or zero emissions vehicles by 2028	Jo.Dicks@cambridge.gov.uk	Early adopter fee waiver budget of £150k, all other costs within normal revenue	Policy adopted: June 2019 and implemented from 1st April 2020.	Disabled-access taxis to be reviewed in 2026.	All Licensed Taxis ULEV by 31st December 2028.	2028	
3.9	Using guidance in the Sustainable Design and Construction Supplementary Planning Document to require provision of electric vehicle charging points in future new housing and non-residential developments and consider the need for new policies in the Greater Cambridge Local Plan to support the electrification of transport.	Emma.Davies@greatercambridgeplanning.org / Jonathan.Dixon@greatercambridgeplanning.org	Existing staff resources from Greater Cambridge Shared Planning Service (GCSP) and Environmental Health	Autumn 2021 - consultation on preferred options including policies related to EV charge point provision	Achieve Gateway 1 of the new plan making system by autumn/winter 2025		Ongoing	Every new development has the amount of charge points as set out in the SPD
3.10	Delivery of electric vehicle charging infrastructure in Council car parks through a commercial partner	Sean.Cleary@cambridge.gov.uk	Net zero capex/opex for the Council solution	Award of contract Sept/Oct 21	First installation completed in August 2023		December 2030	
3.11	Working with Cambridgeshire County Council and UK Power Networks to facilitate on-street residential electric charge points where there is no scope for off-street charging. 3 initial pilot schemes for 'charging collectives' will be procured during 2021.	Jo.Dicks@cambridge.gov.uk	£100K City Council Capital allocation; £119k OZEV ORCS Funding; £ 1 million+ UKPN Green Recovery Fund	Funding Secured from UKPN and OZEV completed in June 2021	Procure contractor for supply, installation, running, maintenance of charge points. (BP Chargemaster Pulse awarded July 2021)	All 42 on street charging points for public use have been installed by August 2023	August 2023	

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
3.12	Working with Cambridgeshire County Council and the CPCA on a wider electric vehicle charging strategy.	Jo.Dicks@cambridge.gov.uk					Ongoing – being led by the CPCA	
3.13	Working with GCP and bus operators to explore opportunities for further investment in electric buses.	Jo.Dicks@cambridge.gov.uk / Isobel.Wade@cambridgeshire.gov.uk	City, GCP and CPCA officer time	February 2020 – launch of electric bus trial	August 2021 – CPCA submission of bid for DfT ZEBRA funding for 30 additional electric buses	Deployment of additional buses from early 2023	Ongoing - awaiting a new round of ZEBRA (Zero Emission Bus Regional Area) funding from Central Government	Reduction in carbon emissions in Cambridge as a result of reduced diesel fuel consumption by buses

Objective 4 Actions: Reducing consumption of resources, reducing waste, and increasing recycling in Cambridge

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
4.1	Funding activities through the Council's Sustainable City Grants by voluntary and community groups to reduce consumption and increase repair, re-use and recycling	Janet.Fogg@cambridge.gov.uk	Climate change Officer - assessment of applications for funding from the Sustainable City Grant (SCG) and Grants Team officers - administration of grants process.	Applications for the 2022/23 SCG are assessed, and funding agreements finalised.	Applications for the 2023/24 SCG are assessed, and funding agreements finalised.	Applications for the 2024/25 SCG are assessed, and funding agreements finalised.	Annually	Reduction in emissions in the city as a result of reduced energy consumption, waste or reduced transport powered by fossil fuels.
4.2	Supporting the national Refill campaign by promoting over 100 free drinking water taps in Cambridge, including a number of drinking taps and fountains provided by the Council.	Alistair.Wilson@cambridge.gov.uk	Within existing staff resource and use of S106 monies (when appropriate)	Web site and Web App presence. www.refill.org.uk/refill-cambridge/	Additional water fountains installed.		Ongoing	
4.3	Reducing plastics usage at Council-run events such as Cambridge Folk Festival and the Big Weekend	Frances.Alderton@cambridge.gov.uk / Rebecca.Stewart@cambridge.gov.uk	Within existing budgets and staff resource	Oct 21 - Require caterers to not use single use plastics or plastic condiment sachet	Dec 2021 - Devise and implement influencing campaign to influence other departments and contractors	Jun 2022 - implement analysis of each event (by section) to provide quantitative data to measure against	Ongoing	
4.4	Maintain trials of separate collections of food waste to approximately 10k households (evidence to	Dee.Wood@scambs.gov.uk	Within existing budget and, in the future, internal funding to be	December 2020 – phase 2 of trial implemented to make 4,000 HH	December 2021 – phase 3 of trial implemented to add a further	By March 2023 – total of 9,205 HH across the GCSWS area	March 2023	Reduction of amount of food waste in the black bin,

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
	date suggests this increases recycling of food waste and ultimately reduces the amount of household food waste).		sought for 2022-2025, central government funding should be available in 2025	on trial in total	5,000 on the trial	were served by the trial. 2025 – outcome of national waste strategy to guide future development		currently 30% as confirmed by Waste analysis
4.5	Continue communications campaigns as documented in Circular Resource Strategy to encourage residents to recycle more, generate less waste and contaminate less. Using communications channels such as events, social media, leaflets and residents' magazines	Rebecca.WeymouthWood@scambs.gov.uk	Within existing budget	May 2022- social media messages delivered on The Big Plastic Count campaign. June 2022- social media messages delivered on World Oceans Day, World Environment Day and World Refill Day	March 2023- deliver a contamination campaign to target households that regularly contaminate bins	Sept 2024- ensure communication and re: battery and electrical recycling is completed. Q3 2024 plan month of promotion on waste prevention circular resources campaign linked to zero waste September etc.	Ongoing	Recycling rate 52% Contamination rate below 7%
4.6	Encouraging businesses to take-up recycling and food-waste collections provided by the Council on a commercial basis	Rebecca.WeymouthWood@scambs.gov.uk	Within existing budgets	2022 – 148 total business customers in 2022	2023 – 174 total business customers in 2023 number of new customers of proceeding year	April 2024- number of new customers of proceeding year	Ongoing	60 per year
4.7	Review outcome of national waste strategy and Environment Act and impact of packaging production	Rebecca.WeymouthWood@scambs.gov.uk	Within existing budgets	December 2024 - review outcome of national waste strategy and impact of packaging production	May 2024- attend briefing by DEFRA	Implement Food Waste collections by April 2026 and respond to other DRA EPR legislation	Ongoing	Delivery of new Food waste collections by 2026

Objective 5 Actions: Promoting sustainable food

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
5.1	Incorporating sustainable food principles in council catering and at Council-run events where possible	Graham.Saint@cambridge.gov.uk	This is dependent of food providers at council run events that are directed by the fair terms and conditions set out in council licenses and contracts.	Contracts and licenses are continually being reviewed to incorporate sustainable food principles, where possible, within the legal frameworks that apply.			Ongoing	
5.2	Work in partnership with local voluntary and community groups to address food poverty, including working with Cambridge Food Poverty Alliance and Cambridge Sustainable Food to develop a food re-distribution hub	Graham.Saint@cambridge.gov.uk / Vicky.haywood@cambridge.gov.uk	a) use of Cambridgeshire County Council funds to support fuel/food poverty projects b) £100K capital funds allocated for redistribution hub c) Staffing resourced through community services baseline budget	August 2021: £30K (county funding) redistributed to voluntary organisations for summer holiday, food/fuel poverty programmes	Redistribution hub moves from temp home at Buchan St prior to premises demolition	Work on sustainable business plan for project beyond life of council funding - Present to Sept 2023	Re-distribution hub re-locates on/before Autumn 2022	
5.3	Supporting the work of local Community Food Hubs to provide free, sustainable food to residents affected by the Covid-19 pandemic	Vicky.haywood@cambridge.gov.uk	Staffing resourced through community services baseline budget. Funding provided through Covid funding streams	Funding provided to: CECF /CSF/Foodbank to support emergency food/ pandemic recovery	8x food hubs working together with food poverty alliance to agree next steps Oct 2022	Review emergency food parcel provision post pandemic June 2022	Ongoing	

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
5.4	Working with the Cambridge Sustainable Food Partnership towards achieving the Sustainable Food Cities Network Gold Award for Cambridge.	Graham.Saint@cambridge.gov.uk	CSF CIC has provided resources in terms of officer time to assemble and submit applications. Partners to contribute actions.	The Silver Award was assigned by Sustainable Food Places to Cambridge City on 2 July. Work has begun to prepare an outline submission for Gold Award - launched in May 2022.	Prepare a submission of interest for Gold Award for the city by the end of December 2023.	Final application for Gold Award submitted by March 2024.	June 2024	Gold Award achieved in June 2024
5.5	Encouraging residents to choose sustainable, local food and to reduce meat consumption through corporate communications messages	Danette.OHara@cambridge.gov.uk	Existing staff resource	Communications prepared to coincide with COP26 in November 2021	Communications prepared to coincide with upcoming national awareness days: Food Waste Action Week (March 2022) and National Vegetarian Week (May 2022)	Communications prepared to coincide with upcoming national awareness days: Veganuary January (2025 and 2026), Food Waste Action Week (March 2025), Stop Food Waste Day (April 2025) and National Vegetarian Week, World Vegetarian Day and World Food Day (October 2024 and 2025)	Ongoing to March 2026	Ongoing

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
5.6	Maintaining the current level of occupancy rates at existing allotments and supporting take-up of new community gardens and allotments in growth sites to encourage residents to grow their own food	Alistair.Wilson@cambridge.gov.uk	Existing staff resource	Regular inspections for non-cultivation, followed by enforcement leading to termination so plots can be allocated to those on the waiting lists	Allocation of new and existing plots as soon as they are made available		Ongoing	Ongoing
5.7	Using guidance in the Sustainable Design and Construction Supplementary Planning Document (SPD) to encourage developers to incorporate food growing in new housing and non-residential development (e.g. providing fruit trees, roof top gardens and growing space as part of landscape design)	Emma.Davies@greatercambridgeplanning.org / Jonathan.Dixon@greatercambridgeplanning.org	Existing service budgets				Ongoing until new Greater Cambridge Local Plan comes into force	
5.8	Working with local voluntary and community groups and other partners to promote sustainable food practices to local businesses	Janet.Fogg@cambridge.gov.uk	Use of Sustainable City Grant to fund activities	Projects funded for delivery in 2022/23	Projects funded for delivery in 2023/24	Projects funded for delivery in 2024/25	Ongoing to March 2026	Ongoing (annually through Sustainable City Grants)

Objective 6 Actions: Supporting Council services, residents and businesses to adapt to the impacts of climate change

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
6.1	Developing an Environmental Management System (EMS) for Environmental Services activity and seek ISO40001 accreditation. This will include a focus on reducing water consumption, potentially through reduce plant watering and sourcing water through rainwater harvesting systems for plant watering and public toilets.	Alistair.Wilson@cambridge.gov.uk	Existing staff resource	Audit and draft an EMS for S&OS.	Implement and carry out first assessment of EMS effectiveness	Modify EMA and seek achievement if accreditation to ISO 14001	March 2022	March 2022
6.2	Working with Cambridge Water to promote water saving messages to residents and businesses	Danette.OHara@cambridge.gov.uk	Existing staff resource	Communications prepared to coincide with upcoming national awareness days	To promote water savings and reductions through social media on World Water Day (March 2025) and Water Saving Week (May 2025)		Ongoing to March 2026	Water consumption of homes and businesses reduced
6.3	Promoting the use of council pools/ paddling pools/ splash pads in the event of hosepipe bans in conjunction with the local water company, to encourage residents to utilise council facilities instead of using water to fill up garden paddling pools etc.	Ian.Ross@cambridge.gov.uk	Social media and web-based messaging.	This action will only be implemented if there is a hosepipe ban and will come into actioning then	N/A	N/A	N/A	Ongoing

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
6.4	Requiring new housing to meet the water efficiency standards in the current Local Plan (maximum of 110 litres/person/day) and explore where higher standards may be needed in the new Local Plan.	Emma.Davies@greatercambridgeplanning.org / Jonathan.Dixon@greatercambridgeplanning.org	Existing service budgets	Autumn 2021 - consultation on preferred options including options related to enhanced levels of water efficiency	Achieve Gateway 1 of the new plan making system by autumn/winter 2025		Ongoing until adoption of the Greater Cambridge Local Plan	All housing developments to achieve 110 litres/person/day. All non-residential developments to achieve 5 BREEAM Wat01 credits.
6.5	Exploring opportunities to manage climate risks through policies in the new Local Plan, subject to the outcomes of the current national consultation on planning reforms. This could include water efficiency policies to help reduce water consumption and manage water resources; designing buildings that are simple to keep cool; and Sustainable Drainage Systems (SUDs) measures to help reduce flood risk.	Emma.Davies@greatercambridgeplanning.org / Jonathan.Dixon@greatercambridgeplanning.org	Existing service budgets	Autumn 2021 - consultation on preferred options including options related to designing for a changing climate and flood risk and sustainable drainage	Achieve Gateway 1 of the new plan making system by autumn/winter 2025	TBC	Following examination	
6.6	Increasing the tree canopy cover through tree planting and protection on public and private land, and using parks, open spaces and other green infrastructure in the city to help regulate temperatures.	Matthew.Magrath@cambridge.gov.uk	Existing service budgets and grant funding (e.g. Urban Tree Challenge, Local Authority Treescape Fund, Interreg 2 Seas)	Complete our commitments to the Nature Smart Cities across the 2 Seas project – extended to March 2023 (completed)	New tree strategy. 2026	2% increase in tree canopy cover. 2050	2050	330.3 tCO_2

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
6.7	Providing advice to residents on how to reduce health risks during heatwaves	Danette.OHara@cambridge.gov.uk	Existing staff resources	Communications prepared to coincide with summer / usual heatwave periods			Ongoing to March 2026	Increased awareness of health risks during heatwaves
6.8	Working with Cambridgeshire County Council and other partners in the Cambridgeshire & Peterborough Flood and Water Management Group (CP FloW) to manage climate change-related flood risks.	Rachel.veysey@cambridge.gov.uk	Existing staff resources	Continuing to work with the partnership including inputting into the local flood risk management strategy action plan – October 2021 deadline for review of the most recent draft	Local flood risk management strategy action plan approval due- December 2021	Action plan approved 2022	Objectives to delivered by 2027	
6.9	Delivering a measurable biodiversity net gain on the City Council's estate through enhanced management of existing Local Nature Reserves and making parks and housing open spaces more hospitable to wildlife through creation of meadows, scrub and woodland.	Guy.Belcher@cambridge.gov.uk	Adoption and implementation of new Biodiversity Strategy and Action Plan- existing revenue budgets, S106 and EIP projects.	Review LNR management plans 2023 - 2026			Ongoing	Measurable biodiversity net gain on the City Council's estate
6.10	Engaging and influencing individuals, institutions and businesses to take steps to make their land more hospitable and permeable to wildlife and help create a citywide network of sites.	Guy.Belcher@cambridge.gov.uk	Adoption and implementation of new Biodiversity Strategy and Action Plan- existing revenue budgets, S106 and EIP projects.	Partner with Cambridge Conservation initiative on evidence based local projects and citizen science			Ongoing. Strategy through to 2030	Ongoing

Ref	Action	Officer	Resources	Milestone 1	Milestone 2	Milestone 3	Completion date	Target
6.11	Implementing projects to manage water courses and improve biodiversity, including a project to improve rare chalk stream habitats in Cambridge. Initial work will focus on Cherry Hinton Brook, Vicars Brook at Coe Fen, and Coldham's Brook on Stourbridge Common.	Guy.Belcher@cambridge.gov.uk	Existing Drainage revenue, EIP and S106. Combined Authority Grant. Additional external grants e.g. Anglian Water Get River Positive, OFWAT, Cambridge Water, Natural England and Environment Agency	August 2023 - CPO Sign off of Greater Cambridge Chalk Stream Project	September 2023 - Creation of external partner stakeholder group	Stakeholder and technical workshops to understand opportunities and constraints and priority action	March 2026	Under development
6.12	Move to cease the use of herbicide on grass road verges and trial using a new grass cutting and collecting machine, which will reduce cuttings left on verges, reduce the fertility of the soil for wildlife and support biodiversity.	Alistair.Wilson@cambridge.gov.uk	New resource secured on a temporary contract	Scope the use of a Trial following the Council Motion on the 22 July 2021.	Report to Committee in late 2021 or early 2022	Trial underway in agreed locations Spring 2022	March 2022	January 2023 Review of trial from 2022

Appendix B – Carbon Management Plan projects

2023-24 Projects	Cost	Climate Change Fund contribution	Contribution from other sources	Estimated annual energy savings (kWh)	Estimated annual carbon savings (tCO_2e)	Estimated annual financial savings	Financial payback	LATEST UPDATE ON PROJECT AS OF AUGUST 2024
STREETLIGHTING								
Streetlighting: Replacement of remaining HRA streetlamp columns and lanterns with LED units. Estimated 63% reduction on the baseline.	£513,826.00	-	£513,826.00	97,925	27.2	TBC	TBC	Completed: Replacement works started in September 2022 to upgrade lanterns and columns and was completed by March 2024.
FLEET								
Shared Waste Service: Purchase of 5 further electric Refuse Collection Vehicles (RCV) for use across the service.	TBC	-	TBC	TBC	TBC	TBC	TBC	In Progress: The third electric Refuse Collection Vehicle (eRCV) was delivered in July 2023.

ADMINISTRATION BUILDINGS2024-25 Projects	**Cost**	**Climate Change Fund contribution**	**Contribution from other sources**	**Estimated annual energy savings (kWh)**	**Estimated annual carbon savings (tCO_2e)**	**Estimated annual financial savings**	**Financial payback**	**LATEST UPDATE ON PROJECT AS OF AUGUST 2024**
FLEET								
Shared Waste Service: Purchase of 5 further electric Refuse Collection Vehicles (RCV) for use across the service.	TBC	-	TBC	TBC	TBC	TBC	TBC	In Progress: The fourth electric Refuse Collection Vehicle (eRCV), a Dennis eCollect, went into service in June 2024 on the inner-city trade waste collections.
STREETLIGHTING								
Communal lighting in blocks of flats: Replacement of communal lights within blocks of flats on housing estates with LED lamps and appropriate controls.	£651,735	-	-	TBC	TBC	TBC	TBC	In Progress: 10 sites were completed during 2022/23 as part of an ongoing five-year communal upgrade programme prioritising sites where emergency lighting has been identified as a requirement (£340,440). A further 3 sites will be completed in 2024/25 (£311,295).
CREMATORIUM								
Crematorium: HVAC improvements, BEMS, LED lighting, insulation.	Estimated: £39,902	-	£39,902	141,932	28	£4,327	9.2	Further Investigation Required: Ongoing. Part of comprehensive Head Decarbonisation Plan (please see below)

ADMINISTRATION BUILDINGS2024-25 Projects	**Cost**	**Climate Change Fund contribution**	**Contribution from other sources**	**Estimated annual energy savings (kWh)**	**Estimated annual carbon savings (tCO_2e)**	**Estimated annual financial savings**	**Financial payback**	**LATEST UPDATE ON PROJECT AS OF AUGUST 2024**
Heat Decarbonisation Plan Phase A: Crematorium, Kelsey Kerridge Sports Centre (linked to Parkside Pool), Brown's Field Community Centre, Barnwell House and Trumpington Pavilion								
Heat Decarbonisation Plan (HDP) and Feasibility Study with detailed proposal of low carbon solutions, capital cost, carbon/cost savings and a carbon projection over the next 20 years (including PSDS application support)	Estimated: £32,8252	£18,4252	£14,4002	Subject to outputs of HDP and feasibility study	Subject to outputs of HDP and feasibility study	Subject to outputs of HDP and feasibility study	Subject to outputs of HDP and feasibility study	Consultancy proposals reviewed and further investigation ongoing.

REPORT TITLE: Consultation on expansion of the Smoke Control Area (SCA)

To:
Councillor Rosy Moore

Executive Councillor for Environment, Climate Change & Biodiversity

Environment & Community Scrutiny committee

26th September 2024

Report by:
Jo Dicks, Environmental Quality & Growth Team Manager

Tel: 01223 457892 Email: jo.dicks@cambridge.gov.uk

Wards affected:
City Wide

1. Recommendations

1.1 It is recommended that the Executive Councillor:

Approve the consultation to the public on expanding the SCA to cover the whole of the district including to extend the scope of the SCA to include permanent moored vessels.

2. Purpose and reason for the report

2.1 Solid Fuel Burning is the largest single source of PM2.5 emissions in Cambridge. It accounts for 40% of emissions in Cambridge.

2.2 Legislation to control emissions from solid fuel burning is the Clean Air Act 1993 and the use of Smoke Control areas (SCA); a designated area where the emission of smoke is not permitted. You can burn inside a SCA, but either smokeless fuel or a DEFRA approved appliance must be used. In Cambridge we currently have three SCA's which were introduced in the 1960's and 1970's, See Appendix A. The majority of residential properties are outside our existing SCA's.

2.3 Cambridge City Council commissioned an independent report to assess the effects of amending the SCA in Cambridge to cover the whole of the city. The report considered

both the inclusion and exclusion of permanent moored vessels in terms of changes in pollution emissions, health & socio economic impacts. See Appendix B for the full report.

2.4 The report concluded that any changes to widen the scope of the SCA would provide a net benefit to society from health improvements due to reduced air pollution and greenhouse gas emissions, with these benefits outweighing the combined costs. Costs include, cost to home and vessel owners of switching fuel or upgrading stove and cost to council for implementation and enforcement.

2.5 The impact on individuals was considered as part of the socio-economic study. Very few residents are solely dependent on solid fuel for heating and hot water, with changes impacting those that use wood burning stoves for pleasure or to subsidise other forms of central heating. However, this is not the case for moored vessel owners who are more dependent on solid fuel. Evidence suggests that this group may have lower incomes and be more vulnerable.

2.6 The report recommends the expansion of the SCA to cover the whole city including moored vessels however, recommends further engagement with vessels owners given the increased potential vulnerability of this group. Should changes to the SCA be implemented it should be accompanied by a robust awareness raising campaign.

3. Alternative options considered

3.1 Cambridge City Council has a responsibility under LAQM to monitor air quality in its district and identify actions to deliver continued air quality improvements, including how we can help meet national targets for $PM_{2.5}$. Domestic Burning is the largest source of PM2.5 in the city and continues to increase due to the growing trend for wood burning stoves. Review of existing SCA's as a mechanism for reducing $PM_{2.5}$ emissions is an action for Local authorities within the National Air Quality Strategy.

3.2 The existing SCA's provide limited control on emissions from solid fuel burning due to the limited geographical area, however it is acknowledged that amendments to the scope of the SCA will potentially impact some residents.

3.3 The amendments to the Environment Act (2021) allowed the scope of the SCA to be expanded to include permanent moored vessels following a period of consultation. Of the complaints received by Environmental Health pertaining to smoke pollution we receive a disproportionate amount related to smoke from permanent moored vessels,

despite the small number that exist. It therefore makes sense to consider the inclusion of moored vessels should amendments to the SCA be made.

