ENVIRONMENT AND SUSTAINABILITY COMMITTEE

Cambridgeshire County Council

Thursday, 14 January 2021

Democratic and Members' Services
Fiona McMillan
Monitoring Officer

10:00

Shire Hall
Castle Hill
Cambridge
CB3 0AP

COVID-19

During the Covid-19 pandemic Council and Committee meetings will be held virtually for Committee members and for members of the public who wish to participate. These meetings will held via Zoom and Microsoft Teams (for confidential or exempt items). For more information please contact the clerk for the meeting (details provided below).

AGENDA

Open to Public and Press

CONSTITUTIONAL MATTERS

1.	**Apologies for absence and declarations of interest** *Guidance on declaring interests is available at* http://tinyurl.com/ccc-conduct-code	
2.	**Minutes and Action Log of the Environment & Sustainability Committee meeting held 15 October 2020**	**3 - 8**
3.	**Action Log**	**9 - 10**
4.	**Petitions and Public Questions**	

KEY DECISIONS

The Environment and Sustainability Committee comprises the following members:

For more information about this meeting, including access arrangements please contact

Councillor Josh Schumann (Chairman) Councillor Tim Wotherspoon (Vice-Chairman) Councillor Anna Bradnam Councillor Lorna Dupre Councillor Ian Gardener Councillor John Gowing Councillor Peter Hudson Councillor Jocelynne Scutt Councillor Mathew Shuter Councillor Graham Wilson

Clerk Name:	Dawn Cave
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Environment and Sustainability Committee

Date: 15 October 2020

Time: 10.00 a.m. - 12.00p.m.

Present: Councillors Josh Schumann (Chairman), Tim Wotherspoon (Vice-Chairman), Anna Bradnam, Lorna Dupre, Ian Gardener, John Gowing, Peter Hudson, Jocelynne Scutt, Mathew Shuter and Graham Wilson.

36. Apologies for Absence and Declarations of Interest

No apologies for absence were received.

There were no declarations of interest.

37. Minutes - 17th September 2020

The minutes of the meeting held on 17th September 2020 were agreed as a correct record, subject to the following amendments:

- Correction to the fifth issue raised by Members on Minute 33 (Northstowe Phase 3A – Outline Planning Application Consultation Response), with 'Cambridge Equality Panel' to be replaced by 'Cambridgeshire Quality Panel'.

- Last sentence of second bullet point on item 32 (The Great Ouse Fens Tactical Plan – changes to Flood Risk Funding) amended to read: "It was noted that Internal Drainage Board (IDB) watercourses and EA main rivers were often well designed to cope with more than the design standard."

- Second sentence of third bullet point on item 32 amended to read: "Members were informed that, the County Council did not make a significant contribution towards (IDB) or EA defences, and that for the current 10 to 15 years of the Tactical Plan this was unlikely to change."

38. Action log

While considering the Action Log, one Member noted that a final response should be circulated to the Committee regarding Northstowe Phase 3A – Outline Planning Application Consultation Response, asking for a target date for this to be set. Officers agreed to provide updates on an ongoing basis until the final response had been completed. Action required

The Action Log was noted.

39. Petitions and Public Questions

No petitions or public questions were received

40. Carbon Valuation

The Committee received the Carbon Valuation report, which detailed a proposal to apply a financial value to carbon emissions in order to improve the Council's decision making on environmental issues. Attention was drawn to two of the four methods which the Council could implement in order to meet its climate change objectives. The recommendation was to mirror the Government's approach by applying the combination of Option 2 and Option 3, as set out in the report.

It was suggested that carbon valuations could be built in to business cases to demonstrate a virtual cost or saving. It was highlighted that workshops and training sessions were essential across the Council in order to strengthen collective competency and to achieve understanding of the use of carbon valuation for each work area. In addition to the re-development of business case templates to include carbon valuation, it was suggested that the Finance team could be the first point of implementation.

Members praised the report for its clarity and foresight, in addition to its identification of the need for increased training.

It was resolved unanimously for:

a) The Council to implement a virtual 'internal carbon price', based on the UK Government's method of using the EU Emissions Trading Scheme (ETS) price for traded emissions (such as electricity) and the Department for Business, Energy and Industrial Strategy (BEIS) forecast carbon value for non-traded emissions (such as those from heat or transport).

b) The internal carbon price to be built into all applicable business cases, updating templates where used, in order to understand how and which decisions may differ when the cost of carbon is taken into account.

41. Business Planning Proposal for 2021-26 – Opening Update and Overview

The Committee considered a report which provided an update on the Council's current business and budgetary planning position and estimates for 2021-2026. It also lay out the principal risks, contingencies and implications facing the Committee and the Council's resources, while setting out the process and next steps for the Council in agreeing a business plan and budget for future years. Members attention was drawn to the fact that the Business Plan had been greatly affected by Covid-19. This had led to an increased demand for Council services, as well as a reduction in the Council's income. Options for tackling these issues were presented in the report, and Members were advised that these ideas would provide the basis of the business plans to be presented to the Committee in December.

Individual Members raised the following issues after the report was introduced:

- A significant cost increase regarding Stanground and Woodston Landfill Sites and North Angle Solar Farm for 2022-23. Officers explained that the increase was due to the fact that the North Angle Solar Farm and Stanground Landfill Site would both generate income and have operational costs for 2022-23. It was noted that the Woodston project was currently on hold due to the lack of grid capacity in the area.

- Income generation from the services provided by the Flood Risk team and the Historic Environment team. The Committee was informed that the savings were achieved by providing specific services to both Milton Keynes Council and Peterborough City Council. Further savings could be achieved by the Historic Environment team through providing support services, but the review of this revenue was reviewed by Shared Services.

- The contrast between the lowest and highest achievable savings as a result of the review of Household Recycling Centres (HRCs) and waste disposal. Officers acknowledged that the range of available options could result in different saving values and noted that the plans were still under development.

- Government's financial support to address expenditure resulting from the impact of Covid-19. Members were advised that further discussion was planned for the December Committee meeting as part of the budget planning process. It was also noted that the Business Intelligence remit included finding ways to provide further support for vulnerable people.

- Operational and policy changes at HRCs. It was suggested that the early involvement of local Members and members of the public would establish support and give an opportunity to contribute to the future plans.

One Member commented that whilst she was happy to note and comment on the report, as per the recommendations, this did not mean that she supported all of the proposals in the report.

It was resolved unanimously to:

a) Note the overview and context provided for the 2021-22 to 2025-26 Business Plan.

b) Comment on the draft proposals for E&S Committee set out in section 5.3 and endorse their development.

42. Service Committee Review of the Draft 2021-22 Capital Programme

The Committee received the Service Committee Review of the Draft 2021-22 Capital Programme which provided an overview of the capital process. The Strategic Finance Business Partner drew attention to the two schemes relevant to the Committee, as detailed on page 3 of the appendix. There was a discussion on how elements of the budget presentation could be improved.

It was resolved unanimously to note:

a) The overview and context provided for the 2021-22 Capital Programme for Place & Economy

b) The draft proposals for Place & Economy's 2021-22 Capital Programme and endorse their development

43. Results of the Consultation on the draft Heat Supply Agreement for Swaffham Prior Community Heat Project

Members received a report detailing the outcome of the general consultation on the Draft Heat Supply Agreement for the Swaffham Prior Community Heat Project. Members were informed that over 107 comments had been submitted during the consultation. The community had raised questions regarding various aspects of the plans and the central three concerns related to the proposed standing charge, the cancellation fee and plans regarding the future of the scheme.

In response to the report, Members noted that:

- The plan for a cancellation fee had been discarded, although a payment would need to be made for removal of equipment from individual households.

- there was a duty of care to vulnerable people for exceptional weather phenomenon

- A further consultation would be held within the community on 23rd October to consider different price models for standing charges.