3.4 The independent report commissioned by Cambridge City Council considered the environmental, health and socio economic impacts of making amendments to the SCA. The report considered five scenarios:

- baseline (SCA as existing),
- existing SCA plus inclusion of moored vessels,
- city wide without moored vessels,
- city wide with moored vessels
- No SCA.

3.5 A sensitivity test of 25% non compliance has been built into the results due to the limitations and uncertainty inherent in the report and resulting behavioural changes. The report demonstrated that the scale of environmental and health benefits were in line with the scale of change with the greatest benefits achieved by expanding the SCA city wide. Whilst moored vessels account for a small number of individual sources they are fairly visible and account for a disproportionately large proportion of emissions as a large percentage of vessels rely on solid fuel burning in some capacity.

3.6 The report recommends the expansion of the SCA city wide including moored vessels as this offers the greatest environmental and health benefits. Whilst there is not a requirement to formally consult to expand an existing SCA, there is if the inclusion of moored vessels is to be considered. We recommend consulting on the expansion of the SCA to enable engagement with residents who may be impacted both positively and negatively and disseminate the message about the wider health implications of solid fuel burning. The alternative option to the consultation is not to consult and to retain the existing SCA's as they are.

4. Background and key issues

4.1 Driver for Change

4.1.1 The primary pollutant of concern from solid fuel burning is $PM_{2.5}$ (particulates less than 2.5 micrometres). Solid fuel burning is the largest single source of $PM_{2.5}$ emissions in the district, estimated to account for 40% (35 tonnes in 2021). Wood burning makes up the majority (76% of the 35 tonnes). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

4.1.2 The Environment Act 2021 amendments required a national target level for $PM_{2.5}$, with two legally binding targets, each with an interim target set under the Environmental Target Regulations (2023): Target levels set for $PM_{2.5}$ are:

- 10 µg/m^3 annual mean concentration $PM_{2.5}$ nationwide by 2040, with an interim target of 12 µg/m^3 by January 2028
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline

4.1.3 The 'National Air Quality Strategy: Framework for Local Authority delivery' sets out how Local authorities are expected to use their powers to reduce $PM_{2.5}$ emissions within their district from sources which are within their control; with particular emphasis on domestic burning and review of Smoke Control Areas.

4.1.4 The recently adopted Greater Cambridge Air Quality Strategy (2024) outlines how continued air quality improvements will be delivered working towards WHO air quality guidelines, with interim targets within the lifetime of the strategy. Consulting on the expansion of the SCA was an action in the strategy.

4.2 Smoke Control Areas (SCA)

4.2.1 In Cambridge we currently have three SCA's which were introduced in the 1960's and 1970's. They mainly cover the central, southern and western areas of the City. Appendix A shows the extent of the three SCA's.

4.2.2 Smoke Control areas (SCA) are mandated through the Clean Air Act 1993 and are the primary mechanism for controlling emissions from solid fuel burning. The Environment Act 2021 amended the Clean Air Act 1993 to include both domestic and commercial premises in a SCA. There is also the option for local authorities to extend the scope of the SCA, following a period of consultation to include permanent moored vessels such as canal and river boats.

4.2.3 Within SCA's certain rules apply around the emissions of smoke from chimneys of buildings; and the type of appliance and fuel that can be burnt. SCA's aim to reduce the smoke that can be released from domestic and commercial chimneys, thereby reducing the amount of air pollutants emitted into the air.

This does not mean solid fuel cannot be burnt within an SCA. In a SCA, residents and businesses must follow certain regulations to be able to burn solid fuel in a way that is both clean and safe. Residents and businesses will still be able to buy and use solid fuel, if they use an approved (exempt) stove or appliance or if they are unable to use an approved stove or appliance they must use an authorised fuel type, for example manufactured solid fuel (MSF's) or anthracite. Unauthorised fuels e.g. wood can only (legally) be used in an approved appliance.

4.3 **Smoke Control Area Impact Study (2024)**

4.3.1 Cambridge City Council commissioned an independent report to assess the effects of amending the SCA in Cambridge to cover the whole of the city. it considered both the inclusion and exclusion of permanent moored vessels in terms of changes in pollution emissions, health & socio-economic impacts.

4.3.2 Residential emissions are the largest single source of $PM_{2.5}$ emissions in Cambridge with the majority of properties currently outside the SCA. Moored vessels represent a much smaller contribution to overall emissions, and current assumptions are that most are already burning MSF which is compliant under SCA rules, meaning they would not need to change their behaviour.

4.3.3 The expansion of the SCA to cover the whole city would have the following impacts:

4.4 *Air Quality & Health*

4.4.1 Expanding the SCA city wide is estimated to reduce domestic $PM_{2.5}$ emissions from solid fuel burning by 69% reduction (18.9 tonnes) and even with 25% non-compliance offers a significant reduction. By comparison the existing SCA only offers a 4% reduction in $PM_{2.5}$ emission when compared with no SCA given the small number of residential properties within the existing SCA.

4.4.2 This reduction in PM2.5 will deliver positive benefits for human health for all residents and visitors to Cambridge but most notably will deliver a reduction of annual deaths and reduce the risk of lung cancer, stroke, ischemic heart disease, asthma and respiratory hospital admissions. It will also deliver additional indoor air quality improvements with associated health benefits.

4.4.3 The report concluded that any changes to widen the scope of the SCA would provide a net benefit to society from health improvements due to reduced air pollution and greenhouse gas emissions.

4.5 *Socio Economic Impact on Households*

4.5.1 The report recognises that there are costs both to individual households and to the council if the decision to expand the SCA was pursued; however, it concludes the environmental and health benefits outweigh these costs. Costs include cost to home and vessel owners of switching fuel or upgrading stove and cost to council for implementation and enforcement.

4.5.2 Impact on individuals was considered as part of the socio-economic study. The report looked at those that need to burn wood as their only heating source, those that burn to

subsidise another fuel source or those who burn on occasion for pleasure and comfort. Data from census 2021 was used to estimate this.

4.5.3 89.7% heat their homes with a single fuel central heating system that is not reliant on solid fuels plus 7.8% have two or more types of central heating. 0% are reliant on wood or solid fuel only for central heating. Therefore, data indicates that very few households fall into the category of burning solid fuel as their only heating source. The greatest impact will therefore be on those that burn wood for pleasure or to subsidise another form of central heating (7.8% or 4,918 properties). 2.1% of the 7.8% are estimated to be using either an open fire or non-exempt stove. Therefore approximately 1,300 households would feel a change in their living and or working conditions should the SCA be extended city wide.

4.6 *Permanent Moored Vessels*

4.6.1 There are approximately 70 moored vessels in Cambridge of which 85% use solid fuel (60 boats). Of those 85% only 25% are predicted to use wood (15 boats). Therefore, if moored vessels were included in the scope of the expanded SCA 15 moored vessel owners will need to change their behaviour, changing either fuel or stove. This change may have a more significant impact as evidence suggests this group may have lower incomes and tend to be more vulnerable (more likely to be elderly, have a disability or long-term health condition). In addition, choice in exempt stoves may be limited with boats less well insulated.

4.6.2 The report recommends the expansion of the SCA to cover the whole city including moored vessels, however, recommends further engagement with vessels owners given the increased potential vulnerability of this group. Should changes to the SCA be implemented it should be accompanied by a robust awareness raising campaign

5. Corporate plan

5.1 Many measures to improve air quality are complimentary to the climate Change agenda. Reduction in the burning of solid fuel and most notably wood will lead to reduction in CO*2* emissions and will assist Cambridge in moving closer to achieving its targets as set out in Priority 1. The Smoke Control Area Impact Study was completed to inform the council of the potential impact to households should changes to the SCA be progressed. The findings demonstrate that limited households are dependent on solid fuel as their only source of heating and hot water with environmental and health benefits outweighing impacts to individuals who will be those that burn for pleasure or to supplement another heating source. For moored vessel owners who are potentially lower

income further work is recommended and mitigation put in place to assist with the transition should change go ahead. The recommendation is for a consultation only at this stage which will provide further understanding and supporting evidence on the wider impacts of the SCA changes should the council decide to progress. This evidence will help ensure no changes are proposed that could be contrary to Priority 2.

6. Consultation, engagement and communication

6.1 We are seeking a decision to consult the wider public on the expansion of the SCA to cover the whole city (considering also whether to include or exclude moored vessels).

6.2 The role of SCA's in reducing $PM_{2.5}$ emissions is a key strand in the National Air Quality Strategy which requires Local Authorities to regularly review boundaries of SCA's and look at sources of $PM_{2.5}$ within their districts. In response to this extensive literature and case studies have now been produced through LAQM support to assist Local Authorities in delivering an inclusive and robust consultation that clearly demonstrates and communicates the benefits but also the wider implications of changes to SCA's.

6.3 The 'Expansion of the SCA' will be open for wider public consultation on Citizen Lab and Paper copies of the consultation will be available at key locations within the city with a system in place to enable people who are digitally excluded to complete the consultation at the council offices by arrangement or over the phone.

6.4 We will make statutory stakeholders and wider stakeholders aware of the consultation to ensure they can respond to the consultation.

6.5 The consultation will be promoted widely via Cambridge Matters, Press Releases, social media and posters across the city. Working with local community groups it is proposed to carry out workshops across the city to raise awareness about the proposals and the consultation.

6.6 We have started to engage with colleagues in other teams to understand and implement the best ways to engage with all members of the residential communities across the city.

6.7 Following recommendations in the 'Smoke Control Area Impact Study 2024' a more targeted approach will be taken for boat owners as given the potential vulnerability of this group it is key they are represented. This is likely to take the form of a workshop and / or targeted questionnaires.

7. Anticipated outcomes, benefits or impact

7.1 We are seeking permission to consult the wider public on the expansion of the SCA, considering both inclusion and exclusion of moored vessels only at this stage. We will aim to carry out the consultation at the end of 2024 / early 2025 with a view to bring to committee in 2025.

8. Implications

8.1 Relevant risks

There are no financial risks associated with undertaking the consultation. Expansion of the SCA is likely to receive mixed responses both for and against the proposal. There is a danger that lack of understanding of the legislation and proposals means residents may assume they 'cannot' burn. This is not the case. It is therefore crucial that the consultation is communicated effectively to the wider public and reaches all sectors of the community.

8.2 Financial Implications

£10,000 was secured from DEFRA funding to assist with the consultation on the expansion of the SCA including promotion of the consultation and wider awareness raising on the issues associated with smoke from chimneys.

There are no additional financial implications associated with undertaking the consultation.

8.3 Legal Implications

N/A

8.4 Equalities and socio-economic Implications

Public Health data indicates that in 2020, 48 deaths in Cambridge could be attributed to Particulate Air Pollution. This figure is calculated based on the number of deaths in Cambridge in 2020 and the Public Health Outcomes Framework Fraction mortality due

to particulate air pollution. Currently $PM_{2.5}$ is considered the most suitable metric for evaluating health impacts.

We know that improving air quality has positive impacts for children, older people, disability (mitigating or preventing ill health relating to asthma, coronary heart disease, stroke, lung cancer, chronic bronchitis, and diabetes), and pregnancy (reducing low birth weight). In addition, studies have linked exposure to air pollution with deprivation and deprivation with ethnicity.

The proposal at this time is to complete a consultation only. An Equality Impact Assessment has been completed and is attached to this report as Appendix C. The protected characteristics which are most relevant to this request for a consultation are age and disability and the risk of digital exclusion. The consultation process will need to ensure that this is considered as part of the wider consultation. Should the council choose to progress with the expansion of the SCA a new equality impact assessment will be completed as part of a new committee report.

8.5 **Net Zero Carbon, Climate Change and Environmental implications**

Rating: Nil

The proposal is for a consultation only at this time on the expansion of the Smoke Control Area (SCA) city wide including permanent moored vessels. Should we choose to recommend proceeding with the expansion this will come back to committee. The consultation as a standalone proposal will not have an impact on the delivery of Net Zero targets, although there may be a minimal net positive benefit from the awareness raising campaign to be carried out as part of the consultation. In addition to promoting the consultation to increase uptake it will seek to improve understanding on the environmental and health impacts of burning solid fuel, implications of any changes to the SCA boundary for residents and benefits of 'Better Burning' to reduce emissions. Should the council opt to proceed it is expected that the expansion of the SCA would deliver a positive impact as many measures to improve air quality are complimentary to the climate change agenda.

8.6 **Procurement Implications**

N/A

8.7 **Community Safety Implications**

N/A

9. Background documents

Used to prepare this report, in accordance with the Local Government (Access to Information) Act 1985

9.1

1. Local Air quality Management Policy guidance (PG22), August 2022
England (exc. London) Policy Guidance | LAQM (defra.gov.uk)

2. Local Air Quality Management Technical Guidance (TG22), August 2022
UK Regions (exc. London) Technical Guidance | LAQM (defra.gov.uk)

3. Air Quality Strategy: Framework for Local Authority Delivery
www.gov.uk/government/publications/the-air-quality-strategy-for-england

4. Air Quality Annual Status Report 2023
www.cambridge.gov.uk/air-pollution-measurements

5. COMEAP Annual Report 2022
www.gov.uk/government/publications/comeap-annual-report-2022

6. COMEAP Response to publication of WHO Air Quality Guidelines
COMEAP statement: response to publication of the World Health Organization Air quality guidelines 2021 - GOV.UK (www.gov.uk)

7. World Health Organisation Air Quality Guidelines (2021)
www.who.int/news-room/questions-and-answers/item/who-global-air-quality-guidelines

10. Appendices

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A. Maps of existing Smoke Control Areas
B. Smoke Control Area Impact Study 2024
C. Equality Impact Assessment

To inspect the background papers or if you have a query on the report please contact Elizabeth Bruce, Scientific Officer

tel: 01223 457735, email: elizabeth.bruce@cambridge.gov.uk

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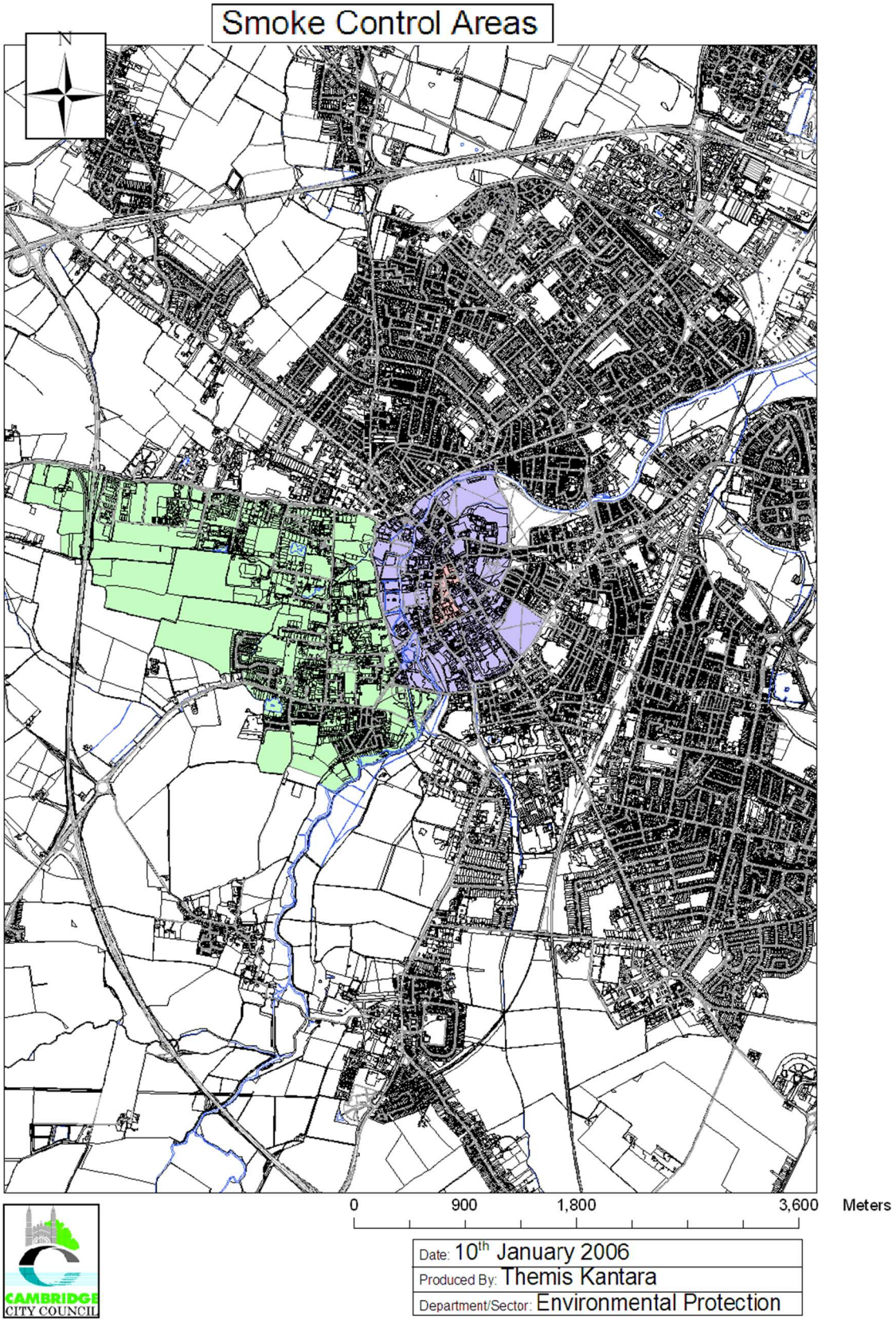
Appendix A: Existing Smoke Control Areas



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Report

Smoke Control Area Impact Study 2024

Final Report

For Cambridge City Council

28 August 2024

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1 Executive Summary

Burning of solid fuels for heating in homes and commercial buildings is an important source of air pollution, which when exposed to, carries significant detrimental impacts for human and environmental health. In the UK, $PM_{2.5}$ emissions decreased by 72% between 1990 and 2022[1]. The major drivers for this were the reduction in the burning of coal for power generation, and improved emission standards for transport and industrial processes. In recent years, the rate of reduction in annual emissions of PM has slowed, with decreases in emissions from certain sectors being offset by increases in emissions from wood burning in domestic settings and from solid fuel burning by industry[3]. Hence, burning of solid fuels in homes and businesses is becoming an increasingly important source as emissions reduce from other sources. In the Cambridge City Council area, domestic solid fuel burning is estimated to account for 40% of total $PM_{2.5}$ emissions, with wood burning making up the majority of the domestic total.

One of the key policy mechanisms to tackle pollution from burning of solid fuels for heat has been Smoke Control Areas (SCA), which restrict the type of fuels that can be burned and the type of appliance used. Cambridge has three existing SCAs covering the central and western areas of the city, established during the 1960s. Cambridge City Council commissioned Logika Group to undertake this study to assess the effects of amending its existing SCAs (extending or removing) in terms of changes in pollutant emissions, health and socio-economic considerations. The following scenarios were considered:

- **Baseline:** This estimated emissions in Cambridge from domestic premises and river vessels based on the current SCA boundary.
- **Scenario 1:** This looked at the changes in emissions and impacts if all moored residential boats are also included in SCA rules, with no change to the current SCA boundary for residential properties.
- **Scenario 2:** This extends the SCA boundary to become a city-wide SCA (and continues to exclude the moored residential boats).
- **Scenario 3:** This is the same as Scenario 2 (extend SCA boundary to become a city-wide) but includes moored residential boats in SCA rules.
- **Scenario 4:** This estimates what emissions in Cambridge might have been if the existing SCAs had not been declared (this is similar to, but not the same as, removal of the existing SCA).

The analysis performed uses the most up-to-date and robust data and approaches and follows relevant best-practice guidelines for the assessment of associated effects. The methodology has been developed on the basis of the expertise of the project team and has been discussed and agreed with the Council. That said, there are limitations and uncertainty in the assessment and assumptions made, in both the baseline and the scenarios. The most important uncertainty relates to the resulting behaviour change of households and moored vessels if the SCA is expanded. Hence sensitivity tests have been run around the scenarios above, looking at 25% non-compliance with the SCA, and also testing the sensitivity of some of the baseline assumptions.

Residential emissions are the largest single source of emissions of $PM_{2.5}$ in Cambridge and the majority of properties are currently outside of the SCA. Expanding the SCA city wide (Scenario 2) is estimated to have a large positive effect on emissions from solid fuel burning, resulting in a 69% reduction (18.9

[1] https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25#:~:text=Annual%20emissions%20of%20PM2.,65%20thousand%20tonnes%20in%202022.

tonnes) of $PM_{2.5}$ from domestic solid fuel burning overall. Even with 25% non-compliance assumed, there is still predicted to be a significant (61%) reduction in overall $PM_{2.5}$ emissions from solid fuel burning. Moored river vessels represent a much smaller contribution to overall emissions, and current assumptions are that most are already likely to be burning Manufactured Solid Fuel (or MSF, which is a compliant fuel under SCA rules, meaning that they would not need to change behaviour in response to an extension of the SCA to cover moored vessels). Therefore Scenario 1, which only includes moored vessels, achieves a much smaller reduction in $PM_{2.5}$ emissions of 2% (0.52 tonnes). Scenario 3, the expansion of the SCA, including moored vessels, provides the greatest benefit, but is very similar to Scenario 2 due to the small contribution that moored vessels make. Scenario 4 shows that the current SCA delivers a benefit of around a 4% reduction in $PM_{2.5}$ emissions from domestic solid fuel burning (1.1 tonnes).

These reductions in air pollutant emissions will deliver ***positive benefits for human and environmental health***, with the size of effects moving in line with the size of the emission reductions – hence Scenarios 2 and 3 will deliver a significantly greater benefit than Scenario 1. A wide (and increasing) range of health conditions are linked to air pollution exposure, and reducing emissions will reduce the risk of lung cancer, stroke, ischemic heart disease, asthma, respiratory hospital admissions and deaths attributable to air pollution. These benefits can be expressed in monetary terms using 'damage costs', which capture associated changes in health care costs, 'productivity' benefits and the value people place on their own good health. When valued in this way, Scenarios 2 and 3 deliver a societal benefit valued at £1.6m each year, in comparison to £44,000 per year for Scenario 1. By comparison, analysis of Scenario 4 suggest that the existing SCA delivers a societal benefit of around £93,000 per year for Cambridge residents (i.e. a benefit that could be lost should the SCA be removed).

These monetised health impacts have been combined into a wider assessment of the ***socioeconomic effects*** of adjusting the SCA. Where possible, the impacts of the Scenarios have been quantified and captured in a cost-benefit analysis comparing the benefits of the scenarios against the costs. The costs to home and vessel owners of switching fuel or upgrading stoves, and to the Council with implementation and enforcement are greatest under Scenarios 2 and 3: Scenario 3 is estimated to carry a cost of £250,000 per annum relative to Scenario 1 which would cost around £15,000 per year. Overall, all scenarios to extend the SCA are estimated to deliver a 'net benefit to society' – in other words, the health improvements from reduced air pollution and benefit of greenhouse gas emission reductions outweigh the combined costs to the Council and owners of homes and moored vessels. The size of the net benefit delivered rises in line with the size of air quality benefits, hence Scenarios 2 and 3 deliver the largest net benefit in the order of £2.8m per year, with a ratio of benefits-to-costs or 12-to-1. Scenario 4, the existing SCA, was not subject to quantitative analysis given uncertainty around what would happen should an SCA be removed, however expert judgement suggests it is likely that the costs of removing the SCA in terms of the air pollutant benefits lost (i.e. increased emissions) and higher GHG emissions would outweigh any benefits in terms of fuel cost savings, hence delivering an overall disbenefit for society.

While increasing the coverage of the SCA results in a net benefit to society, it is important to consider ***additional impacts and risks that have not been quantified and captured in the cost-benefit analysis***. For households, there may be some practical implications of switching, such as search costs of finding new fuel sources, the need to allow access to the home to upgrade stoves, and installation risks – however there is no evidence to suggest these risks are significant overall. This is particularly the case as based on census data, there are no (or very few) households using wood or other solid fuel as their only source of heating, and those who do use solid fuels are typically not in the more deprived deciles of the Index of Multiple Deprivation (IMD). That said, the implications for moored vessel owners appear more consequential, in particular as 85% (~60 boats) use solid fuel as their primary heating source. As a group, evidence suggests moored vessel owners may have relatively lower incomes (A Canal and River Trust survey found that 27% of boaters declared an income under £20,000/year, and 43% under £30,000/year) and hence alternative options may be less affordable for some. Furthermore, this group

tend to be more vulnerable (i.e. more likely to be elderly or have a disability or long-term health conditions) and vessels tend to be less well-insulated. Hence there is a greater risk that moored vessel owners may face difficulties affording to comply with the SCA, which in turn may have a detrimental impact on living standards amongst a more at-risk group.

Overall, the assessment presents either Scenario 2 or 3 as the preferred option. Analysis shows that benefits of expanding the SCA outweigh the costs, and there is predicted to be a net benefit to society of extending the SCA to the whole of Cambridge, driven by improvements to health. These findings are however dependant on behaviour change driven by the SCA which is uncertain and unlikely to be the full extent modelled, albeit costs and benefits will scale in line with the response and a net positive impact is likely even where response is lower than modelled here. As such, awareness-raising information campaigns and/or enforcement will be important to ensure the SCA succeeds in achieving behaviour change. Further work such as a city-wide survey may be helpful for better understanding burning behaviour and potential behaviour change related to extension of the SCA. Inclusion of river vessels in the SCA would deliver an additional net benefit and could achieve a significant impact on emissions from a more visible source (although the additional benefit as a whole is relatively small). There are however some additional risks and concerns for this small group of affected citizens, including higher economic vulnerability and risks from changes in living conditions. The data relating to proportions of river vessels burning wood and coal products, and the appliances which are being used is also more uncertain than for residential properties. Therefore, where Scenario 3 is pursued, additional engagement with moored vessel owners is recommended to further explore solid fuel burning activity within this group, as well as the potential impacts and risks to this group, and complementary measures should be considered where potential issues are identified to mitigate risks for vulnerable boat owners where possible.

2 Introduction

2.1 Context

Burning of solid fuels for space and water heating in homes and commercial buildings is a source of air pollution. Emissions from solid fuel burning contribute to elevated concentrations of Particulate Matter (PM) in the atmosphere. PM, both in the form of PM_{10} and $PM_{2.5}$[2], has many different sources, both natural and anthropogenic. These can be grouped into primary sources, where the particles are emitted directly into the atmosphere, or secondary sources, where the particles are formed from precursor gases through chemical reactions in the atmosphere. Sources of primary anthropogenic emissions include road and non-road vehicles, industrial activities, power stations, domestic heating, and shipping. Natural sources of particles include sea salt. The formation of secondary particles happens over hours to days, thus secondary PM is found downwind (sometimes tens or hundreds of kilometres) of the sources of emission. Reducing exposure to PM is particularly challenging, given the variety of sources, and contributions from secondary components.

In the UK, $PM_{2.5}$ emissions decreased by 72% between 1990 and 2022[3]. The major drivers for this long-term decrease were the reduction in the burning of coal for power generation, and improved emission standards for transport and industrial processes. However, in recent years the rate of reduction in annual emissions of PM has slowed, as shown in Figure 2-1. Considerable decreases in emissions from certain sectors have been largely offset by increases in emissions from wood burning in domestic settings and from solid fuel burning by industry[3]. Hence, burning of solid fuels in homes and businesses is becoming an increasingly important source as emissions reduce from other sources.

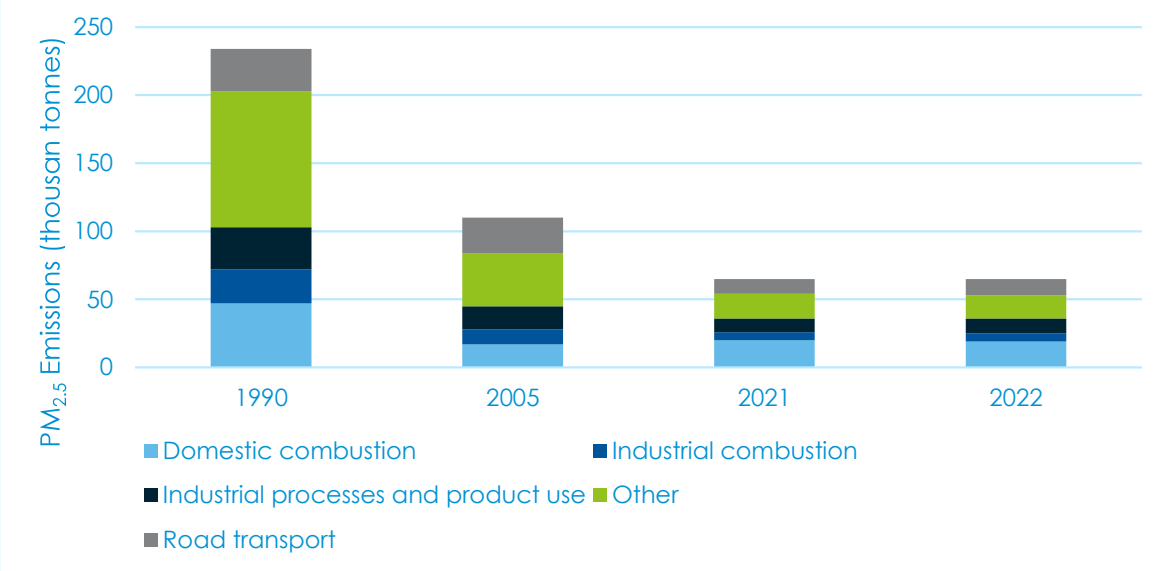

Figure 2-1 UK annual emissions of $PM_{2.5}$ by major emission source (1990, 2005, 2021, 2022)[3]

[2] PM_{10}, or course particles, are particles that are less than 10 microns (µm) in diameter. $PM_{2.5}$, or fine particles, are particles that are less than 2.5 µm in diameter and hence are a subset of PM_{10}

[3] https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25#:~:text=Annual%20emissions%20of%20PM2.,65%20thousand%20tonnes%20in%202022.

Concentrations of $PM_{2.5}$ tend to be greatest in urban environments in the southern and eastern areas of the UK due to a variety of factors, including higher population density, weather conditions and greater exposure to pollution sources from mainland Europe.

In the Cambridge City Council area, it is estimated that total primary $PM_{2.5}$ emissions from all sectors is 87 tonnes per annum[4]. The 2021 National Atmospheric Emissions Inventory (NAEI)[5] breaks this down into 11 categories, as shown in Figure 2-2 (note: the figure splits out category '02 non-industrial combustion plants into its separate components 'Domestic Solid Fuel Burning' and 'Other non-industrial combustion' form to highlight emissions from domestic solid fuel burning.

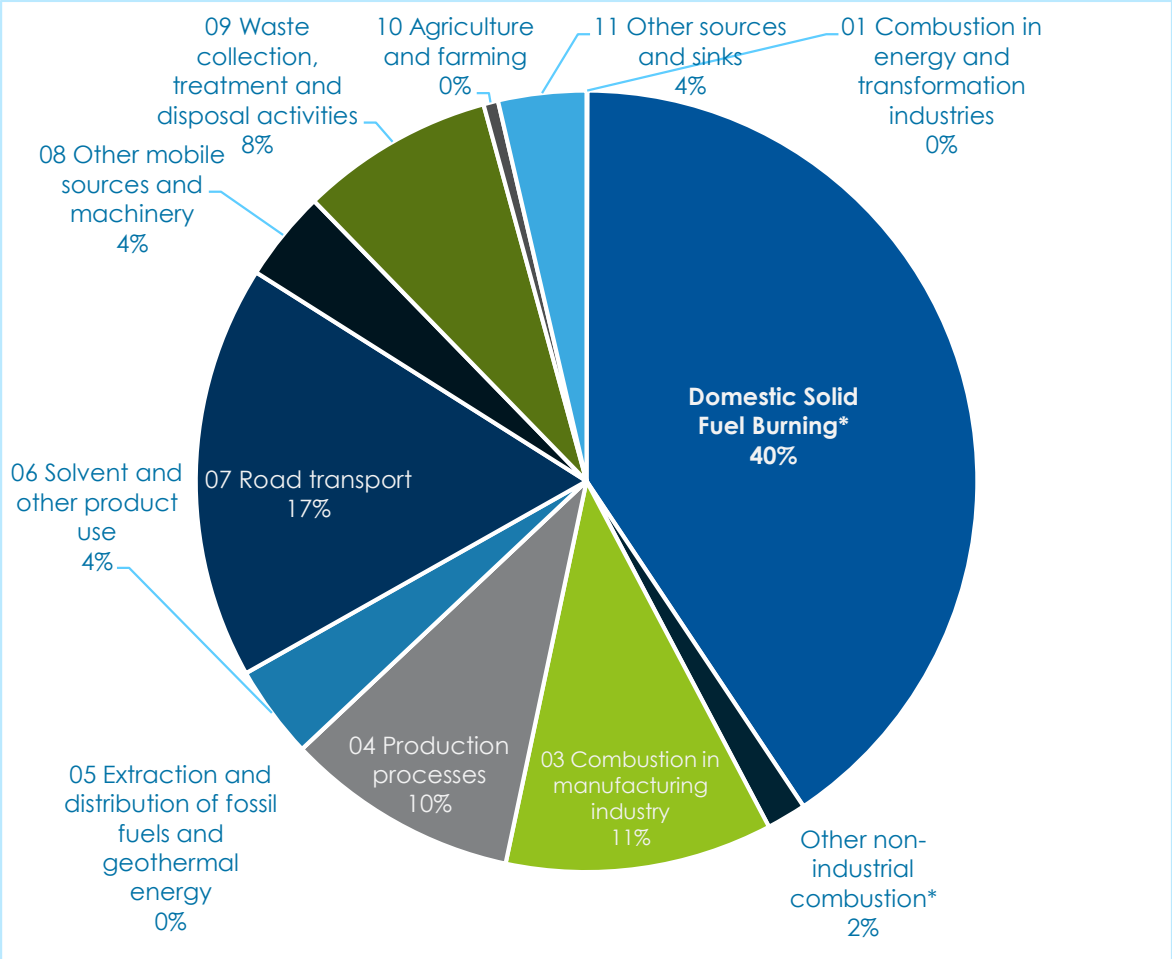

Figure 2-2 NAEI (2021) $PM_{2.5}$ sector emissions for Cambridge City Council area. *Note: 'Domestic Solid Fuel Burning' and 'Other non-industrial combustion' form category '02 non-industrial combustion plants' in the NAEI – they have been separated here to highlight emissions from domestic solid fuel burning.

Domestic solid fuel burning is the largest single source of $PM_{2.5}$ emissions in the Cambridge City Council area, contributing 35 tonnes in 2021, (40%) of total $PM_{2.5}$ emissions. Of which, the largest contributing source is from burning wood (76%), compared to relatively small contributions from solid smokeless fuels (SSF), as shown in Figure 2-3. Domestic wood burning hence represents a large proportion of primary emissions of $PM_{2.5}$, and hence one which should be addressed.

[4] Summed across 63 1km by 1km grid squares with data from the 2021 National Atmospheric Emissions Inventory
[5] Available via interactive map: https://naei.beis.gov.uk/emissionsapp/

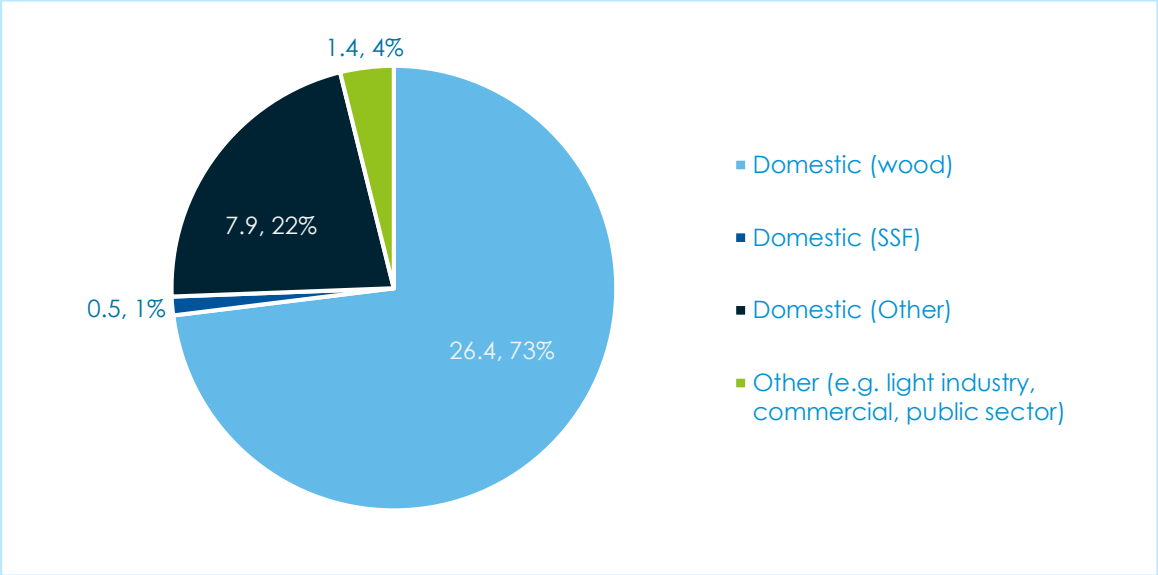

Figure 2-3 $PM_{2.5}$ emissions from '02 Non-industrial combustion plants' by fuel source (tonnes, per cent)[4]

One of the key policy mechanisms to tackle pollution from burning of solid fuels for heating purposes are Smoke Control Areas (SCAs). A SCA requires that households and businesses within the area use either an approved appliance (boiler, stove, etc) or an approved solid fuel (e.g. certain types of Manufactured solid fuels (MSFs) or anthracite) – fuels not approved (e.g. wood) can only (legally) be used in an approved appliance. SCAs are mandated through the Clean Air Act (originally 1956, most recently 1993, and as amended by the Environment Act 2021), and are declared through an order made by the Local Authority (s18, CAA 1993). They can be applied to all or a defined part of the Local Authority's area and the order may vary how the provisions of the Act are applied, e.g. through the specification of building classes or appliance which can be included. One of the changes introduced through the Environment Act 2021 is the potential to include residential, moored river vessels within SCAs.

Cambridge has three existing SCAs covering central and western areas of the city which were established during the 1960s. A map of the current areas can be found on the Cambridge City Council website[6], although very limited information is available regarding the rationale underpinning their original design and declaration. There were a handful of exemptions in one of the original orders (dated 6th November 1961) for fireplaces in buildings owned by the University; these have been confirmed as either replaced by modern heating systems or used infrequently for celebratory events.

2.2 Study aim and scope

Cambridge City Council commissioned Logika Group to undertake this study to explore changes to its existing SCA regime, in order to potentially reduce the air quality (and health) impacts of solid fuel burning across the city. This study has quantified the effects of different options which consider amending the SCA in Cambridge to encompass the whole of the Local Authority Area, and to incorporate moored boats within the designation. The effects on emissions, health and socio-economic considerations are set out in the following sections.

[6] https://www.cambridge.gov.uk/media/3454/smoke-control-area-map.pdf

The approach taken follows the following steps:

- Question 1: Establish the number of households and moored residential vessels burning solid fuels and an emissions baseline;
- Question 2: Calculation of air quality impacts of policy scenarios;
- Question 3: Health impact assessment of air quality impacts; and
- Question 4: Socio-economic assessment of policy scenarios.

Air pollution can be quantified in terms of the emissions (the amount of pollutants released into the atmosphere from a source, usually defined in terms of tonnes) or concentrations (the amount of a pollutant in a given volume of air at a given location) of pollutants. This report focusses on emissions. Emissions are related to concentrations, but not in a linear way, due to the effects of meteorology and atmospheric chemistry. Typically, converting emissions to concentrations is achieved by running atmospheric models. However, such modelling and estimates of population exposure add a further level of uncertainty into the study outcomes and were not in the scope of this study. Nonetheless, whilst health impact evidence and approaches associate exposure to air pollutant concentrations with adverse health outcomes, well-established methodologies have been produced to allow policy evaluation based on emissions only[7]. This study draws on these approaches to produce robust and comparable outputs for the different scenarios.

This study has focused on quantifying the impacts of changes in solid fuel burning on $PM_{2.5}$ and has not modelled the impacts on other pollutants (e.g. Nitrogen Oxides NOx). This approach was deemed appropriate because the underlying evidence base linking air pollutant exposure to health effects attributes the most significant effects to changes in $PM_{2.5}$ relative to other pollutants. Hence, only quantifying the impacts associated with $PM_{2.5}$ will still capture the vast proportion of the effects of the change in air pollution. Should other pollutants also have been included, this would not substantially increase the overall benefits assessed and hence is unlikely to have an impact on the overall results of the study.

The following sections of the report are structured as below:

- **Section 2** sets out the study approach including modelling methodology.
- **Section 3** presents the results of the air quality assessment.
- **Section 4** presents the results of the Health Impact Assessment.
- **Section 5** presents the results of the socio-economic assessment including overall costs and benefits of policy scenarios.
- **Section 6** presents a summary and conclusions.

[7] https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance

3 Approach

3.1 Policy Scenarios Assessed

The policy scenarios assessed are presented below:

- **Baseline:** Current SCA coverage, no moored vessels
- **Scenario 1:** Current SCA coverage, with moored vessels
- **Scenario 2:** City-wide SCA, without moored vessels
- **Scenario 3:** City-wide SCA, with moored vessels
- **Scenario 4:** This estimates what emissions in Cambridge might have been if the existing SCAs had not been declared (this is similar to, but not the same as, removal of the existing SCA).

3.2 Baseline emissions calculations

3.2.1 Domestic

Quantifying emissions associated with solid fuel burning in domestic and commercial premises has several challenges:

- Types of appliance used to burn solid fuel vary enormously (from open fires to sophisticated pellet-fed wood boilers), with widely varying emissions profiles;
- Activity data is incomplete, with limited information on quantities of fuel used, and in the case of wood, fuel condition (e.g. moisture content);
- Domestic heating appliances do not require any form of registration, and so the number of appliances is uncertain; and
- Emissions factors also have uncertainty associated with them and are updated on a regular basis, for example through the NAEI.

Two approaches were explored to overcome these challenges – a top-down approach based on NAEI emissions, and a bottom-up approach based on other sources of information (e.g., surveys). The two approaches were compared and a decision taken on which approach to use for the assessment of the policy scenarios.

Top-down

Gridded emissions from different source categories are contained in the NAEI[8]. The NAEI contains estimates of emissions to air of a variety of pollutants, split by sources and geographical area. This includes estimates of emissions from solid fuel burning on a 1km by 1km grid, disaggregated by fuel type, as presented in Figure 2-3. The gridded data for Cambridge have been used to estimate the difference in emissions per household between residents currently inside and outside the SCAs.

[8] https://naei.beis.gov.uk/

Bottom-up

Data on domestic solid fuel burning behaviours has been derived largely from the Burning in UK Homes and Gardens Survey[9], undertaken by Kantar on behalf of Defra, in 2018 and 2019 (hereafter referred to as the Kantar Survey). This survey provides data regarding the prevalence of solid fuel burning for the 'East of England' specifically, split for *some (but not all)* categories (e.g. split by appliance type is not available at regional level), split between urban and rural areas, and split between activity within SCAs and outside SCAs (both of the latter two splits are at England level). There are also some data on appliance type, such as the split between open fire or closed appliance, with additional information on broad categories of installation date for closed appliances.

OS AddressBase[10] data has been used to estimate the numbers of properties within and outside of the existing and expanded SCA boundaries.

Calculations were undertaken for emissions from properties within the SCAs and outside of the SCAs (further detail on the specific data and assumptions used are outlined in Section 3.2.5). The calculations utilised the number of properties within and outside of the SCAs, multiplied by the proportions of properties burning wood or coal-like products, multiplied by a typical quantity of solid fuel burned per year. Adjustments were made to convert house coal to manufactured solid fuel (MSF, also known as smokeless coal) based on energy outputs of the different fuels. The total numbers of properties burning solid fuels were then split by appliance type (for wood and coal-like products), and emission factors applied for each appliance and fuel type.

NAEI emission factors were used for combustion (wood and coal-like products) in open fires and for three types of closed stoves. Further detail on stove types is included in Section 3.2.5. It should be noted that for $PM_{2.5}$ the NAEI currently uses the same emission factors for wood on any given appliance regardless of the moisture content, which is thought to lead to significant variation in the quantity of $PM_{2.5}$ emitted. However, as a SCA does not stipulate a requirement for moisture content of wood, this will not affect the emissions changes calculated between policy scenarios. Note that other sources of emission factors are available, such as the EMEP Guidebook published by the European Environment Agency[11]. However, it was concluded that, while the EMEP Guidebook offers a more extensive range of emission factors for small scale and domestic combustion, the resolution of the input data meant that there was little to be gained from this. In addition, using the NAEI emission factors makes the emission estimates produced more comparable to other UK-based results (including the NAEI itself).