A Member thanked officers for the exemplary Member engagement that had taken place with regard to this scheme.

It was resolved unanimously to:

a) Note the consultation process and metrics set out in paragraphs 2.1 and 2.2;

b) Agree the key proposed changes to the draft HSA as set out in the tables under paragraph 2.3;

c) Agree the updated Heat Supply Agreement is shared with the community for a second time, ahead of finalisation; and

d) Delegate any further changes to the Heat Supply Agreement to the Executive Director, Place and Economy in consultation with the Chair of Committee and the Green Investment Advisory Group.

44. Planning White Paper (Planning for the Future) – Response to Consultation

The Committee received a report which outlined the proposed formal response from the Council to the Government's White Paper for reform of the planning system. The Council was required to submit a formal response to the consultation, which was due to end on 29th October 2020, and was scheduled for implementation in 2024. It was reported that the response had been completed and was ready for submission.

While discussing the report, Members expressed concern that planning for water sufficiency had not been included as part of the response. It was suggested that this could be included under point 8a, which related to the planning of future developments, although after discussion, it was agreed that officers would include this matter in the appropriate section. Action required

In response to a Member question, the composition of the Member Reference Group and Member engagement processes with regard to the Planning White Paper were noted.

It was resolved unanimously to:

> Allow the Executive Director: Place and Economy, in consultation with the Chair of Environment and Sustainability Committee, to finalise and submit the Council's technical officer response on the Government's consultation on the Planning White Paper in order to be able to meet the Government's deadline of 29th October 2020.

45. Agenda Plan, Training Plan and Appointments to Outside Bodies and Working Groups

While considering the Agenda Plan, Members noted that the 'Trees & Woodland Strategy' report, scheduled for the December Committee meeting, had been deferred due to the need for further engagement with partners. It was also agreed that the 'Finance Monitoring Report' should be reintroduced to all future meetings.

The 'Energy Programme including new business models – Carbon offset from CUSPE 2020' training session scheduled for 22nd October had been deferred until December, due to a clash with another meeting. It was further suggested that there was a need for a water sustainability training session to be added to the Training Plan. Action required

Chairman

Environment and Sustainability Committee Minutes- Action log

This is the updated action log as at **6th January 2021** and captures the actions arising from the most recent Commercial & Investment Committee meeting and updates Members on the progress on compliance in delivering the necessary actions.

Minutes of 17 September 2020					
Minute number	Item title	Responsible officer(s)	Action	Comments	Status
32.	The Great Ouse Fens Tactical Plan – Changes to Flood Risk Funding	Steve Cox Sheryl French	The need to include a specific sign off for climate change in the report template for Policy and Service Committees.	A draft template has been discussed with Democratic Services. Any template must now comply with the new Accessibility Regulations. A report is being drafted for JMT for October/November 2020 for discussion/approval with a view to implement a new template in the new year. Training will be required ahead of implementation. A paper and draft template went to JMT on 17th December 2020. The implementation of the template will likely start from March 2021 to allow for work pressures from Covid during January and to collaborate with report writers for key decisions in February to test the new template format	Complete

33.	Northstowe Phase 3A – Outline Planning Application Consultation Response	Juliet Richardson	Circulate final response to the Committee.	The work is ongoing with Draft initial responses provided to the LPA. We are also liaising with lead and local members. Meetings to agree the final response will be held in January	Ongoing
Minutes of 15 October 2020					
38	Action Log	Juliet Richardson	Provide updates on an ongoing basis for the Northstowe Phase 3A- Outline Planning Application Consultation Response until the final response is completed	The work is ongoing with Draft initial responses provided to the LPA. We are also liaising with lead and local members. Meetings to agree the final response will be held in January	Ongoing
44.	Planning White Paper (Planning for the Future) – Response to Consultation	Emma Fitch	Include Water sufficiency as part of the response	The response was updated to take account of the water resource comments made at committee and the final version was shared with Cllrs Schumann and Wotherspoon before being signed off by the Chairman (Cllr Josh Schumann) and by Steve Cox. The final version was submitted by Colum Fitzsimons on 23 October 2020.	Completed
45.	Agenda Plan, Training Plan and Appointments to Outside Bodies and Working Groups	Democratic Services	Water Sustainability training session to be added to the Training Plan	Water Sustainability will be included on either the 15/01/21 or 19/02/21 Committee training session.	To be completed Jan/Feb.