3.2.2 Commercial

The restrictions under SCAs also apply to commercial properties and there is therefore the potential for emissions reductions from businesses in sectors such as hospitality (in particular hotels, pubs, and restaurants), which may burn solid fuel. Commercial properties have not been included in the calculations for a number of reasons as follows:

- Using data available in the NAEI on a 1km by 1km basis, the commercial emissions make a small contribution (2%) to the current total emissions outside of the SCAs in Cambridge;
- Due to the relatively few commercial establishments compared to residential properties, the reduction from these sources is likely to be small (and certainly within the uncertainties of other assumptions);

[9] https://uk-air.defra.gov.uk/library/reports?report_id=1014
[10] https://www.ordnancesurvey.co.uk/products/addressbase
[11] https://www.eea.europa.eu//publications/emep-eea-guidebook-2023

- There is no basis for estimating what the reductions may be, in contrast with domestic properties where data from the Kantar survey can be used to demonstrate domestic solid fuel burning practices inside and outside SCAs; and
- On a per-grid-cell basis, the emissions in the NAEI for commercial solid fuel burning are higher within the current SCAs than outside. Therefore, where we apply our approach of adjusting emissions outside SCAs based on what is currently observed inside SCAs, this would result in calculating an increase in emissions if the SCA is extended, which is the opposite of what should happen in practice.

Omitting commercial emissions from the calculations could marginally underestimate the benefits in policy Scenarios 2 and 3. This should be taken in context of some of the other assumptions which may overestimate the benefits, which are discussed later in the report, and in some cases tested through sensitivity tests.

3.2.3 Moored River Vessels

Assessing emissions from solid fuel burning from moored river vessels is highly uncertain; heating appliances are often non-standard and it can be difficult to establish patterns of use. Broadly, the number of moorings in Cambridge was multiplied by the proportion of vessels assumed to be burning solid fuels, followed by assumptions on proportions of vessels burning different types of fuel (MSF and wood). These figures were then multiplied by an assumption of quantity of MSF or wood burnt per year per boat, assuming conventional or high efficiency stoves, using boat-specific emissions factors for these stove types.

In 2017, the Canal and Rivers Trust commissioned a study to establish emission factors for UK river and canal traffic. Emission factors were developed for solid fuel heating appliances used on vessels (as well as for the engines which are not relevant for this project). We have used these emission factors, which are specific to river vessels and therefore differ from the emission factors used from the NAEI for residential properties, for our present analysis. These have been combined with assumptions outlined in Section 3.2.5 relating to activity to produce emissions estimates for moored vessels from solid fuel burning for heating purposes only.

Data for solid fuel burning activity (e.g. quantity of fuel used) on moored vessels is scarce. In some cases assumptions have been derived from the Canal and River Trust Boater Census Survey 2022[12]. In other cases, where no data exist, online blogs[13] have been used (for example to estimate the average amount of MSF used per year to heat a boat). These are assumptions which could be refined further through discussion with the boating community in Cambridge.

3.2.4 Behavioural response and scenario tests

There are a number of potential behavioural responses to the designation of a SCA. If the household or boat owner is burning MSF, this is still allowable within any appliance, and hence behaviour is unlikely to change. If burning wood, if the household or boat owner has a stove which is Defra exempt, then again, no behaviour change would be required. If the household or boat owner is burning wood on an appliance which is not Defra exempt, but can burn multiple fuel types, the response could be to change from burning wood to burning MSF without an upgrade of appliance. Further response could entail an upgrade of stove to continue to burn wood, or stopping burning altogether.

[12] https://canalrivertrust.org.uk/boating/boating-news-and-views/boating-news/boater-census-survey-2022
[13] For example https://www.canalworld.net/forums/index.php?/topic/55406-how-much-coal/ and https://www.canalworld.net/forums/index.php?/topic/113482-narrowboat-heating-whats-best/

There are several key challenges for the scenario testing:

- Households have limited awareness of SCAs and often limited knowledge on precisely what fuels they are burning, what appliance they are using, and whether they comply or not with a SCA[14];
- It is unclear as to how people would respond to an expanded SCA, and how fuel burning habits would change;
- Breaches of SCAs are difficult to enforce, requiring evidence that emitted smoke is due to non-exempt fuels being used on non-approved appliances; and
- Estimating behaviour change for moored vessels comes with its own sets of uncertainties, as very little data exist around types of stoves on boats, specific emissions factors for boats, and what fuel is being burnt.
- Hence, defining what the behavioural response of households and moored vessels would be to the different SCA policy options is highly uncertain, as is defining the level of enforcement required to elicit a given response. To facilitate the analysis, we have made a number of assumptions based on existing evidence, expert judgement of the project team, and discussions with Cambridge City Council. These assumptions are summarised below.

Domestic properties: all properties moving into the SCA will have the same assumptions as those made for properties currently within the SCA. In other words, the proportions of households burning wood or coal-like products, the split of appliance types, and compliance with the regulations will change such that they are the same as for properties already within the existing SCAs.

Moored vessels: half of those burning wood on a non-compliant stove will transition to burning MSF, and half will upgrade their appliance.

Given the uncertainty, these assumptions are also subject to sensitivity analysis to test whether the results of the analysis and conclusions drawn would change under different assumptions.

In comparison to the baseline (i.e. current SCA coverage, no moored vessels) changes in $PM_{2.5}$ emissions have been calculated for the following scenarios:

- Scenario 1: Current SCA coverage with moored vessels
- Scenario 2: City-wide SCA without moored vessels – incorporating Sensitivity Test with 25% non-compliance
- Scenario 3: City-wide SCA with moored vessels – incorporating Sensitivity Test with 25% non-compliance
- Scenario 4: This estimates what emissions in Cambridge might have been if the existing SCAs had not been declared (this is similar to, but not the same as, removal of the existing SCA).Sensitivity test on the assumption of stove types in homes in Cambridge.

3.2.5 Assumptions and key data points used in the estimation of numbers burning solid fuels and emissions

Assumptions and key data points used to estimate the number of households and moored vessels burning solid fuels, their behavioural response under the scenarios, and resulting emissions changes are outlined in the tables below. All assumptions used have been discussed and agreed with

[14] This is based on responses to the survey being run to update the Kantar survey, but has not been published at the time of writing.

Cambridge City Council. It is recognised that these assumptions could be updated once the survey of solid fuel use being undertaken by IPSOS[15] on behalf of Defra is published, or by using more local information should this become available in the future (for example any future surveys on solid fuel use across the residential or boating sectors).

Table 3-1: Assumptions in the bottom-up approach: Domestic Properties

Description	Value	Unit	Rationale
$PM_{2.5}$ emission factors from the latest NAEI (2021) – no separation between wood moisture content (i.e. dry / seasoned / wet)	Several (8 different emission factors; wood and MSF across 4 appliance types)	kt/TJ	This is the latest that is available from the NAEI. The SCA regulations do not differentiate between burning dry/seasoned/wet wood. Updates to the next NAEI are anticipated to have different emission factors for wood condition.
Number of households inside / outside current SCAs from OS AddressBase	3,832 inside / 63,053 outside current SCAs within CCC boundary	Number of Households	Selected all address points that were classed as 'residential' to be comparable to the Kantar data (i.e., including flats etc. as the Kantar data provides a % of all households that are burning)
Proportions of households burning wood inside / outside SCA	3.1% inside SCAs / 5.5% outside current SCAs	% of households	Inside SCA metric taken from 'SCA' figures from Kantar data. Outside SCA taken from 'average urban' figures from Kantar data (as 'outside SCA' also includes rural)
Proportions of households burning coal-like products inside / outside SCA	1.4% inside SCAs / 2.3% outside current SCAs	% of households	As per row above
Amount of wood burnt per burning household	1.06	Tonne /household	Calculated from Kantar data (East of England)
Amount of coal-like products burnt per burning household	1.75	Tonne /household	Same as row above, but Kantar data provides coal products consumption including house coal (approx. 9%). Applying same method as above would work out at 1.53 tonnes per household. However, as house coal is now unavailable for domestic use due to the ban on sales under the Domestic Solid Fuel Regulations, we have converted this 9% of house coal to MSF based on energy in the fuel (require more MSF to have the same heat output as house coal)
Household compliance with	Inside SCA: 0% wood on an open	Appliance % split	Simplified approach based on installation dates. 'Basic' stoves

[15] A new survey (led by IPSOS and supported by AQC) has been commissioned by Defra to update the Kantar study and includes a specific hospitality sector survey. The results are not yet publicly available.

Description	Value	Unit	Rationale
current SCA regulations (i.e., full compliance means no burning of wood on an open fire or non-compliant stove within SCA)	fire, 100% on stoves. Of stoves: 0% on basic, 27% on upgraded, 73% on EcoDesign. Outside SCA: 24% wood on open fires, 76% on stoves. Of stoves, 18% on basic, 18% on upgraded, 64% on EcoDesign.		assumed to be installed pre-2000, 'Upgraded' installed 2000-2009 and EcoDesign assumed to be installed post 2009. Kantar data only has information on installation dates, not on exempt versus non-exempt stoves. Potentially underestimates current emissions and potentially overestimate emissions reductions. This is explored further in a sensitivity test.
Burning of coal-like products (MSF) by appliance	No difference in profile inside/outside SCAs. 36% on an open fire, 64% on stoves. Of stoves, same as wood outside SCA distribution (18%, 18%, 64%)	Appliance % split	The fuel itself is classed as 'smokeless' and is exempt from SCA regulations – it does not matter what appliance is used.
Determining usage on compliant / non-compliant stoves. NAEI classifications of stoves (for emission factors): 'Basic', 'Upgraded' and 'EcoDesign'.	'Basic' assumed not exempt appliance; 'Upgraded' assumed exempt; 'EcoDesign' assumed exempt.	Appliance % split	Simplified approach based on installation dates. A sensitivity test on the baseline has been included which assumes that 25% of post 2000 installations are non-exempt appliances and 30% of pre 2000 appliances (or 'unsure') are exempt.

Table 3-2: Assumptions in the bottom-up approach: Boats

Description	Value	Unit	Rationale
Number of moorings	70	Number of boats	There are currently 70 moorings available in Cambridge and there is a waiting list for spaces, therefore assumed full capacity.
Proportion of boats with solid fuel burning stoves	85%	%	Canal and River Trust Survey of Boating Community suggests 66% of boats nationally burning solid fuel. Increased this value to 85% as there are no electric hook ups in Cambridge.
Proportion of boats burning MSF/ wood	75% MSF, 25% wood	% Split	Based on boating blogs, professional judgement, discussion with Cambridge City Council
MSF consumed per boat per annum	1,500	kg/boat	Based on 2x25 kg bags of MSF per week in winter and additional burning in summer (at a much

Description	Value	Unit	Rationale
			lower rate) – based on boating blogs/ discussions
Wood consumed per boat per annum	3,167	kg/boat	Based on same energy output required by MSF, converted to wood
Split between conventional stoves and high efficiency stoves (Defra exempt)	100% conventional stoves	% split	Based on professional judgement – very little incentive until now for boating community to install high efficiency stoves
Compliance of stoves on boats (to reflect categories which we have emission factors for)	Conventional Stove = not exempt High Efficiency Stove = Exempt	% Split	There are only 2 types of stoves that we have emission factors for, so seems logical to apply the exempt / non-exempt split amongst these.
Boating emission factors based on report for Canal and River Trust	MSF (1.6), wood on a conventional stove (14.1), wood on a high efficiency stove (5.4)	g $PM_{2.5}$ / kg fuel	Only boating specific figures for emissions we are aware of: split between 'conventional' stoves and 'high efficiency' stoves

3.3 Health Impact Assessment

There is substantial evidence linking air pollutant exposure to a range of negative human health outcomes, including different respiratory and cardiovascular illnesses, and an increased mortality risk.

The health impacts have been monetised using Defra's air pollutant damage costs[16]. These are summary estimates which aggregate key impacts associated with air pollution, expressed per tonne of emission. For the analysis, the '$PM_{2.5}$ domestic' damage cost is selected . This is also applied to emissions from moored vessels, given no specific damage cost is available for inland waterway emissions, but these are assumed to have similar proximity to population given the location of emissions.

We have quantified the impacts of changes in $PM_{2.5}$ emissions from the scenarios described above - the health impact assessment has focused on $PM_{2.5}$ as this is the fraction of particulate matter for which Defra's air pollutant damage costs are defined. However, the damage costs combine the health impacts of changes in both $PM_{2.5}$ and PM_{10} as the impacts of both are combined in the $PM_{2.5}$ damage cost, so the impacts of both will also be captured in this analysis.

In applying the Defra damage costs, this also implicitly carries through the underlying assumptions made in the construction of the damage costs. Importantly, this includes the relationship between the emission of the air pollutant and resulting concentration. In other words, the health impact analysis implicitly assumes that exposure to pollution from domestic burning in Cambridge is the same as exposure to the average unit of $PM_{2.5}$ emitted from domestic burning anywhere in the UK. It is not possible to test the robustness of this assumption without detailed concentration modelling specifically for Cambridge, which was not in the scope of this study – however, applying the damage costs in this way follows Defra's best-practice appraisal guidance for assessments of this size and sensitivity to the damage costs is tested as part of our sensitivity analysis.

[16] https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance

The health impacts captured by the damage costs can be split out by applying the underlying approaches, data, and methods used to derive the damage costs. Hence, the assessment of individual health impacts is fully consistent with Defra's damage costs and underpinning the Committee on the Medical Effects of Air Pollution (COMEAP) guidance, and hence follows UK best practice appraisal guidance.

The quantified outputs present changes in life-years lost, deaths, respiratory hospital admissions, and incidence of ischemic heart disease, stroke, lung cancer and asthma in children. The assessment captures the relative impact of the scenarios and the health burden of baseline emissions. The table below summarises the key inputs to the calculations captured in the analysis.

Table 3-3: Health impact pathways captured, and key input assumptions (all associated with exposure to $PM_{2.5}$)

Impact pathway	Output metric	Concentration response function (change per 10 μgm^{-3})*	Baseline health outcome (all ages, cases per 100,000)	Monetary valuation of health endpoint (£ per output metric, 2022 prices)
Mortality (associated with chronic exposure)	Life years lost (LYL) / deaths	8% (RR)	858	£50,600 per LYL
Respiratory hospital admissions	# Admissions	0.96% (RR)	1,995	£9,800
Ischemic heart disease (IHD)	# New cases (incidence)	7% (RR)	171	£72,000 per Quality adjusted life year (QALY), applied to discounted QALY over duration of the disease
Stroke	# New cases (incidence)	11% (RR)	133	
Lung cancer	# New cases (incidence)	9% (RR)	78	
Asthma in children	# New cases (incidence)	1.48 (OR)	461	

Notes: *RR = relative risk, where concentration response functions (CRFs) are presented as a percentage change per 10 μgm^{-3} change in $PM_{2.5}$; OR = odds ratio, where CRFs are presented as the change in odds ratio per 10 μgm^{-3} change in $PM_{2.5}$.

3.4 Socio-Economic Assessment

3.4.1 Quantitative assessment

In response to the SCA, those burning non-compliant solid fuels (i.e., wood) on a non-compliant appliance can either: upgrade to an exempt appliance, switch to a compliant fuel, or stop burning. Each carries with it a different set of impacts and consequences for the household or vessel owner.

Fuel and utility cost changes: Those who change fuel or stop burning face several effects: a fuel cost saving of the fuel no longer burnt, a fuel cost increase of any new fuel burnt, and a change in 'utility' (either the difference between burning the new relative to existing fuel, or the lost utility from no longer burning the existing fuel). Utility refers to the intangible, non-monetary benefit that people derive from burning fuel. This captures the pleasure or ambience effect of burning, and also includes any heat and warmth benefit delivered by the solid fuel (where this is not replaced by other heating options).

The emissions modelling has captured the change in fuel consumption of wood (not compliant in SCAs) and MSF (compliant in SCAs) across the different policy scenarios assessed. This shows that the overall consumption of both wood and MSF reduces in response to Scenarios 2 and 3. Hence for MSF, the increase in consumption from fuel switching is outweighed by the reduction from those who stop burning all together. Even though MSF is a compliant fuel and there is no legal requirement to stop burning, the modelling approach results in a reduction in fuel consumption due to the different behavioural profile inside relative to outside an SCA, as outlined in Table 3-1.

By assuming the solid fuel burning behavioural profile that currently exists within the SCAs is applied to residential properties outside the SCAs, the air quality assessment effectively presents a combined response of those who switch fuel and those who stop burning. One limitation therefore for the subsequent economic modelling of fuel cost and utility effects is it is not possible to separate the change in fuel consumption between those who switch fuel and those who stop burning.

A second limitation in assessing these effects is it is not possible to estimate the total utility effect of burning solid fuels that may be lost. In theory, the utility benefit must be at least as great as the fuel cost (otherwise people would not burn solid fuels in the first place). However, no data or methods exist to suggest how much greater the utility benefit is, over and above the fuel costs. In the absence of a better methodology, for those that stop burning, we assume the utility benefit is equal to the fuel cost savings – as such the net impact is zero for those that stop burning. Overall, this understates the costs of stopping burning.

In summary:

- We do not know what proportion of households switch fuel or stop burning;
- For those that switch, we can cost the difference in fuel costs associated with the switch – this implies an increase in costs as MSF is generally more expensive that wood (also accounting for the higher energy density of MSF relative to wood); and
- For those that stop burning, we cannot capture the utility lost, and can only assume this is at least as great as the fuel costs. These impacts offset, leaving no net impact to stop burning. This understates the costs.

For each policy scenario, we combine the two approaches above for those households that stop burning and those that switch fuel in a way that demonstrates the most 'conservative' (i.e. highest) cost. We do so by assuming: (a) 100% of the reduction in wood consumption is switched to MSF – in which case we capture the maximum net cost of fuel switching; (b) the remaining fuel consumption change is those who stop burning – this carries a net neutral cost (noting this does not capture the utility effect). In practice, not all those burning wood will switch to MSF, as such this will overstate the net cost of fuel switching. However, we cannot capture the utility effect of those who stop burning, and the quantitative analysis will understate this impact. By adopting these assumptions, we present the most conservative quantitative estimate of costs for comparison to the benefits.

For those that switch fuel, the changes in fuel use of the different policy scenarios as calculated under the emissions assessment are combined with fuel prices sourced from the Nottingham Energy Partnership[17]. The fuel prices used are shown in the table below. Prices were sense checked against fuel prices used in a recent Impact Assessments by the Scottish Government (presented as the price sensitivity below)[18].

[17] Energy Cost Comparison — Nottingham Energy Partnership (nottenergy.com)
[18] 3. Business and Regulatory Impact Assessment - Impacts of the sale of house coal and the most polluting manufactured solid fuels: report - gov.scot (www.gov.scot)

Table 3-4 Fuel price data

Fuel	Price (£/tonne)	Price Sensitivity (£/tonne)
Wood (kiln dried logs)	365	389
MSF	667	406

Investment costs: Those that upgrade to a compliant stove face a one-off cost associated with this upgrade (see point below on 'investment costs') but are assumed not to change fuel consumption and hence face no associated ongoing costs. Investment costs for the installation of new Defra-exempt stoves driven by policy scenarios were calculated by combining the number of new stoves purchased (as calculated under the emissions modelling) with an average cost of an EcoDesign stove including installation costs, sourced from a targeted review of literature and online sources[19,20,21,22,23]. An average cost for an EcoDesign stove (the only type of stove that is legally possible to purchase and are also exempt in SCAs) and installation was determined to be £1,500. It is assumed that those choosing to purchase a new stove already have a flue and so there are no additional costs associated with flue installation. Investment costs were annualised with an assumed stove life of 10 years and discount rate of 3.5%[24], for comparison with the single year of emissions impacts assessed.

No data was found regarding the costs of EcoDesign stoves for boats. Hence the analysis assumes the same upgrade costs for boats as for houses.

The analysis assumes that non-compliant stoves are upgraded with new compliant stoves, however in practice other options may be available. This includes potential retrofit options, which may be considerably cheaper than the cost of a new stove. It was decided to not include these costs due to uncertainty around the proportion of stoves which could technically be retrofitted and the likelihood of retrofits being the chosen behavioural response. As such, investment costs may be slightly overstated if there is uptake of retrofits rather than new EcoDesign stove purchases.

There will be **implementation costs** for the Council associated with enforcement (i.e. in terms of additional enforcement officer time) and information campaigns. It is not known precisely what the implementation costs will be. Through discussion with the Council, an assumed cost of £50,000 was included as an illustrative estimate of overall implementation costs.

Greenhouse gas (GHG) impacts driven by the change in quantities of fuels burned were calculated using GHG emissions factors from the European Monitoring and Evaluation Programme (EMEP) guidebook and NAEI, applied to the fuel consumption changes calculated under the emissions modelling. These were then monetised using carbon prices from the Department for Energy Security and Net Zero's (DESNZ) guidance[25]. Note, the analysis of GHG emissions effects only captures changes in Scope 1 emissions (i.e. those associated directly with the burning of the fuel). It does not

[19] https://www.yorkshirestoves.co.uk/wood-burning-stove-installation/#:~:text=Whether%20you're%20looking%20to,installation%20from%20just%20%C2%A31769
[20] https://www.checkatrade.com/blog/cost-guides/log-burner-install-cost/
[21] https://www.directstoves.com/our-blog/the-ultimate-guide-to-wood-burning-stove-installation-costs-in-2023/
[22] https://www.minster-stoves.co.uk/wood-burning-stove-installation-cost-estimator/
[23] https://www.thecosystovecompany.co.uk/how-much-does-it-cost-to-install-a-wood-burning-stove/
[24] In line with the discount rate for social cost-benefit analysis recommended by the HM Treasury Green Book: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020
[25] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

capture possible Scope 3 (or 'lifecycle') effects of the fuel, which would also capture emissions associated with sourcing, transportation and other aspects of the fuel. Scope 3 emissions were not in the scope of the analysis and are challenging to estimate, in particular given uncertainty around the source of the wood burnt. Lifecycle emissions can vary widely depending on source, for example between wood foraged locally and wood pellets imported to the UK.

The outputs of the quantitative cost analysis and monetised greenhouse gas emissions impacts were combined with the monetised benefits of the air quality impacts calculated in the health impact assessment to calculate an overall **net present value** (NPV) and **benefit:cost ratio** (BCR) of the different policy scenarios. These summary metrics present the overall balance of benefits and costs of a scenario, relative to the baseline – i.e. where the NPV is positive or the benefit:cost ratio greater than one, the benefits of the scenario outweigh the costs and would indicate an overall positive change for society.

3.4.2 Qualitative assessment

A range of important effects could not be captured quantitatively in the analysis, either due to a lack of data on the effects of the SCA, or a lack of methodologies and approaches to quantify the effects.

Burning solid fuels can have a significant impact on ***indoor air quality***, with an additional detrimental impact on health that is not captured by the assessment of changes in ambient air quality, as presented above and captured using the damage costs. Although there is growing awareness of this risk, the evidence base is more nascent and approaches to quantify effects (in particular that reliably identify additional impacts over ambient exposure) are not well established. These effects were considered further through targeted literature review to elaborate the nature and potential size of effects.