Swaffham Prior Community Heat Project – Investment Case

To:	Environment and Sustainability Committee
Meeting Date:	14th January 2021
From:	Steve Cox, Executive Director, Place and Economy
Electoral division(s):	Burwell, Swaffham Prior
Forward Plan ref:	2020/048
Key decision:	Yes
Outcome:	100% carbon reduction for heating and hot water from 2022 for homes and local businesses connected to the Swaffham Prior Community Heat Project.
Recommendation:	Members are asked to: a) Approve the investment case for the Swaffham Prior Community Heat Project as set out in section 2.4. b) Note the project risks set out in section 3. c) Support further work with Government to develop community carbon policy to reduce risk to the project (and future projects) as set out in paragraph 3.1. d) Approve capital expenditure as set out in paragraph 2.4.7 to cover state aid compliance for the Heat Network Improvement Project (HNIP) commercialisation funding. e) Delegate the decision to sign contracts with Bouygues to design, build, operate and maintain the Swaffham Prior Community Heat Project, once final costs and grants are confirmed, to the Executive Director of Place and Economy and Chief Finance Officer in consultation with the Chair of Environment and Sustainability Committee and the Green Investment Advisory Group.

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1. Background

1.1 In March 2017, the Council approved its Corporate Energy Strategy. The strategy includes a vision to help "build energy resilient communities through aligning the Council's assets and the potential for energy generation with local needs". A key objective of the strategy is to "work with all partners and the local community to identify and facilitate low carbon energy projects using the Council's assets to bring benefits to all partners."

1.2 The Council adopted a new corporate objective (in February 2020) to deliver net zero carbon emissions for Cambridgeshire by 2050 and approved its Climate Change and Environment Strategy (CCES) at Full Council in May 2020. This strategy includes mitigation of climate change, cutting carbon emissions and the use of the Council's assets to generate clean energy.

1.3 The Swaffham Prior Community Land Trust (SPCLT) has been the driving force behind this community heat project. It approached the Council in December 2017, sharing a feasibility study it had commissioned and inviting the Council to partner in the project and use rural estate land on the edge of the village, earmarked in part for industrial development, to host a clean energy centre for the community to take it off oil and onto renewable energy.

1.4 The Swaffham Prior Community Heat Network (SPCHN) comprises an energy centre located in a County owned barn and farmland at Goodwin Farm, which includes a ground source heat pump, air source heat pump, solar PV and thermal storage. Connecting to the energy centre is a district heating network (underground pipes) that runs through the village connecting to homes and businesses. Heat is transferred from the heat network via a heat interface unit into existing homes' hot water and heating systems. Existing oil boilers and tanks are disconnected. Please see diagrams explaining the project in Appendices A and B. To get a visual sense of the project please watch the link to a video describing the community heat project (Link here to a video describing the community heat project) and review the project website news (Link here to review the project website news).

1.5 The SPCHN is a ground-breaking project. It is a first of its kind at this scale in the UK, enabling homes of any age in the village to decarbonise their heating and hot water. It uses established technologies already in place in other countries and applies them to the UK and Cambridgeshire more specifically. It has compared standalone air or ground source heat pumps to community heat schemes and concludes that for Swaffham Prior, which has many older listed buildings, individual solutions for some of the older or poorly insulated properties cannot reach high enough temperatures to give the same level of comfort as that provided by current oil boilers whilst also operating efficiently. This project has been designed to deliver heat to homes at temperatures between 70-75 degrees which means existing radiators and pipework can be used and not replaced. The business model innovation is that homes can join the scheme at no cost before construction starts and is open for anyone in the village to join (providing homes are compatible). This removes the current major financial barrier to decarbonising heat for homeowners. Individual solutions generally require homeowners to pay upfront for changing to low carbon solutions and a risk to the Government delivering net zero by 2050. This project is already an inspiration to other communities both within Cambridgeshire and across the UK looking to decarbonise, a trend which looks set to continue.