Compliance with the SCA will have varying impacts on the household or vessel owner depending on their specific circumstances. More specifically, where those affected can afford to switch to an alternative means of heating (e.g. through fuel switch or upgrading stoves), this is unlikely to have an impact on the living conditions of the dwelling. However, where households or vessel owners cannot afford to switch to a viable alternative, this may impact on living conditions, with consequent impacts for health. The assessment has considered in further detail ***where the compliance costs could fall*** between different types of households, by reviewing different data sources which provide insight into the demographic profile of solid fuel users. Robustly quantifying impacts associated with ***changes in living conditions*** (e.g. reduced temperature, increased levels of damp,) was not possible as data is limited on current conditions and changes in heating patterns in response are uncertain. Furthermore, there is no established approach to quantifying impacts. That said, the consequences of such changes have been elaborated through targeted literature review.

Finally, the ***practical implications of changing heating practices*** were explored through a targeted literature review to identify potential effects and challenges for domestic users, and moored vessels that are not captured in the quantitative analysis, e.g. the learning required for new heating systems, and availability of different fuels.

4 Air Quality Assessment

4.1 Baseline

Table 4-1 presents baseline $PM_{2.5}$ emissions (representing current emissions, i.e. without any further intervention) from solid fuel burning in residential properties and moored river vessels in Cambridge. This presents the results from the top-down and bottom-up approaches.

The bottom-up estimate for residential emissions could be assumed representative of the current year, although it is recognised that the Kantar survey used to quantify the baseline represents conditions in 2018, and wood burning stove use has been increasing[26] in recent years. It should also be noted that emissions factors, on which these estimates are based, are reviewed and refined at regular intervals. Those used in the calculations below are based on the current NAEI (2021) for residential properties, and for moored vessels from a boating-specific report published in 2017.

The top-down approach utilised the 2021 NAEI and represents the sum of 1km by 1 km grid squares across Cambridge that were designated as largely inside or outside the current SCAs. As uniform grid squares do not perfectly align with the extent of the current SCAs, there is likely to be some error associated with this approach.

Table 4-1 compares the top-down and bottom-up approaches. Table 4-1 shows that the majority of emissions from solid fuel burning in Cambridge are from residential properties outside of the current SCAs. Emissions from moored vessels and residential properties inside the SCAs make up a relatively small proportion of total emissions. There is good agreement with the two methods, and we have therefore used the bottom-up approach for subsequent analysis given this: (a) can be amended more easily in the future as the assumptions are potentially refined, and (b) can be used as the basis of a more robust economic assessment.

Table 4-1: Baseline $PM_{2.5}$ Solid Fuel Burning Emissions in Cambridge (all figures tonnes per annum)

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa) using bottom-up approach	Baseline $PM_{2.5}$ Emissions (tonnes pa) using top-down approach (NAEI)
Residential – Inside SCA	0.50	0.61
Residential – Outside SCA	26.22	27.34
Moored vessels (stationary, for heating purposes only)	0.77	n/a
Total	27.48	27.95

Table 4-2 details the assumed baseline data on number of households and moored vessels using specific solid fuels and appliances, inside and outside the current SCAs.

[26] For example: https://www.bbc.co.uk/news/uk-england-bristol-63241940

Table 4-2: Baseline parameters

Parameter	Inside SCA	Outside SCA
Number of Properties	3,832	63,053
Number of Properties Burning Wood	119	3,485
Number of Properties Burning Coal-like Products	55	1,474
Number of Properties Using Open Fire (Wood)	0	821
Number of Properties Using Open Fire (Coal-like Products)	20	529
Number of Properties Using Basic Stove (Wood)	0	480
Number of Properties Using Basic Stove (Coal-like Products)	6	170
Number of Properties Using Upgraded Stove (Wood)	32	480
Number of Properties Using Upgraded Stove (Coal-like Products)	6	170
Number of Properties Using EcoDesign Stove (Wood)	87	1703
Number of Properties Using EcoDesign Stove (Coal-like Products)	22	604
Number of Moored Vessels[27]	-	70
Number of Moored Vessels Burning Wood	-	15
Number of Moored Vessels Burning Coal-like Products	-	45

4.2 Scenario Tests

4.2.1 Scenario 1: Current SCA Coverage with Moored Vessels

The modelled change in Scenario 1 is that the SCA regulations are extended to moored vessels, in addition to the current SCAs for residential properties. The behavioural change assumptions for this scenario are that: of the 25%[28] of boats which are assumed to burn wood, half change to burning MSF and half upgrade their stove to an exempt appliance (the baseline assumes that all boats do

[27] Assumed all using standard appliances, all closed stoves (only emission factors available specific to boats for conventional and high-efficiency stoves)
[28] Note that 75% of boats which use solid fuel are assumed to be already burning MSF (which they can legally carry on doing).

not have an exempt appliance). Table 4-3 shows that of the moored vessel emissions there is a reduction of 67% relative to the baseline. However, overall, this scenario reduces $PM_{2.5}$ emissions from solid fuel burning in Cambridge by only 2%. In summary, there is a relatively large impact of the SCA regulations on emissions from moored vessels relative to existing emissions from moored vessels, but as this is a small proportion of total emissions, there is only a small impact relative to the total baseline emissions.

Table 4-3: Emissions Reductions under Scenario 1

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa)	Scenario 1 $PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Residential (total)	26.71	26.71	±0 (0%)
Moored vessels (stationary, for heating purposes only)	0.77	0.25	-0.52 (-67%)
Total	27.48	26.96	-0.52 (-2%)

4.2.2 Scenario 2: City Wide SCA without Moored Vessels

This scenario only influences emissions from residential properties, while the emissions from moored vessels remains as in the baseline. This scenario assumes that the 63,053 properties currently outside of the SCAs are now covered by a city-wide SCA. The behavioural assumptions, such as numbers of households burning and appliance types used, that were assumed for households under the existing SCA are applied to households newly captured in the extended area. See Table 3-2 for assumptions in full, but there is a reduction in the proportion of properties burning solid fuel (including wood), there is no burning wood on open fires, and it is assumed that all stoves used are exempt (i.e. non-compliant stoves are upgraded). Table 4-4 shows that of the residential emissions (which make up a large proportion of overall emissions), there is a reduction of 71%. Overall, this scenario reduces $PM_{2.5}$ emissions from solid fuel burning in Cambridge by 69%.

Table 4-4: Emissions Reductions under Scenario 2

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa)	Scenario 2 $PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Residential (total)	26.71	7.85	-18.86 (-71%)
Moored vessels (stationary, for heating purposes only)	0.77	0.77	±0 (0%)
Total	27.48	8.62	-18.86 (-69%)

4.2.3 Scenario 2a: Sensitivity Test Assuming 25% non-compliance

Scenario 2a provides a sensitivity test assuming 25% non-compliance across the properties which are currently outside of the SCAs if a city-wide SCA was established (i.e., 25% will continue to burn wood on open fires and 25% will not upgrade non-compliant stoves). Table 4-5 shows that instead of a 71% reduction in residential emissions as shown in Scenario 2, a 62% reduction in residential emissions is observed (and a 61% reduction in overall solid fuel burning emissions).

Table 4-5: Emissions Reductions under Scenario 2a

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa)	Scenario 2a $PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Residential (total)	26.71	10.02	-16.69 (-62%)
Moored vessels (stationary, for heating purposes only)	0.77	0.77	±0 (0%)
Total	27.48	10.79	-16.69 (-61%)

4.2.4 Scenario 3: City Wide SCA with Moored Vessels

Scenario 3 combines Scenarios 1 and 2 by applying the assumptions for increasing coverage of the SCA to include both city-wide residential properties and moored vessels across the Cambridge area. This therefore combines the emissions reductions in both Scenarios 1 and 2. The result is an overall 71% reduction in $PM_{2.5}$ emissions from solid fuel burning, as shown in Table 4-6.

Table 4-6: Emissions Reductions under Scenario 3

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa)	Scenario 3 $PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Residential (total)	26.71	7.85	-18.86 (-71%)
Moored vessels (stationary, for heating purposes only)	0.77	0.25	-0.52 (-67%)
Total	27.48	8.10	-19.38 (-71%)

4.2.5 Scenario 3a: Sensitivity Test Assuming 25% non-compliance

Scenario 3a provides a sensitivity test assuming 25% non-compliance across the properties which will be covered by the expanded SCA (as per Scenario 2a), as well as an assumed 25% non-compliance amongst moored vessels (i.e. of the boat owners remaining burning wood, half upgrade their stove and half do not). Scenario 3a (Table 4-7) shows that instead of a 71% reduction in total emissions as shown in Scenario 3, an overall 62% reduction in total emissions is observed, which is still a substantial reduction.

Table 4-7: Emissions Reductions under Scenario 3a

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa)	Scenario 3a $PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Residential (total)	26.71	10.02	-16.69 (-62%)
Moored vessels (stationary, for heating purposes only)	0.77	0.35	-0.42 (-54%)
Total	27.48	10.38	-17.11 (-62%)

4.2.6 Scenario 4: No SCA

This scenario assumes that the residential properties which are currently in the SCA are no longer subjected to the requirements of a SCA. As such, this applies the behavioural assumptions made for households currently outside of the SCA to all properties in Cambridge (i.e. including those within the existing SCA). In practice, this is not a realistic assumption as residents would be very unlikely to downgrade stoves (i.e. remove a compliant EcoDesign stove and install a non-compliant basic stove), but is estimated to provide an indication of the current effect of the SCA on $PM_{2.5}$ emissions. Table 4-8 shows that if the current SCA was revoked there would be a 4% increase in $PM_{2.5}$ emissions from solid fuel burning. This increase is all from residential properties, as moored vessels are currently outside of the SCAs no change is assumed for these solid fuel users.

Table 4-8: Emissions Reductions under Scenario 4

Emissions Source	Baseline $PM_{2.5}$ Emissions (tonnes pa)	Scenario 4 $PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Residential (total)	26.71	27.81	+1.10 (+4%)
Moored vessels (stationary, for heating purposes only)	0.77	0.77	±0 (0%)
Total	27.48	28.58	+1.10 (4%)

4.3 Other Sensitivity Tests

4.3.1 Stove Exemptions

One of the assumptions around which there is greatest uncertainty is the proportion of different stove types used within households and moored vessels in Cambridge. There is no available information that we are aware of, either nationally or locally, on the proportion of stoves currently in use which are classed as Defra exempt. Hence, assumptions about upgrades of stoves when residents move into the SCA is also highly uncertain. The key data sources that do exist include:

- The Kantar survey, which has information (nationally) on the date at which stoves have been installed (split into pre-2000, 2000-2009 and post 2009); and
- The NAEI emissions factors for stoves, which are based on the following categories of closed stove: 'Basic', 'Upgraded' and 'EcoDesign'.

For the baseline we have assumed that pre-2000 installations are 'Basic', those installed between 2000-2009 are 'Upgraded', and Post 2009 installations are 'EcoDesign'. In addition, 'Basic' are assumed to be not exempt appliances, while 'Upgraded' and 'EcoDesign' are assumed to be Defra exempt (i.e. those households with the latter 2 categories of stove would not need to upgrade stoves to be compliant with a SCA).

There are a number of issues with these assumptions, not least that there have been Defra exempt appliances since the Clean Air Act came into force in 1956, and therefore the date of installation is not necessarily a good indicator of a compliant stove or not. However, in terms of emissions, installation date is likely to be a better indicator (i.e. stoves are getting progressively cleaner) and if residents moving into an SCA upgrade their stove, it is likely that they can now only buy an EcoDesign stove[29]. Hence from the perspective of calculating emissions, these assumptions seem reasonable. Because of these uncertainties, this sensitivity test is based on the assumption that 25% of post 2000 installations are not exempt appliances, and 30% of pre 2000 appliances (or classed as 'unsure' in the Kantar Survey) are exempt appliances. Table 4-9 shows that with these altered assumptions, there would be a 16% increase in $PM_{2.5}$ emissions from residential wood burning in the baseline, or a 15% increase when compared to the overall baseline of solid fuel burning emissions in Cambridge. This sensitivity on the baseline emissions/stoves means that, if this were to be the case, there would be more opportunity for emissions savings from upgrading of non-compliant stoves in the policy scenarios.

Table 4-9: Emissions Reductions under Stove Assumption Sensitivity Scenario (Baseline)

Emissions Source	Baseline $PM_{2.5}$ Emissions (t/a)	Stove Assumption Sensitivity Scenario $PM_{2.5}$ Emissions (t/a)	Scenario Impact (t/a) (% relative to baseline)
Residential (total)	26.71	30.90	+4.19 (+16%)
Moored vessels (stationary, for heating purposes only)	0.77	0.77	±0 (0%)
Total	27.48	31.67	+4.19 (+15%)

4.4 Summary

The Air Quality Assessment has presented the likely changes in $PM_{2.5}$ emissions under four main policy scenarios, including incorporating moored river vessels into the SCA, and increasing the extent of the SCA to capture all domestic properties within the whole Cambridge area. In addition, sensitivity tests have been run looking at 25% non-compliance with the SCA and also testing the sensitivity of the assumption of stove types in the baseline. The table below presents a comparison of all the scenarios, including the impact in terms of emissions (tonnes of $PM_{2.5}$ per annum) and percentage change relative to the baseline.

[29] The EcoDesign Regulation (EU) 2015/1185 24/5/201 for solid fuel space heating appliances came into force in the UK on 1st January 2022. All stoves manufactured from that date onwards must comply with the requirements of EcoDesign.

Table 4-10: Summary of Emissions reductions from scenarios modelled

Scenario	$PM_{2.5}$ Emissions (tonnes pa)	Scenario Impact (tonnes pa) (% relative to baseline)
Baseline	27.48	NA
1. **Current SCA coverage, including moored vessels**	26.96	-0.52 (-2%)
2. City-wide SCA coverage, no moored vessels	8.62	-18.86 (-69%)
2a. As per Scenario 2 with 25% non-compliance	10.79	-16.69 (-61%)
3. City-wide SCA coverage, with moored vessels	8.10	-19.38 (-71%)
3a. As per Scenario 3 with 25% non-compliance	10.38	-17.11 (-62%)
4. No SCA	28.58	+1.10 (4%)
Stove Assumption Sensitivity	31.67	+4.19 (+15%)

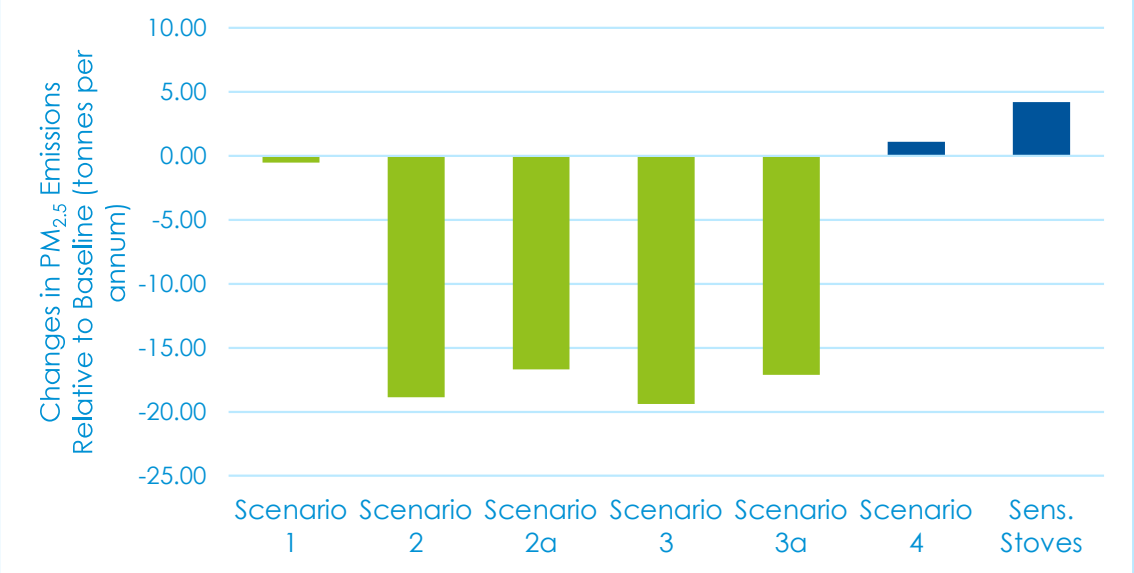

Figure 4-1 Summary of changes to $PM_{2.5}$ emissions across Cambridge in the modelled policy scenarios relative to the Baseline

The overall difference (relative to the baseline) in $PM_{2.5}$ emissions modelled using the 'bottom-up' approach across the range of policy scenarios is presented in Figure 4-1. Scenarios 1 to 3a all result in a reduction of $PM_{2.5}$ emissions. Meanwhile Scenario 4 and the sensitivity test on stove types result in an increase in $PM_{2.5}$ emissions. The largest reduction in emissions occurs in policy Scenario 3 (19.4 tonnes per annum) which simulates a city-wide extension of the SCA and inclusion of moored vessels. The sensitivity tests assuming a proportion of non-compliance with the regulations (Scenarios 2a and 3a) still result in a significant reduction in $PM_{2.5}$ emissions.

The overall change in $PM_{2.5}$ emissions under the core policy scenarios relative to total $PM_{2.5}$ emissions[30] across Cambridge is shown in Figure 4-2. The reductions in $PM_{2.5}$ emissions are significant under policy Scenarios 2 and 3; by implementing a city-wide SCA it is estimated that $PM_{2.5}$ emissions could reduce by 21.8% (Scenario 2), and by 22.4% (Scenario 3) if moored vessels are also included in the SCA. These represent substantial reductions in primary $PM_{2.5}$ emissions across the Cambridge area.

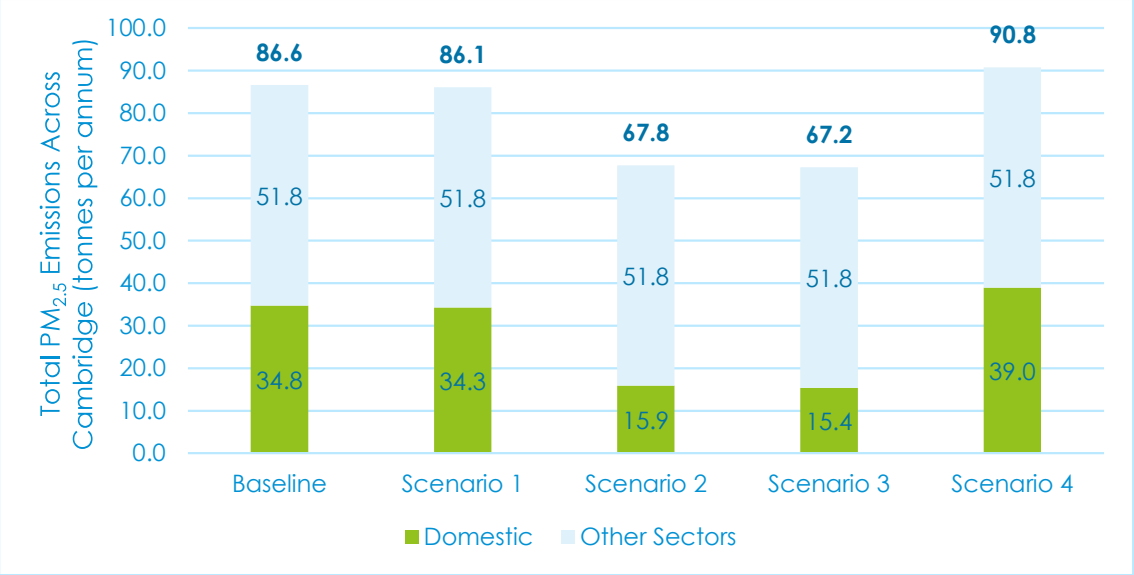

Figure 4-2 Summary of changes to $PM_{2.5}$ emissions across Cambridge in the modelled policy scenarios relative to total $PM_{2.5}$ emissions

Residential emissions represent a large proportion of overall emissions from solid fuel burning (in comparison to commercial premises and moored vessels) and the majority of properties are currently outside of the existing SCAs in Cambridge. Hence, expanding the SCA to incorporate all properties in the Cambridge City area (as under Scenario 2 and Scenario 3) is estimated to have a large effect on emissions from solid fuel burning. The reduction in emissions stems from the consequent assumed reduction in numbers of properties burning solid fuels, as well as a reduction in burning on open fires and stove upgrades for wood burning. The majority of baseline emissions and emissions savings are driven by wood burning (both a higher number of properties burning wood and higher emissions per kg of fuel burnt). Even with 25% non-compliance assumed (i.e., as under Scenario 2a), there is still predicted to be a significant (61% in the case of Scenario 2a) reduction in overall $PM_{2.5}$ emissions from solid fuel burning.

Moored river vessels represent a much smaller contribution to overall emissions, and current assumptions are that most are already likely to be burning MSF. Therefore, relatively few boat owners would need to change behaviour in response to an extension of the SCA to cover moored vessels. For both these reasons the impact of bringing moored boats into the SCA is therefore much less than for residential properties. However, despite this, there is potential for a proportionally large reduction in emissions emanating specifically from moored river vessels (67% in Scenario 1) if they were brought into the SCA. This is because $PM_{2.5}$ emissions from wood burning are much higher than for MSF per unit of fuel, so any reduction in wood burning will have a relatively large positive effect on emissions. In the baseline, although only 25% of solid fuel burning river vessels are assumed to be burning wood, this makes up 86% of overall moored vessel emissions.

[30] 2021 NAEI used for emissions of all sectors. Total domestic emissions as a subset of the'02 Non-industrial combustion plants' sector. Changes presented in Figure 4-2 subtracted from NAEI totals.

It is accepted that there are large uncertainties in the assumptions, in both the baseline and policy scenarios. There are particular uncertainties in relation to the behaviour change if the SCA is expanded. It is assumed that residents being captured in the newly declared SCA adopt the same behaviour as those who currently fall within the existing SCA, and that these changes occur when it is declared (i.e. reductions in proportions of properties burning, burning wood on open fires ceases, and changes to stoves where burning still occurs). However, sensitivity tests to explore a scenario of 25% non-compliance with the SCA regulations still show substantial reductions in emissions (62% for Scenario 3a relative to the baseline for properties and moored vessels), adding further evidence to the case for expanding the SCA.

Some of the uncertainties are likely to overestimate the emissions reductions (for example assuming full compliance with the SCA and that people will change behaviour as per those within the current SCA), while some assumptions are likely to underestimate the benefit (such as not including commercial emissions). However, even though some will potentially increase emissions in both the baseline and scenarios, and some will potentially decrease emissions, they will not necessarily act proportionally across the baseline and scenarios. For example, uncertainty about the assumption relating to the split between appliance types, will have different effects in the baseline, where the majority of properties are outside of the SCA, than in a scenario whereby it is assumed that all properties are compliant with the SCA (and hence have a different appliance split).

5 Health Impact Assessment

5.1 Health impacts of policy scenarios (Quantitative)

Each scenario will deliver a change in air pollutant emissions, which will have associated consequences for human and environmental health. The changes in emissions and associated impacts have been monetised using the Defra air pollutant damage costs – the results are presented in Table 5-1. All impacts are expressed as a change relative to the baseline.

Table 5-1: Damage costs of changes in air pollution (benefits associated with reductions in air pollutant emissions are expressed as positive numbers) (£000k), relative to the baseline, per annum

Scenario	1 Existing SCA, with moored vessels	2 City-wide SCA, without moored vessels	2a 25% non-compliance sensitivity test on Scenario 2	3 City-wide SCA with moored vessels	3a 25% non-compliance sensitivity test on Scenario 3	4 No SCA
Monetised damage costs (£2022 prices)	44	1,600	1,410	1,640	1,480	-93

Scenarios 1-3 each delivers a human and environmental health benefit relative to the baseline. This moves in line with the size of the emissions reductions achieved. The scenario with the most significant impact is Scenario 3, which is estimated to deliver a benefit valued at £1.64 million per annum in human and environmental health improvement.

Scenario 4, which simulates the removal of the existing SCA, demonstrates that the current SCA is providing a human and environmental health benefit with a value of approximately £93,000 per year (capturing health care cost savings, improved productivity, and the additional benefit to individuals themselves of improved health).

These monetised damage costs capture a range of different underpinning impacts on human and environmental health. The figure below presents the split of the overall monetised damage cost values by their individual impact pathway – this is presented for Scenario 3 only, but all scenarios follow the same pattern of results. By far the most important impact in the damage costs is the impact of mortality risk (comprising 57% of the overall impact valuation). This is followed by the morbidity pathways asthma (in children), stroke and ischemic heart disease. Respiratory hospital admissions show a 0% contribution – this is rounded down from a very small figure, which in turn is driven by the relatively low valuation relative to other health endpoints (i.e. one hospital admission incurs a much lower cost relative to say a case of asthma or death).

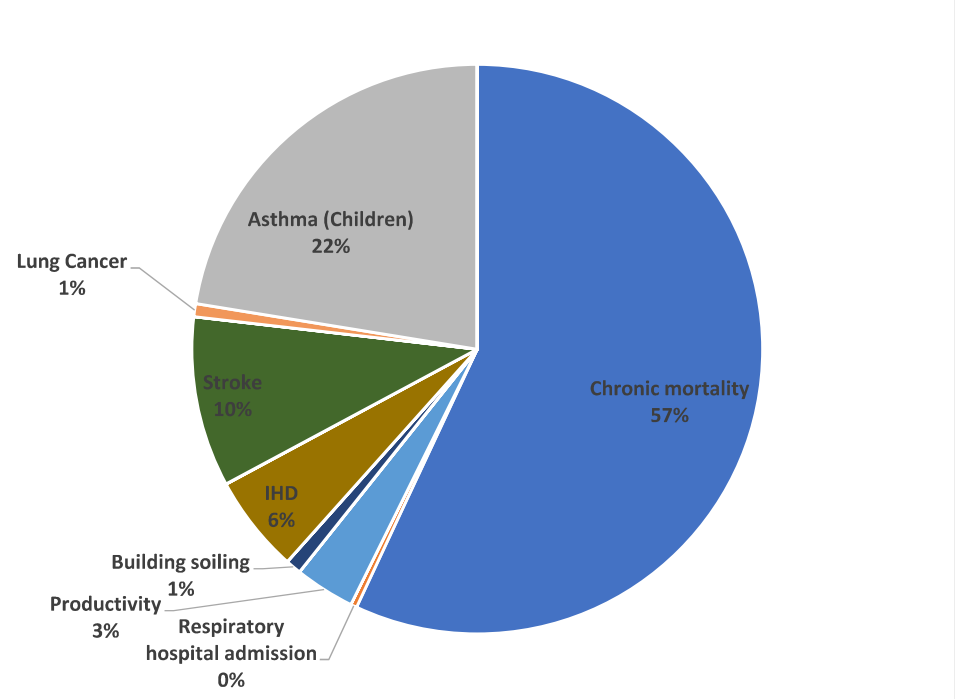

Figure 5-1: Split of monetised damage costs by impact pathway – Scenario 3

Table 5-2: Scenario health impacts (benefits associated with reductions in air pollutant emissions are expressed as negative numbers), relative to baseline

Impacts	Unit	Scenarios					
		1 Existing SCA, with moored vessels	2 City-wide SCA, without moored vessels	2a 25% non-compliance sensitivity test on Scenario 2	3 City-wide SCA with moored vessels	3a 25% non-compliance sensitivity test on Scenario 3	4 No SCA
Mortality*	Deaths	-0.05	-1.77	-1.57	-1.82	-1.61	0.10
Mortality*	LYL	-0.49	-17.96	-15.90	-18.46	-16.29	1.05
Respiratory hospital admission	HA	-0.02	-0.57	-0.50	-0.58	-0.51	0.03
IHD	#cases	-0.01	-0.35	-0.31	-0.36	-0.32	0.02
Stroke	#cases	-0.01	-0.43	-0.38	-0.44	-0.39	0.03
Lung Cancer	#cases	-0.01	-0.21	-0.18	-0.21	-0.19	0.01
Asthma (Children)	#cases	-0.02	-0.63	-0.56	-0.65	-0.57	0.04

Note: *Mortality effects are expressed using two alternative metrics – these are separate ways of expressing the same effect and are not two separate, additional impacts.

The table above presents some of the key human health impacts which are captured by the damage costs, expressed instead in terms of health outcomes rather than monetised values as presented above. It is important to note that the damage costs do not capture all health effects that have been linked to air pollutant exposure - exposure is also associated with other human health effects which are not quantified here, including diabetes, cardiovascular hospital admissions and chronic bronchitis.

Each scenario has a range of associated effects, which again move in line with the magnitude of emissions change observed. The scenario which delivers the greatest benefit is Scenario 3, which equates to:

- 1.8 fewer deaths each year associated with air pollutant exposure, with an associated reduction in life years lost (LYL) of 18.5 – i.e. 18.5 years of life[31] are gained for each year of emissions reductions;
- Reduction in 0.6 hospital admissions per year for respiratory conditions associated with air pollution exposure – i.e. one less hospital admission every 1 year and 9 months;
- Reduction in 0.36 new cases of ischemic heart disease each year – i.e. one less new case every 2 years and 9 months;
- Reduction in 0.44 new stroke cases each year – i.e. one less stroke case every 2 years and 3 months;
- Reduction in 0.21 new lung cancer cases each year – i.e. one less new lung cancer case every 4 years and 8 months; and
- Reduction in 0.65 new asthma cases in children per year – i.e. one less new case of asthma in children every 1 and a half years.

As is common in assessments of this nature (e.g. city-level analyses considering the effects of changing policies targeting air pollution), when analysed individually the calculated health impacts appear small. It is important to note that these figures present 'statistically attributable' impacts associated with the change in air pollution, based on the methodologies drawn from the underlying epidemiological evidence base, for the purpose of policy assessment. In practice, specific health outcomes can very rarely be attributed solely to changes in air pollution – in fact changes in air pollution will benefit all citizens to some extent and will have an influence on the risk and severity of all health outcomes with which air pollution has been associated (e.g. reducing air pollution will have some impact on all cases of lung cancer, rather than simply reducing one case every 4 years or so as quantified here for Scenario 3).

5.2 Health impacts of policy scenarios (Qualitative)

5.2.1 Indoor air quality impacts

Evidence has shown that solid fuel use has a significant negative impact on indoor air quality, as demonstrated by the review of indoor air quality undertaken by the Air Quality Expert Group (AQEG)[32]. It has been linked to increased levels of a range of pollutants in the indoor environment,

[31] These years of life gained are spread across those who experience a reduction in exposure to air pollution – in this case the impacts will predominantly be gained by Cambridge residents. This figure is a representative figure of the total statistically attributable impact across affected population – in practice it is not possible to know how many people will benefit and to what extent. I.e. there could be a large benefit to a smaller population, or a smaller effect spread across a larger population.
[32] https://uk-air.defra.gov.uk/library/reports?report_id=1101

including PM, carbon monoxide, oxides of nitrogen, volatile organic compounds (VOCs), sulphur dioxide (especially in relation to coal-based fuels) and polycyclic aromatic hydrocarbons (PAHs)[33]. A paper by Chakraborty *et al.* (2020)[34] identified that significant increases in indoor air pollution are observed, even when Defra-approved stoves were used. These included an average increase of 196% in levels of $PM_{2.5}$ between times when the stoves were in use and when they were not. This increase is likely to be far higher when using an open fire, where less efficient combustion is also likely to give rise to a higher proportion of PAHs (a group of chemicals which contains many known carcinogens).

The risk of heightened levels of pollution indoor is exacerbated by the fact the UK population spends 80-90% of its time indoors[35]. A report by the WHO in 2015[36] analysed the potential health impacts of indoor air pollutants from solid fuel heating, and also demonstrated the health benefit (including lower cardiovascular and respiratory mortality) that could be obtained through upgrading appliances to more efficient versions (e.g. more modern stoves) or non-combustion heating options.

It should be noted that indoor air quality in moored vessels has also been shown to be negatively impacted by solid fuel use. This is in addition to emissions from cooking (as with fixed households) and from the diesel engine (used either in propulsion or to charge batteries)[37].

The impacts of indoor air pollution on health have not been captured in the quantitative assessment of the impacts (and benefits) of changing SCA coverage in Cambridge for three key reasons. Firstly, indoor air quality is far more variable than outdoor air quality, both over time and between locations. Activities common indoors, including cooking, using candles or incense[38,39], or even people moving about, can give rise to peaks in measured concentrations of pollutants such as $PM_{2.5}$ which would be seen as extreme in outdoor environments. Equally, a lack of such activity can see concentrations drop to very low levels, below the outdoor background level (especially if windows are closed). Added to the differences in activity in different households, this would mean any "average" concentration carries an extremely high level of uncertainty. Furthermore we do not have data on indoor concentrations of pollutants in either burning or non-burning households.

Secondly, the damage coefficients used to estimate the health impacts of air pollution on populations correlate (usually) to measured outdoor concentrations with population level health outcomes. However, these populations will spend the majority of their time indoors, and thus the coefficients include indoor exposures to a certain extent (the variability in such exposures, for the reasons set out above, are not accounted for). Thus, calculating a separate health impact for indoor exposures could represent a "double counting" of effects.

Finally, Indoor air quality has been subject to increased interest and research in recent years. However, the field is still less developed than for outdoor air pollution and while some attempts have been made to quantify its impacts on health, these are not sufficiently robust to allow inclusion here.

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[33] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2211011000_15062022_Indoor_Air_Quality_Report_Final.pdf
[34] https://www.mdpi.com/2073-4433/11/12/1326
[35] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831319/VO__statement_Final_12092019_CS__1_.pdf
[36] https://iris.who.int/handle/10665/153671
[37] https://www.islington.gov.uk/-/media/sharepoint-lists/public-records/environmentalprotection/information/adviceandinformation/20222023/indoor-pollution-on-canal-and-river-boats.pdf
[38] https://ineris.hal.science/ineris-01863023/document
[39] https://pubmed.ncbi.nlm.nih.gov/23288671/

5.2.2 Changes in living and working conditions

Residential

By extending the SCA to cover properties in the wider city area, it is expected that households will change their behaviour if they are currently burning wood on an open fireplace, or on a stove which is not on Defra's exemptions list. It is anticipated that the changes will largely be felt by three broad groups of households:

- those who need to burn wood as it is their only heating source;
- those who burn on occasions for the aesthetic pleasure and comfort of a solid fuel fire; or
- those who burn wood to subsidise another form of central heating[40].

To assess the proportion of households who fall into these respective groups, data from the latest (2021) Census[41] has been extracted. While there was not a direct question relating to wood burning, information on the types of central heating systems installed is available. In the Cambridge Local Authority District (LAD) **89.7%** of households heat their homes with a single-fuel central heating system that is not reliant on solid fuels (i.e., mains gas, bottled gas, electricity, oil, renewable energy, or district/communal heat networks). Meanwhile the Census data indicates that **7.8%** of households have two or more types of central heating, but **0%** of households are reliant on wood or solid fuel only for central heating.

This data therefore indicates that no (or very few) households fall into category 1 (above), i.e. using wood or another solid fuel as their only source of heating. This is encouraging; it is anticipated that no household will be without a means to heat their property if the SCA is extended. This therefore indicates that the changes in living conditions will be concentrated on those households who currently burn for pleasure and/or to subsidise another form of central heating. The likely behavioural options are therefore to a) stop burning entirely and rely on the other form of heating already available to the household, b) upgrade the appliance on which the burning is taking place or c) change from wood to a compliant solid fuel, e.g. MSF.

Based on the Census data, approximately **4,918** (7.8%) households outside the current SCA boundary could have an open fire or solid fuel burning appliance as a secondary form of heating, and therefore fall into categories 2 and 3 (above). This compares well with the modelled estimate of households currently outside the SCA using wood and coal-like products (4,959), based on the Kantar survey. Using the model estimates, this equates to 3,485 households subsiding central heating systems with wood burning, of which **821** households are likely to be using an open fire, and **480** on a stove which is not exempt. This corresponds to a total of 2.1% of households currently outside the SCA boundary.

While 2.1% of households is relatively few in the context of the whole city, this equates to 1,301 households feeling a change in their living and/or working conditions. The potential impact on households in terms of changes in living conditions is also dependent on how affordable different alternatives are, and hence importantly ties to the socio-economic situation of the household – this is explored further in Section 6.3. Another aspect of households changing burning behaviour is whether some households have a preference for a non-compliant wood stove providing heat to the property (e.g. in a primary room, with other secondary sources elsewhere) – this is explored further as part of the 'fuel and utility cost' discussion in the quantitative analysis.

[40] Note that there may be a significant overlap between groups two and three.
[41] https://www.ons.gov.uk/census/maps/choropleth/housing/type-of-central-heating-in-household/heating-type/two-or-more-types-of-central-heating-not-including-renewable-energy?lad=E07000008

Moored Vessels

A previously outlined, information on burning behaviours on river boats is relatively sparse and/or spatially aggregated compared to the data available for residential behaviours. It is currently estimated that of the 70 houseboat moorings available in Cambridge, 85% use solid fuel as their primary heating source (~60 boats), of which it is assumed 75% use MSF and 25% use wood (~15 boats). All appliances are currently assumed to not be exempt. Therefore, if moored vessels are included within the SCA, 15 moored vessels will need to change their burning behaviours. It is anticipated that half those currently using wood on a not exempt appliance would switch fuels to MSF (~7.5 boats), and half would upgrade their appliance (~7.5 boats). Compared to the number of residential households that will be required to change their behaviours (1,301), the number of houseboats impacted is relatively few. Additionally, there is no ban on burning in general so the SCA regulations should result in either a fuel switch or stove upgrade. However, if there are misinterpretations of the regulations and/or teething issues with becoming accustomed to burning differently, the effects may be felt more acutely for these Cambridge residents; houseboats are typically less well insulated than traditional brick buildings and the choice of appropriate exempt stoves may be more limited. Changes in living and working conditions are explored further in Section 6.43.

5.3 Summary

A wide (and increasing) range of health conditions are linked to air pollution exposure, and reducing emissions will reduce the risk of lung cancer, stroke, ischemic heart disease, asthma, respiratory hospital admissions and deaths attributable to air pollution. Reductions in air pollutant emissions under the scenarios will therefore deliver positive benefits for human and environmental health, with the size of effects moving in line with the size of the emission reductions – hence Scenarios 2 and 3 are estimated to deliver a significantly greater benefit than Scenario 1. These benefits can be expressed in monetary terms using 'damage costs', which capture associated changes in health care costs, 'productivity' benefits and the value people place on their own good health. When valued in this way, Scenarios 2 and 3 deliver a societal benefit valued at £1.6m each year, in comparison to £44,000 per year for Scenario 1. By comparison, analysis of Scenario 4 suggest that the existing SCA delivers a societal benefit of around £93,000 per year for Cambridge residents (i.e. a benefit that could be lost should the SCA be removed).

These quantified impacts capture the change in exposure to ambient air pollution, but they do not completely capture the additional effect of changes in exposure to indoor air pollution. Evidence has shown that solid fuel use has a significant negative impact on indoor air quality, a risk that is heightened by the fact people spend the majority of their time indoors. The impact of the SCA scenarios on indoor air pollution and health cannot be quantified as robust approaches are not available to do so. The impact of the scenarios will depend on the behavioural response of each affected household, but it reasonable to assume the scenarios will deliver some improvement for some households (i.e. where households stop burning and/or switch to a non-solid fuel heat source).

A further impact on health could come through changes in living conditions as households and vessel owners respond to the SCA. The data available suggests almost no households solely relies on solid fuel as the only source of heat - this is encouraging as it is anticipated that no household will be without a means to heat their property if the SCA is extended. Hence whether households experience a change in living conditions is likely to be closely related to whether there are affordable options available such that they can retain an adequate level of heat – this is considered in further detail in the next section. By comparison, the majority of vessels use solid fuel as a primary heating source, and boats are typically less well-insulated than brick homes – hence the potential risk is greater for boat owners but will also be tied to their socio-economic situation and how they respond to being captured in the SCA.

6 Socio-Economic Assessment

6.1 Quantitative analysis

Table 6-1 presents the results of the quantitative socio-economic analysis.

Table 6-1 Results of cost analysis (£/annum) – costs are presented as positive values

Cost impact	Scenario 1 Existing SCA, with moored vessels	Scenario 2 City-wide SCA, without moored vessels	Scenario 2a 25% non-compliance sensitivity test on Scenario 2	Scenario 3 City-wide SCA with moored vessels	Scenario 3a 25% non-compliance sensitivity test on Scenario 3
Fuel and Utility Cost	£912	£62,600	£62,600	£63,500	£63,500
Investment Costs	£1,350	£132,000	£98,800	£133,000	£99,800
Implementation costs	£12,800	£50,300	£50,300	£50,300	£50,300
TOTAL	£15,100	£245,000	£212,000	£247,000	£214,000

There is a modelled increase in combined **fuel and utility cost** associated with all scenarios. As presented in Table 6-1, the net fuel and utility cost is approximately £1,000 per annum under Scenario 1, compared to a cost of around £63,000 per annum under all other scenarios. As discussed in the methodology Section 3.4.1, we cannot split out the observed changes in fuel consumption from the emissions modelling between affected households and vessels that switch fuel and those that stop burning. As such, the estimated impacts attempt to capture several underlying impacts associated with one or both of these behavioural responses, namely: fuel cost savings (i.e. a benefit) from fuel no longer burnt, additional fuel costs from any new fuel burnt, and a loss in utility (i.e. the amenity value of burning) either associated with a fuel switch or from stopping burning altogether. As previously outlined, data does not exist to quantify the full utility loss – our approach assumes this is equal to (and hence offsets) the fuel cost saving, and hence understates the overall utility cost. To somewhat balance this underestimation, the approach therefore adopts an assumption that is likely to overstate the additional costs of fuel switch from wood to MSF, namely that all the observed reduction in wood consumption is fuel switch to MSF, maximising the net cost associated with fuel switch (in practice, not all the reduction in wood consumption will be fuel switch, and hence this cost is somewhat overestimated). It is noted that this is not a perfect approach as it is not possible to judge whether the overestimation of fuel switching costs under or over accounts for the underestimation of utility costs. That said, it is insightful to demonstrate the potential order of magnitude of effects, relative to other impacts. **Investment costs** associated with purchases of new EcoDesign stoves are estimated to be £1,350[42] on an annualised basis in Scenario 1, associated with a small number (~7.5) of boats upgrading their appliance. Costs associated with purchasing of EcoDesign stoves in houses in Scenario 2 are estimated to be £132,000 on an annualised basis. In Scenario 3, costs of upgrading stoves purchased in boats and residential properties together is estimated to be £133,000 on an annualised basis (this is the sum of Scenarios 1 and 2, but appears different due to rounding). There are uncertainties surrounding these costs, largely due to the unknown behavioural response of how many people will choose to upgrade their stove as a result of being 'moved into' a SCA. Additionally, it is unknown whether full compliance will be achieved; as explored in Scenarios 2a and 3a,

[42] This presents the cost of upgrading the 7.5 assumed non-compliant stoves in moored vessels, annualized over 10 years – this is not the total (unannualized) cost of upgrading.

investment costs are lower as a result of the 25% non-compliance as fewer people upgrade from an open fire or non-compliant stove.

Implementation costs are estimated to be the same for Scenarios 2 and 3 (and the sensitivities around these scenarios in terms of non-compliance) , with the exception of Scenario 1, where enforcement of the SCA for boats only is expected to use only a quarter of the time that would be required under a more expansive scenario. These are estimated based on costs presented by previous studies, refined through discussion with Cambridge City Council as to the likely enforcement and information campaign costs associated with implementation (see Section 3.4.1).

Impacts on **greenhouse gas emissions**[43] were calculated resulting from the change in quantities of wood and MSF burned. As a result of Scenario 1 extending the SCA to moored vessels only, a small increase of 2 tCO_2e is estimated (with an equivalent monetised social cost of £450 per annum). Scenario 2 results in a reduction in GHG emissions of 4,997 tCO_2e, with a monetised societal benefit with a value of £1,340,000 per annum. Scenario 3 also results in a reduction of 4,995 tCO_2e which has an associated monetary value of £1,340,000 per annum. Scenario 1 is estimated to lead to an increase in GHG emissions whereas Scenarios 2 and 3 lead to a decrease, due to the variance in energy density of wood and MSF and due to the assumed behavioural responses. Under Scenarios 2 and 3, some households 'stop burning' and overall there is an estimated reduction in burning of wood and solid fuel, delivering a GHG emission reduction. Under Scenario 1, vessels are not assumed to 'stop burning' and hence all vessels either 'switch fuels' from wood to MSF or upgrade stove (with the latter having no impact on GHG emissions as it is assumed there is no impact on fuel consumption). Whilst the tonnage reduction of wood burned outweighs the tonnage increase in MSF, the higher relative energy (and hence emissions) density of MSF relative to wood leads to a small net increase in emissions in this case. Non-compliance sensitivity analyses presented in Scenarios 2a and 3a do not impact on the estimated GHG emissions savings under Scenarios 2 and 3 respectively as it is assumed the non-compliance is amongst those that upgrade stoves only, hence no difference in the quantity of fuels burned is assumed.

The **overall impacts of policy scenarios (i.e. the Net Present Value, or NPV)** combining monetised impacts of changes in emissions, associated health benefits, and the cost analysis including impact on greenhouse gas emissions, is summarised in Table 6-2 and the figure below.

Table 6-2 Cost-benefit analysis of policy scenarios (negative values are benefits, positive values are costs, all impacts are per annum for a representative year, expressed in £2022 prices)

Impact	Scenario 1 Existing SCA, with moored vessels	Scenario 2 City-wide SCA, without moored vessels	Scenario 2a 25% non-compliance sensitivity test on Scenario 2	Scenario 3 City-wide SCA with moored vessels	Scenario 3a 25% non-compliance sensitivity test on Scenario 3
Fuel and utility Costs	£912	£62,600	£62,600	£63,500	£63,500
Investment Costs	£1,350	£132,000	£98,800	£133,000	£99,800
Air pollution impacts	-£43,900	-£1,600,000	-£1,410,000	-£1,640,000	-£1,450,000
Implementation Costs	£12,800	£50,300	£50,300	£50,300	£50,300
Greenhouse Gas Emissions	£451	-£1,340,000	-£1,340,000	-£1,340,000	-£1,340,000

[43] As presented above, the GHG emissions assessment focuses only on change in Scope 1 emissions, and does not capture the Scope 3 (lifecycle) impacts.

NPV	-£28,400	-£2,800,000	-£2,550,000	-£2,740,000	-£2,580,000
BCR	2.8	12.0	13.0	12.1	13.1

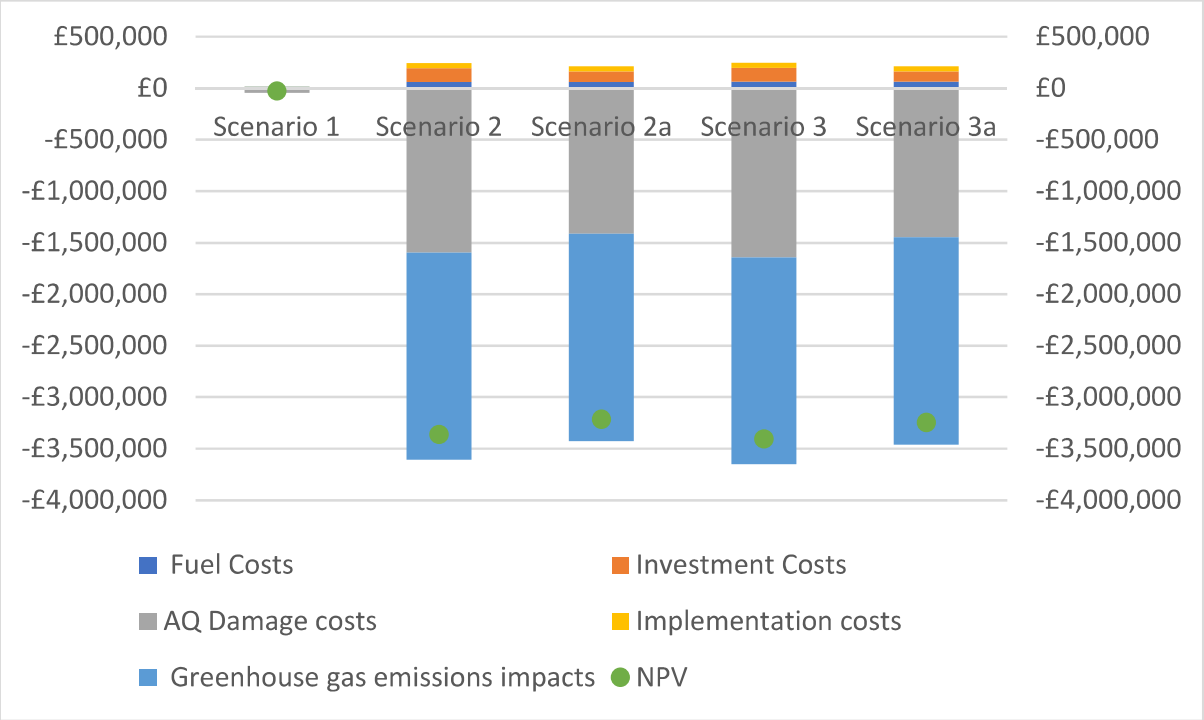

Figure 6-1: Cost-benefit analysis of policy scenarios (negative values are benefits, positive values are costs, all impacts are per annum for a representative year, expressed in £2022 prices)

Scenario 1 has the smallest magnitude of impacts, which is to be expected considering its scope is limited to only moored vessels. In this scenario, the ratio of benefits to costs (BCR) are lower (2.8) as heating systems on boats are primary heat sources and therefore all moored vessels are assumed to upgrade stove or switch fuel in response to the SCA – these behavioural responses carry a higher cost in the analysis relative to 'stop burning'. Furthermore, the assumed implementation costs are proportionally higher (noting that there is significant uncertainty around these figures which are included for illustration). Scenario 1 is also the only scenario which observes an increase in greenhouse gas emissions, as MSF has a higher greenhouse gas emission factor than wood.

Scenarios 2 and 3 (including the non-compliance sensitivities around these scenarios) have a large positive BCR and larger overall net benefits. This result is due to the value of improvements in health impacts from reduced $PM_{2.5}$ emissions and reduced greenhouse gas emissions outweighing cost increases from fuel use, investment costs and implementation costs. It is important to note (as discussed in the methodology) that there is uncertainty in the assessment, in particular around the changes in fuel costs – our adopted approach is likely to overestimate the fuel switching costs, but understate the utility lost from those who stop burning (i.e. the loss of pleasure or ambience), and it is unknown whether the former offsets the latter. That said, given the extent to which overall benefits outweigh the costs, it is deemed unlikely that the utility lost not captured would be significant enough to change the overall result of a net positive impact for society. There is only a small difference in the outcomes of Scenario 3 compared with Scenario 2 (12.1 BCR and 12.0 respectively) given the difference is driven by whether moored vessels are included in the SCA, which has a relatively limited impact (as described in Scenario 1).

The non-compliance sensitivity analyses (Scenario 2a and 3a) have a higher NPV and more positive BCR than Scenario 2 and Scenario 3, respectively. These non-compliance sensitivities assume that 25% of those burning on an open-fire or non-compliant stove choose to not upgrade their stove and not comply with the legal SCA regulations (i.e. non-compliance is focused only on those that would have upgraded stove, and does not reduce compliance amongst those that stop burning or switch fuel). This highlights that the purchasing of new stoves to replace an old non-compliant stove or an open fire is assumed in the modelling to be a relatively high-cost way of complying with the SCA, relative to stop burning or switching fuels. However, it is important to note that assumptions made to facilitate the analysis – e.g. we assume only one cost for all stove upgrades, whereas in practice there will be a multitude of choices and options for upgrade. Furthermore, where non-compliance occurs this could occur amongst those that would have upgraded stove and those that switched fuels or stopped burning. While limited, the sensitivity test does serve to show that even with a lower compliance rate, overall the SCA is still likely to deliver a net benefit for society.

6.2 Economic sensitivity analyses

There are several limitations and uncertainties around the analysis. As discussed above, a key uncertainty relates to the behavioural response of households and moored vessels who now need to comply with an expanded SCA – this is explored through Scenarios 2a and 3a. Further sensitivity analyses were conducted to explore uncertainties in the methodology applied to quantify the socio-economic impacts:

- Investment costs: a 25% higher and lower cost was assumed for installation of a new EcoDesign stove;
- Fuel prices: alternative fuel prices were used from the Scottish government impact assessment;
- Air pollutant damage costs: uncertainties exist in the damage costs related to the size of impact associated with exposure, the strength of evidence between exposure and effect and the valuation of health endpoints. High and low damage costs were taken from Defra's appraisal guidance;
- Carbon prices: a high-low bound is applied based on DESNZ's appraisal guidance.
- The results are presented in the table below, relative to the outputs of the core analysis.

As can be seen from the table above, none of the sensitivity tests change the overall result and the key conclusions drawn from the sensitivity analysis. I.e. under no sensitivity test does the net present value change from a net benefit to a net cost – in all cases all scenarios are still estimated to deliver a net overall benefit for society. Hence the results of the study are robust to these key uncertainties in the socio-economic analysis methodology.

The sensitivity test with the largest effect is the low and high range around the air pollution damage costs. Under the low damage cost, the NPV of Scenarios 2 and 3 reduces from around £2.7m net benefit per annum, to around £1.7m net benefit per annum. Hence even taking the low bound to monetise the benefit associated with changes in air pollution, the scenarios are still anticipated to deliver a net benefit overall. This result is also likely to be resilient to the uncertainty around the implicit emissions-to-concentrations relationships carried through from using national-average damage costs (i.e. by applying the Defra UK average 'domestic' damage costs, the analysis implicitly assumes that exposure to air pollution from domestic emissions in Cambridge is equivalent to exposure to an average unit of emission anywhere in the UK). Exposure to emissions from domestic sources in Cambridge would need to be significantly below the UK average to impact on the overall cost-benefit results for the scenarios.

Table 6-3: Outputs of the sensitivity analysis – shows NPV for typical year of impacts, expressed in £2022 prices

	Scenario 1 Existing SCA, with moored vessels	Scenario 2 City-wide SCA, without moored vessels	Scenario 2a 25% non-compliance sensitivity test on Scenario 2	Scenario 3 City-wide SCA with moored vessels	Scenario 3a 25% non-compliance sensitivity test on Scenario 3
Core analysis	-£28,400	-£2,700,000	-£2,550,000	-£2,740,000	-£2,580,000
Low investment cost	-£28,800	-£2,730,000	-£2,570,000	-£2,770,000	-£2,600,000
High Investment cost	-£28,100	-£2,660,000	-£2,520,000	-£2,700,000	-£2,550,000
Alternative fuel prices	-£32,700	-£2,990,000	-£2,840,000	-£3,030,000	-£2,870,000
Low damage cost	-£1,780	-£1,730,000	-£1,690,000	-£1,740,000	-£1,700,000
High damage cost	-£99,800	-£5,290,000	-£4,840,000	-£5,400,000	-£4,930,000
Low carbon price	-£28,600	-£2,020,000	-£1,870,000	-£2,060,000	-£1,900,000
High carbon price	-£28,200	-£3,370,000	-£3,210,000	-£3,410,000	-£3,250,000

6.3 Distributional analysis of costs

6.3.1 Residential

As outlined in Section 5.2.2, the 2021 Census[41] indicates that no residential dwellings in the study area rely solely on wood or another solid fuel as their primary source of central heating. Therefore, it is reasonable to assume that wood burning is supplementary, either for aesthetic purposes, or to offset the use of other heating fuels (and associated costs).

To understand who may be impacted by the SCA extension, the demographic profile of Cambridge has been investigated. In Cambridge, 7.7% of the population was classed as 'income-deprived' in 2019, placing Cambridge as the 248th most income-deprived local authority out of the 316 local authorities in England, according to the Office for National Statistics (ONS)[44]. Therefore, households in Cambridge are, on average, less deprived than those in the average local authority in England.

Going further, we have overlaid ONS census data on household heating systems with Index of Multiple Deprivation (IMD) at the Level of Lower Super Output Area (LSOA) to explore the levels of solid fuel burning in each IMD decile[45]. As explored above, very few households in the Cambridge area are reported to rely solely on wood or other solid fuels as their only heat source – for the analysis we have assessed the proportions assigned as using 'two or more types of central heating (not including renewable energy)'. The number of households in each LSOA is compared to the IMD decile rank, with 1 being the most deprived and 10 being the least deprived.

The number of households and proportion of all households in this category falling in each decile are shown in Table 6-4. From the table it appears that those using two or more types of central heating (a proportion of which includes solid fuels) appears to be concentrated amongst less deprived households: no households in the most deprived income decile use two or more types; only 5% of all

[44] https://www.ons.gov.uk/visualisations/dvc1371/#/E07000008
[45] IMD is often split into deciles, where each LSOA is assigned to one of ten deciles which nationally rank all LSOAs according to their relative level of deprivation

households using two or more types fall in the bottom two deciles; and only 15% fall in the bottom three deciles. Two caveats to this analysis are: (a) this is performed at LSOA level, and there will be variation in deprivation within an LSOA, so we cannot precisely identify the level of deprivation of each specific household using solid fuel; and (b) this analyses households using two or more types of central heating, a proportion of which will and will not use solid fuel as a source.

Table 6-4: Split of households using two or more types of central heating (not including renewable sources), in LSOAs located in the Cambridge Local Authority area, split by IMD decile

IMD decile	# of households	% of all households using two or more types of central heating (not including renewable sources)
1 (most deprived)	0	0%
2	142	5%
3	261	10%
4	124	5%
5	612	23%
6	395	15%
7	231	9%
8	345	13%
9	280	10%
10 (least deprived)	304	11%

The finding that those burning wood are likely to be less vulnerable households is somewhat corroborated by other sources. For example, the Kantar survey found that the majority of indoor burners nation-wide were relatively affluent in comparison with non-burners, however it also found that 22% of indoor burners (at national scale) found it difficult or very difficult to meet their energy costs[46]. Furthermore, a survey run by the London Wood Burning Project[47] (LWBP) suggested that households burning wood in London are more likely to be: younger (i.e. under 40), property owners, living in houses (rather than flats or other), higher earners (i.e. >£60,000) and working full-time.

The costs outlined above to upgrade appliances are therefore likely to fall largely on relatively affluent households. However, there should be attention directed to those who are using solid fuel appliances while struggling to meet their energy costs, as they are unlikely to be able to afford a new appliance and may therefore face the decision of complying with regulations, or not being able to adequately heat their homes. In Cambridge, based on the demographic profile of residents, this is likely to be less of an issue than elsewhere in England.

6.3.2 Moored Vessels

While Section 6.3.1 indicates that the demographic profile of solid fuel burners in residential properties in Cambridge is that of a relatively affluent population where solid fuel burning is not the sole source of heating, the same does not necessarily apply to the population living on river vessels at moorings

[46] https://sciencesearch.defra.gov.uk/ProjectDetails?ProjectID=20159&FromSearch=Y&Publisher=1&SearchText=AQ1017&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

[47] The results of the survey are, as yet, unpublished. These were provided through direct communication between the study and LWBP teams.

throughout Cambridge. As outlined in a statement by the National Bargee Travellers Association[48], most boats are heated using a solid fuel stove, while some are heated using a diesel heater, and few use electricity or bottled gas for heating. This is supported by the Canal and River Trust 2022 Census[12] which identified most boaters had a solid fuel stove (66.6%) while fewer had diesel heaters (53.3%), gas boilers (17.3%), or electric heating (9.3%). Hence moored vessels are more likely to rely solely on solid fuel as their primary heat source.

Demographic information regarding the boating population is relatively sparse, but there are some metrics which indicate the population is likely to more acutely impacted than the rest of the Cambridge population. The Canal and River Trust 2022 Census[12] found that 33.7% of boaters report that their day-to-day activities are limited because of a long-term health problem or disability, which is significantly higher than the national average (17.8%). Additionally, the majority of respondents 70.3%) declared that they receive a pension or pension credit, indicating an older population of boaters compared to the rest of Cambridge. In comparison, the 2021 Census[49] identified 11.5% of the population in Cambridge was above 65 years of age. The same Canal and River Trust census also asked boaters about the issues and challenges associated with living on a boat, of which: 21.7% responded 'employment and work', 16.5% 'accessing financial services' and 11.6% 'accessing financial help (e.g. benefits)'.

Furthermore, as part of a boat licence consultation[50], a Canal and River Trust survey identified that: 53% of boaters stated that their household income was below £40,000, 43% stated their household was income below £30,000, and just over a quarter (27%) stating their household income was below £20,000. By comparison, 34% of all UK households reported gross income below £32,000 and 15% less than £19,000 in 2020[51].

Therefore, extending the SCA to include moored vessels may have a more acute impact on boat residents than those in traditional properties in Cambridge area; they are likely to be more reliant on solid fuel burning as their primary source of heating, and they are more likely to be an older population with additional health demands. There is some evidence to suggest boat residents are also likely to be relatively lower income or suffer from additional financial challenges.

6.4 Practical implications of changing heating practices

6.4.1 Residential

The above has indicated that no (or very few) household will be left without a primary source of heating, assuming the data from the 2021 Census is correct; 0% of households in the study area reported to rely on solid fuel as their main heating source[52]. The remainder of this section therefore focusses on the implication for those households who burn solid fuels for either aesthetic reasons or to supplement their main heating source for economic reasons. For these groups, there are three main behavioural responses:

[48] Written evidence submitted by the National Bargee Travellers Association (NBTA) (WIN0022) https://committees.parliament.uk/writtenevidence/123477/pdf/#:~:text=The%20NBTA%20estimates%20that%20there,no%20further%20breakdown%20of%20population.
[49] https://www.ons.gov.uk/visualisations/censusareachanges/E07000008/
[50] https://canalrivertrust.org.uk/refresh/media/original/48475-boat-licence-review-equality-impact-assessment.pdf
[51] See Gross banded income, UK, financial year ending 2020, here: https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/adhocs/14140bandedequivalisedisposableincomeandnonequivalisedgrossincomeukfinancialyearending2020
[52] Noting this might be slightly above absolute zero, but rounded down in the census results.

- Change fuel, e.g. from wood to MSF;
- Change appliance, e.g. from an open fireplace or non-compliant stove to a compliant stove; and

Stop burning altogether or burn less. For example, by adjusting duration of burning events, frequency of burning events, or reduced heat output during burning events (e.g. through restricting air flow in a stove or constructing a smaller fire).

The cost implications of the first two options have been included in the cost analysis above. In practical terms, the implications of changing from wood to MSF may mean that a new fuel supplier is needed, especially if the wood used is foraged or obtained through non-market means (which would also imply a higher cost implication). This would require time and effort to find a new supplier, and potential additional travel time and distance, and challenges in transporting fuel back to the home where suppliers are located further away than existing sources. Changes in fuel storage are also likely, although MSF will occupy a smaller volume than the equivalent amount of wood for the same energy output. There is also likely to be a loss in aesthetic value which may in turn lead to a reduction in burning for those where this is a primary reason for burning.

Changing appliances will clearly have a short-term disruptive impact on those households which choose to do so, as it is likely to require physical changes within the home. Thereafter, the practical implications are minimal, assuming the installation is undertaken correctly. There is a risk that installations are undertaken incorrectly, to save costs and/or because those undertaking the work are insufficiently skilled (including DIY installations). This could lead to reduced indoor air quality, including a risk of carbon monoxide poisoning, if flue gases are allowed to escape into living rooms. There is also a risk of damage to chimneys if flue liners are incorrectly installed or if no flue liner is installed. This in turn could lead to an increased fire risk, especially if the chimney is not swept regularly (although this risk is also true for correctly installed appliances especially if they are operated incorrectly).

Stopping burning or reduced burning is likely to mean that there is increased use of other heating fuels. This is of greater significance for those households using solid fuels to supplement their main heating source (usually for economic reasons). Anecdotal evidence[53] suggests that the increase in energy prices prompted by Russia's invasion of Ukraine led to a significant increase in households using solid fuel to offset their main heating fuel (usually gas). This includes using solid fuel appliances to heat one room. However, solid fuel costs, both wood and MSF, also increased at that time, and an analysis undertaken for Global Action Plan suggests that using solid fuel heating in this way may not result in net cost savings[54]. Focussing heating on one room can also be achieved through varying thermostatic controls on central heating radiators, although this is less convenient and may not be available e.g. in private rented accommodation. It is therefore not clear whether the increase in gas (or other heating fuel) use implied by a reduction in solid fuel as a supplementary heating fuel will result in a net cost increase for households.

There may be circumstances, especially in lower income households, where the main central heating system is insufficient to heat the house, especially under extreme weather conditions, and that stopping the use of solid fuel may lead to colder homes. This in turn can lead to condensation, mould growth, and other adverse health outcomes. There are already funds available to low income households to improve insulation and improve the efficiency of heating systems, but access to these will be limited, especially in private rented accommodation. There is, therefore, a risk that extending the SCA could exacerbate fuel poverty for some households.

[53] Likely to be confirmed when the results of the recent survey on domestic burning undertaken by Ipsos for Defra are published.
[54] Relight my fire? (globalactionplan.org.uk)

Furthermore, attempts to reduce, but not cease, solid fuel use may result in the incorrect use of appliances, such as through overly restricting air flow in stoves. This could result in a more "smoky" burn, increasing both PM emissions and fouling of the chimney. If the chimney is not swept regularly, this could result in an increased fire risk and, in extreme circumstances, blockage of the flue and leakage of flue gasses (including carbon monoxide) into the living spaces.

6.4.2 Moored Vessels

The practical implications for moored vessels are slightly different, in that solid fuel is nearly always the main heating fuel. Moreover, moored vessel occupants are more likely to be lower income households and thus more vulnerable to price fluctuations in living and energy costs. Moored vessels are also typically poorly insulated, which can make them more sensitive to changes in heating system. The costs of moving from non-compliant to compliant stoves and/or from wood fuel to MSF have been included in this analysis. However, this may underestimate the costs, especially where the wood currently used is foraged or acquired through non-market means. In such cases, the need to switch to MSF may give rise to or exacerbate issues of fuel poverty. The need to use MSF rather than wood may also introduce issues of supply, with the risk of shortage of fuel during particularly cold spells.

Some moored vessel occupants may choose to opt for diesel heaters rather than either upgrading a solid fuel heater or switching fuel. We have not undertaken a cost analysis of solid fuel heating versus diesel heating, but the practical implication may mean increased noise for local residents (and other moored vessels) and an increase in diesel emissions, which have not been considered in this analysis.

6.5 Summary

The monetised health impacts have been combined into a wider assessment of the socioeconomic effects of adjusting the SCA. Where possible, the impacts of the scenarios have been quantified and captured in a cost-benefit analysis comparing the benefits of the scenarios against the costs. The costs to home and vessel owners of switching fuel or upgrading stoves, and to the Council for implementation and enforcement are greatest under Scenarios 2 and 3 (highest cost is Scenario 3 of £250,000 per annum), with Scenario 1 carrying an estimated cost of around £15,000 per year.

Overall, all scenarios to extend the SCA are estimated to deliver a 'net benefit to society' – in other words, the health improvements from reduced air pollution and benefit of greenhouse gas emission reductions outweigh the combined costs to the Council and owners of homes and moored vessels. The size of the net benefit delivered rises in line with the size of air quality benefits, hence Scenarios 2 and 3 deliver the largest net benefit in the order of £2.8m per year, with a ratio of benefits-to-costs or 12-to-1. Scenario 4 which tested the benefits of the existing SCA was not subject to complete quantitative assessment given uncertainty around what would happen should an SCA be removed. However expert judgement suggests it is likely that the costs of removing the SCA in terms of lost air pollutant benefits (i.e. emissions would increase) and higher GHG emissions would outweigh any benefits in terms of fuel cost savings, hence delivering an overall disbenefit for society should the existing SCA be removed.

While increasing the coverage of the SCA results in a net benefit to society, it is important to consider additional impacts and risks that have not been quantified and captured in the cost-benefit analysis. For households, there may be some practical implications of switching, such as search costs of finding new fuel sources, the need to allow access to the home to upgrade stoves, and installation risks – however there is no evidence to suggest these risks are significant overall. That said, the implications for moored vessel owners appear more consequential. As a group, evidence suggests moored vessel owners may have relatively lower incomes and hence alternative options may be less affordable for some. Furthermore, this group tend to be more vulnerable (i.e. more likely to be elderly or have a disability or long-term health conditions) and vessels tend to be less well-insulated. Hence there is a

greater risk that moored vessel owners may face difficulties affording to comply with the SCA, which in turn may have a detrimental impact on living standards amongst a more at-risk group.

7 Summary and Conclusions

7.1 Overall assessment conclusions and recommendations

The overall conclusions of the study are summarised in Table 7-1, which presents the analysis in a multi-criteria analysis, intended to aid comparison between the scenarios and visually present the key benefits and risks of each policy option.

All scenarios result in a net benefit, with extending the SCA to the whole of Cambridge and including moored vessels in the designation providing the largest net impact (Scenario 3). This is driven by health benefits from the reduction of $PM_{2.5}$ emissions, which include a reduction of annual deaths by ~1.8 as well as improvements in other health outcomes associated with a reduction in exposure to ambient air pollution. This scenario will also deliver additional indoor air quality improvements with associated health benefits, which are not captured in the quantitative analysis due to a lack of established methodology to do so.

While all the policy scenarios result in a net benefit to society, it is important to consider additional impacts that have not been monetised. These include the distributional impacts of where changes in fuel costs and investment costs fall in society. While burning of solid fuel in domestic properties is mostly a secondary heat source used by households who are likely to be more affluent, this is not the case with moored vessels. Solid fuel is typically the primary heat source for vessels and boat residents are more likely to be lower income, be older or have a pre-existing medical condition or disability. Furthermore, vessels are likely to be less insulated and more at risk of cold, damp, and resulting mould. Therefore, Scenario 1 and (part of) Scenario 3 risks impacting on a group who may be less able to afford to respond to the SCA in a way that maintains their living conditions, and may be more susceptible to the associated health risks.

Overall, the assessment presents either Scenario 2 or 3 as the preferred option. This study has demonstrated that the monetised benefits of expanding the coverage of the SCA outweigh the costs, and there is predicted to be a net benefit to society of extending the SCA to the whole of Cambridge driven by improvements to health. These findings are, however, dependant on behaviour change in response to the SCA, which is uncertain in practice, and there is no precedence for such a change elsewhere in the UK. As such, awareness-raising information campaigns and/or enforcement will be important to ensure the SCA succeeds in achieving the potential changes in burning behaviours, and in turn, reductions in $PM_{2.5}$ emissions. Further work such as a city-wide survey may be helpful for better understanding burning behaviour and potential behaviour change related to extension of the SCA.

Inclusion of moored vessels in the SCA would deliver an additional net benefit and could achieve a significant impact on emissions from a more visible source (although the additional benefit in terms of overall emissions is relatively small). I There are however some additional risks and concerns for this small group of affected citizens, including higher economic vulnerability and risks from changes in living conditions. The data relating to proportions of river vessels burning wood and coal products, and the appliances which are being used is also more uncertain than for residential properties. Therefore. where Scenario 3 is pursued, additional engagement with moored vessel owners is recommended to further explore solid fuel burning activity within the group, as well as potential impacts and risks to this group, and complementary measures should be considered where potential issues are identified to mitigate risks for vulnerable boat owners where possible.

Table 7-1: Summary multi-criteria analysis of scenarios

Scenario	1	2	3
Emissions impacts (tonne reduction versus baseline per annum / % reduction versus baseline)	-0.52 (-2%)	-18.86 (-69%)	-19.38 (-71%)
Health impacts (£000k monetised effects / # deaths avoided per annum)	44 -0.05 deaths	1,600 -1.77 deaths	1,640 -1.82 deaths
Cost-benefit analysis	£28,000 NPV benefit Benefit Cost Ratio: 2.8	£2.7m NPV benefit Benefit Cost Ratio 12.0	2.7m NPV benefit Benefit Cost Ratio 12.1
Indoor health benefits	Potential benefits for indoor air pollution for moored vessels, although evidence on indoor pollution is less established	Potential benefits for indoor air pollution in households, although evidence on indoor pollution is less established	Potential benefits for indoor air pollution in moored vessels and households, although evidence on indoor pollution is less established
Distribution of costs	Costs fall on a small number (~15) of vessel owners and users. Boat users are more likely to be lower income	Households burning solid fuels (~3,500) do so as a secondary heating source and more likely to be affluent	Costs fall on a small number (~15) of vessel owners and users. Boat users are more likely to be lower income
Changes in living conditions	Vessels tend to be less well insulated. If alternatives are less affordable, there could be a risk for living conditions where residents stop/reduce burning, such as cold, damp and mould	Given majority of households burn for pleasure and/or are less deprived (and can likely afford replacements), risk of households living in colder, damper homes with mould are lower. Other initiatives exist to help ensure homes are adequately heated.	There is a risk that the small number of households living in moored vessels may experience a disproportionate worsening of living conditions (see Scenario 1). Risk for households is assessed to be negligible (Scenario 2)
Practical implications	Need to find alternative fuel source, which may be less convenient. Stove upgrades require access to the moored vessel.	Need to find alternative fuel source, which may be less convenient. Stove upgrades require access to the property. Small risk of incorrect installation.	Need to find alternative fuel source, which may be less convenient. Stove upgrades require access to the property or moored vessel.

Key	Large disbenefit / risk	Disbenefit / risk	Neutral	Benefit	Large benefit

7.2 Caveats and limitations of assessment

- The air quality baseline is uncertain, for reasons set out in Section 3.2, including: Types of appliance used to burn vary enormously, activity data is incomplete, domestic heating appliances do not require registration, and emissions factors have uncertainty.
- Behavioural assumptions in response the SCA are uncertain, e.g. how many people stop burning fuel, switch fuels, upgrade their stoves, or are non-compliant. In this study, responses are based on the Kantar survey and behaviour inside and outside SCAs (which also informed the NAEI), assuming that those outside the current SCA will behave like those inside an SCA once the zone is extended. This is uncertain and reality may be different. In addition, modelling undertaken for this study has assumed that behaviour change is instant with introduction of the policy, however in reality the shift may be more gradual and be helped by information campaigns.
- A single year of analysis has been conducted, presenting one year of annualised costs and air quality impacts. In reality, air quality benefits will be experienced not just in a single year but over several years, and as such air quality benefits are under-represented.
- Modelling has been done on the basis of fuels that are legally permitted to be sold (i.e. MSF). In reality, there may be a proportion of people burning house coal. In this instance, benefits of the modelled analysis are understated as there will be greater benefit from swapping to compliant fuel.
- There is uncertainty in relation to the compliance of existing stoves prior to introduction of the policy and therefore the necessity of upgrading, as well as which stoves will be purchased and their cost. Additionally, there may be the possibility of retrofitting stoves which would be cheaper and as such investment costs overstated.
- Health benefits associated with air quality improvements are estimated by utilisation of the latest damage costs. There are a wide range of detrimental health effects associated with exposure to air pollutants, of which only some are captured and quantified in the damage costs. Furthermore, only the effects associated with exposure to PM have been assessed here and not other pollutants. Both these factors will lead to an underestimation in the size of the air pollution benefits achieved. Use of the Defra damage costs also implicitly assumes the average exposure to a unit of domestic emissions in Cambridge is the same as that of the average


Logika
GROUP

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Cambridge City Council Equality Impact Assessment (EqIA)

This tool helps the Council ensure that we fulfil legal obligations of the Public Sector Equality Duty to have due regard to the need to –

(a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Equality Act 2010;

(b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;

(c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

Guidance on how to complete this tool can be found on the Cambridge City Council intranet. For specific questions on the tool email Helen Crowther Equality and Anti-Poverty Officer at equalities@cambridge.gov.uk or phone 01223 457046.

Once you have drafted the EqIA please send this to equalities@cambridge.gov.uk for checking. For advice on consulting on equality impacts, please contact Graham Saint, Strategy Officer, (graham.saint@cambridge.gov.uk or 01223 457044).

1. Title of strategy, policy, plan, project, contract or major change to your service
Consultation on the Expansion of the Smoke Control Area (SCA)

2. Webpage link to full details of the strategy, policy, plan, project, contract or major change to your service (if available)
Browse meetings - Environment and Community Scrutiny Committee - Cambridge Council

3. What is the objective or purpose of your strategy, policy, plan, project, contract or major change to your service?
Cambridge City Council has a responsibility under LAQM to monitor air quality in its district and identify actions to deliver continued air quality improvements, including how we can help meet national targets for $PM_{2.5}$. Solid Fuel Burning is the largest single source of PM2.5 accounting for 40% of all PM2.5 emissions in Cambridge.

Domestic Burning is the largest source in the city and continues to increase due to the growing trend for wood burning stoves. Review of existing SCA's as a mechanism for reducing $PM_{2.5}$ emissions is an action for Local authorities within the National Air Quality Strategy.

Legislation to control emissions from solid fuel burning is the Clean Air Act 1993 and the use of Smoke Control areas (SCA); a designated area where the emission of smoke is not permitted. You can burn inside a SCA, but either smokeless fuel or a DEFRA approved appliance must be used. In Cambridge we currently have three SCA's which were introduced in the 1960's and 1970's. The existing SCA's provide limited control on emissions from solid fuel burning due to the limited geographical area.

The amendments to the Environment Act (2021) allowed the scope of the SCA to be expanded to include permanent moored vessels following a period of consultation. Of the complaints received by Environmental Health pertaining to smoke pollution we receive a disproportionate amount related to smoke from permanent moored vessels, despite the small number that exist. It therefore makes sense to consider the inclusion of moored vessels should amendments to the SCA be made.

It is acknowledged that amendments to the scope of the SCA will potentially impact some residents. Cambridge City Council therefore commissioned an independent report to assess the environmental, health and socio economic impacts of expanding the SCA city wide. The report recommends the expansion of the SCA including permanent moored vessels.

Based on these recommendations we are looking to carry out a consultation only at this stage to gauge public opinion and identify any potential areas that may need further consideration should the council choose to proceed

4. Responsible Team and Group
Environmental Health

5. Who will be affected by this strategy, policy, plan, project, contract or major change to your service? **(Please tick all that apply)**	☒ Residents ☐ Visitors ☐ Staff
Should the council choose to proceed with the expansion of the SCA those impacted will be predominantly Cambridge City residents and businesses, with the potential to also include permanent moored vessels (of which there are approximately 70 registered). **Please note this is only a consultation at this stage**	

6. What type of strategy, policy, plan, project, contract or major change to your service is this?	☐ New ☒ Major change ☐ Minor change

7. Are other departments or partners involved in delivering this strategy, policy, plan, project, contract or major change to your service? (Please tick)	☒ Yes ☐ No
Whilst Environmental Health will be responsible for developing and delivering the consultation we will be seeking support from other council departments to assist with engagement including the Comms team, recreation (engagement with moored vessel owners) and communities (to assist with reaching key community groups)	

8. Has the report on your strategy, policy, plan, project, contract or major change to your service gone to Committee? If so, which one?
The request to carry out a consultation on the expansion of the SCA (with the potential to include permanent moored vessels) will be put forward for approval at the September 2024 Environmental and Community Scrutiny Committee.

9. What research methods/ evidence have you used in order to identify equality impacts of your strategy, policy, plan, project, contract or major change to your service?
Smoke Control Impact Study 2024 Cambridge City Council commissioned an independent report 'Smoke Control Area Impact Study 2024' produced by Logika Group and dated 28th August 2024 to assess the effects of amending the SCA in Cambridge to cover the whole of the city .it considered both the inclusion and exclusion of permanent moored vessels in terms of changes in pollution emissions, health & socio economic impacts.

Residential emissions are the largest single source of $PM_{2.5}$ emissions in Cambridge with the majority of properties currently outside the SCA. Moored vessels represent a much smaller contribution to overall emissions, and current assumptions are that most are already burning MSF which is compliant under SCA rules, meaning they would not need to change their behaviour.

The report concluded that any changes to widen the scope of the SCA would provide a net benefit to society from health improvements due to reduced air pollution and greenhouse gas emissions, with these benefits outweighing the combined costs. Costs include, cost to home and vessel owners of switching fuel or upgrading stove and cost to council for implementation and enforcement.

The impact on individuals was considered as part of the socio economic study. Very few residents are solely dependent on solid fuel for heating and hot water, with changes impacting those that use wood burning stoves for pleasure or to subsidise other forms of central heating. However, this is not the case for moored vessel owners who are more dependent on solid fuel. Evidence suggests that this group may have lower incomes and be more vulnerable. Where moored vessel owners are not compliant with SCA rules further support may be required.

The report recommends the expansion of the SCA to cover the whole city including moored vessels however, recommends further engagement with vessels owners given the increased potential vulnerability of this group. Should changes to the SCA be implemented it should be accompanied by a robust awareness raising campaign.

Other Evidence

- Public Health Outcomes Framework - Data - OHID (phe.org.uk)
- Committee on the Medical Effects of Air Pollutants (COMEAP): 2022 Annual Report (publishing.service.gov.uk)
- 'State of the city Report' (www.cambridge.gov.uk/state-of-the-city)
- Census 2021 and Joint Strategic Needs Assessment data - Cambridgeshire & Peterborough Insight – Welcome to Cambridgeshire & Peterborough Insight (cambridgeshireinsight.org.uk).
- The Health Of People From Ethnic Minority Groups In England | The King's Fund (kingsfund.org.uk)
- UK Poverty 2024: The essential guide to understanding poverty in the UK | Joseph Rowntree Foundation (jrf.org.uk)

10. Potential impacts

For each category below, please explain if the strategy, policy, plan, project, contract or major change to your service could have a positive/ negative impact or no impact. Where an impact has been identified, please explain what it is. Consider impacts on service users, visitors and staff members separately.

(a) Age - Please also consider any safeguarding issues for children and adults at risk

13.5% of Cambridge City population is under 15 years old with 11.4% of the population over 65 years old (Census 2021).

Potential Impact of consultation

A potential barrier exists in the older population for accessing information and services through online platforms and social media. Research shows that older adult can be digitally excluded (Internet users, UK - Office for National Statistics (ons.gov.uk). Awareness raising and accessing information by the public is one of the key priorities for the delivery of the consultation. We will need to ensure that older adults are targeted as part of the promotion campaign. We intend to have hard copies available in key locations, are looking at options for how customer services can assist, drop in session where an officer is available to assist with completions if required plus providing information at groups that older adults attend. We will ensure that we consider all forms of communication in order to access all ages of society.

Potential Impact of SCA Expansion

There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases, with even low concentrations of pollutants likely to be associated with adverse effects on health. All ages are impacted by poor air quality, but the young and the old are the most vulnerable. Older adults are also more sensitive to air pollution leading to the need for increased care, including hospitalisation.

Taking this into consideration if the proposals to expand the SCA were taken forward it would have a positive impact on children aged under 15 years old and adults aged 50 or over which represents approximately 38.7% of Cambridges population.

The impact study report confirmed that limited residents are dependent on solid fuel as a primary source of heating and hot water, with changes unlikely to impact young and old disproportionately however, the report identified permanent moored vessel residents are more likely to be dependent on solid fuel and likely to be more vulnerable (more likely to be older, have a disability or long term health condition). Therefore, should plans for the extension go ahead mitigation will need to be in place to support older adults identified as being dependent on sold fuel and not compliant with SCA requirements.

Positive Impact: Health benefits because of the resultant improvements in air quality and reduction in exposure to pollution

Potential Negative Impact: Research suggests that older adults are more likely to be digitally excluded. When promoting the consultation we will need to consider this group and ensure they are targeted. Should the expansion proceed and reliance on solid fuel as a primary source of heating and hotwater identified additional support may be required

(b) Disability

In the 2021 census a total of 6.2% of Cambridge City residents are living with a disability that limits day to day activities a lot and 10.5% are living with a disability that limit their day to day activities a little.

Potential Impact of ConsultationA potential barrier exists for those with a disability accessing information and services through online platforms and social media. Research shows that people with a disability can be digitally excluded Exploring the UK's digital divide - Office for National Statistics (ons.gov.uk). Awareness raising and accessing information by the public is one of the key priorities for the delivery of the consultation. We will need to ensure that those with a disability are targeted as part of the promotion campaign. We intend to have hard copies available in key locations, are looking at options for how customer services can assist, drop in session where an officer is available to assist with completions if required plus providing information across a range of community groups settings.

Potential Impact of SCA Expansion All members of this group would benefit from the health benefits offered from improved air quality. Improved air quality can prevent exacerbation of certain existing conditions for example those who have existing heart and lung conditions are more sensitive to air pollution leading to the need for additional medical care including hospitalisation. This group would disproportionately benefit from the amendments to the SCA were it to go ahead.

On the other hand the Canal and River Trust 2022 Census12 found that 33.7% of boaters report that their day-to-day activities are limited because of a long-term health problem or disability, which is significantly higher than the national average (17.8%). Disabled people are more likely to experience poverty (UK Poverty 2024: The essential guide to understanding poverty in the UK | Joseph Rowntree Foundation (jrf.org.uk)) and have higher living costs relating to their disability (Disability Price Tag 2023: the extra cost of disability | Disability charity Scope UK). Therefore, the cost of replacing wood burners may have a disproportionately negative impact. Therefore, should plans for the extension go ahead mitigation will need to

be in place to support disabled people identified as being dependent on sold fuel and not compliant with SCA requirements.

Positive Impact: Health benefits because of the resultant improvements in air quality and reduction in exposure to pollution

Potential Negative Impact: Research suggests that people with a disability are more likely to be digitally excluded. When promoting the air quality agenda we will need to consider this group and ensure they are targeted. Should the expansion proceed and reliance on solid fuel as a primary source of heating and hotwater identified additional support may be required

(c) Gender reassignment

No negative impact has been identified specific to people with this protected characteristic at either the consultation or implementation stage although all members of this group would benefit from the health benefits offered from improved air quality.

No Impact predicted

(d) Marriage and civil partnership

No negative impact has been identified specific to people with this protected characteristic at either the consultation or implementation stage although all members of this group would benefit from the health benefits offered from improved air quality.

No Impact predicted

(e) Pregnancy and maternity

There were 1,293 live birth to people in Cambridge City in 2021 (JSNA 2023). Exposure to air pollution is linked to premature birth, still birth and organ damage during development. The proposal will improve air quality across the city with positive impacts in terms of pregnancy and maternity.

No negative impact was identified at either the consultation or implementation phase. All people with this protected characteristic would benefit from the health benefits offered from improved air quality

Positive Impact: Health benefits because of the resultant improvements in air quality and reduction in exposure to pollution

(f) Race – Note that the protected characteristic 'race' refers to a group of people defined by their race, colour, and nationality (including citizenship) ethnic or national origins.

Approximately half (53%) of the respondents to the 2021 census in Cambridge City described themselves as White British. The remainder is made up of black and ethnic groups with the largest group Other white (21.5%) followed by Asian, Asian British or Asian Welsh (14.8%).

Potential Impact of Consultation As part of the consultation we will look into ensuring that the option for translation should it be required will be investigated. Further discussions with colleagues in other departments of the council is required to understand if this will be required.

Potential Impact of SCA Expansion City wide improvements to air quality will benefit all people living in the city, including a high proportion of the population from ethnic minority backgrounds. This could be important as UK-wide research shows that there are health inequalities between ethnic minority and white groups, and between different ethnic minority groups – and air pollution can exacerbate some existing health conditions.

Potential Impact: To ensure accessibility of the consultation to all residents of Cambridge further consideration is required on how we ensure translation of the consultation is available if required

Positive Impact: If the expansion to the SCA were to go ahead health benefits because of the resultant improvements in air quality and reduction in exposure to pollution

(g) Religion or belief

No negative impact has been identified specific to people with this protected characteristic although all members of this group would benefit from the health benefits offered from improved air quality.

No Impact Predicted

(h) Sex

No negative impact has been identified specific to people with this protected characteristic although all members of this group would benefit from the health benefits offered from improved air quality.

No Impact Predicted

(i) Sexual orientation

No negative impact has been identified specific to people with this protected characteristic although all members of this group would benefit from the health benefits offered from improved air quality.

No Impact Predicted

(j) Other factors that may lead to inequality – in particular, please consider the impact of any changes on:

- **Low-income groups or those experiencing the impacts of poverty.**
- **People of any age with care experience – this refers to individuals who spent part of their childhood in the care system due to situations beyond their control, primarily arising from abuse and neglect within their families. The term "Care experience" is a description of a definition in law, it includes anyone that had the state as its corporate parent by virtue of a care order in accordance with the Children Act 1989 and amendments.**
- **Groups who have more than one protected characteristic that taken together create overlapping and interdependent systems of discrimination or disadvantage. (Here you are being asked to consider intersectionality, and for more information see: https://media.ed.ac.uk/media/1_l59kt25q).**

Low Income Groups – No impact has been identified at the consultation stage. One of the key aims of the SCA Impact Study was to identify whether residents in Cambridge are solely dependent on solid fuel for the provision of heating and hotwater and whether any changes to the SCA would have a disproportionate impact on those with lower income. With the exceptions of permanently moored vessel residents this is not the case with solid fuel stoves used predominantly for pleasure or as a secondary source of heating. Therefore should the expansion of the SCA proceed the changes are not expected to disproportionately impact those on low income.

Permanently Moored Vessel Residents – The report identified that this group is more likely to have a protected characteristic and further work is required should the council decide to progress with the expansion of the SCA. As part of the

consultation we will be targeting this group with plans to approach and interview all residents of which there are approximately 70. This will ensure we have a clear understanding of the potential impacts on this group and options for mitigation should the council chose to proceed. The EqIA shall be updated following the consultation.

People of any age with care experience - No impact identified for people with Care Experience at either the consultation or implementation stages

Groups who have more than one protected characteristic - Where one of the protected characteristics is age or disability then positive and negative impacts as identified above will apply however, it is not envisaged that there will be a cumulative impact for those with more than one protected characteristic. If people have some long-term health conditions as well as well as being children, older age, or pregnant then impacts of poor air quality can be exacerbated as increased vulnerabilities.

11. Action plan – New equality impacts will be identified in different stages throughout the planning and implementation stages of changes to your strategy, policy, plan, project, contract or major change to your service. How will you monitor these going forward? Also, how will you ensure that any potential negative impacts of the changes will be mitigated? (Please include dates where possible for when you will update this EqIA accordingly.)

Following the completion of the 'SCA Impact Study' the consultation is the next phase in research and data gathering. The consultation will be completed alongside a robust awareness raising campaign to increase wider understanding amongst the general public not only on the potential implications of such changes to them as residents but also the health and environmental benefits that 'Better Burning' can bring. Promotion and awareness raising will be targeted at key groups across the community including those with protected characteristics. Once the consultation is completed all information will be collated. Should we opt to proceed with the recommendation to expand the SCA this will return to committee for approval. A new Equality Impact Assessment would be developed at this stage.

12. Do you have any additional comments?

Click here to enter text.

13. Sign off
Name and job title of lead officer for this equality impact assessment: Elizabeth Bruce, Scientific Officer Names and job titles of other assessment team members and people consulted: Helen Crowther, Equality & Anti Poverty Officer; Yvonne O'Donnell, Environmental Health Manager; Jo Dicks, EQG Team Manager Date of EqIA sign off: 9th September 2024 Date of next review of the equalities impact assessment: N/A Date to be published on Cambridge City Council website: 11th September 2024

All EqIAs need to be sent to the Equality and Anti-Poverty Officer at equalities@cambridge.gov.uk

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