1.6 The intended outcome of this report is to construct the SPCHN during 2021/22 (once any necessary listed building approvals have been granted by East Cambridgeshire District

Council) to decarbonise the heating and hot water for homes and buildings in the village of Swaffham Prior, saving 38,000 tonnes of carbon emissions by 2050 and providing a more cost effective and sustainable solution for residents and their homes.

2. Main Issues

2.1 Why have the Government and the Council invested in the Project development to date?

2.1.1 The government is committed to expanding the low carbon economy whilst also hitting national carbon budgets. To deliver net zero greenhouse gas emissions it is looking to cut carbon emissions from household and commercial heating systems during the 2020s. More than a million homes in England are not connected to the gas network and are currently reliant on oil or liquefied petroleum gas (LPG). It is the intention of Government (Clean Growth Strategy, April 2018) to phase out the installation of high carbon fossil fuel heating in new and existing off gas grid residential and other buildings (which are mostly in rural areas) during the 2020s.

2.1.2 Research undertaken in 2019 by Cambridge University Science and Policy Exchange (CUSPE) for the Council identified that approximately one quarter to a third of carbon emissions in Cambridgeshire come from domestic and commercial buildings demanding heat for hot water and space heating. The estimated 10,000 homes and businesses across Cambridgeshire dependent on oil for heating and hot water contribute to these emissions.

2.1.3 Government has a number of mechanisms for incentivising the development of heat network projects. It set up the Heat Network Delivery Unit (HNDU) to fund project development and share early stage project risk; the Renewable Heat Incentive (RHI) to provide income for new projects to support the development of business cases and, more recently, the Heat Network Investment Project (HNIP) to provide gap funding for projects to help build market knowledge. All of these incentives are currently required to build a business case for off-gas community retrofit projects but the aim is that as more projects are developed, supply chains established and templates for key transactions developed, the costs for heating schemes will reduce.

2.1.4 The development of the SPCHN has taken three years. The timetable has been largely driven by the need to access grants to undertake project development. Moving through the grant stages is generally contingent on delivering agreed outputs at each stage. This has added time to the development of the project, but hopefully future projects will benefit from the learning these outputs have delivered. Five rounds of grant funding have been secured for the Swaffham Prior Community Heat Project and these are set out in Appendix C with the key deliverables. These grants have developed knowledge and experience in the community, at Cambridgeshire County Council and within Government on how to design and develop community scale heat retrofit projects which have social value. This knowledge can now inform new government policy and funding regimes for community heat decarbonisation, as well as provide communities with a guide on how to design and deliver heat projects for the future including key legal issues, contract templates, engaging with communities and project governance. This guide will save Government and communities' time and money in developing their own schemes and speed up the decarbonisation of other off-gas communities across the UK.

2.1.5 Cambridgeshire County Council (CCC) has match funded the major grants from the Department for Business, Energy and Industrial Strategy (BEIS) Heat Networks Delivery

Unit (HNDU). The Heat Network Investment Project (HNIP) approved the Council's application for capital grant towards the construction of the heat network and grant for the commercialisation of the SPCHN. A revised application to HNIP is under preparation to increase the capital grant for the heat network to reflect changes in market conditions facing many heat projects as a result of Brexit and the pandemic. The Cambridgeshire and Peterborough Combined Authority (CPCA) contributed match funding in the early phase of the project towards costs for drafting the community Heat Supply Agreement and for heat meter installations into homes to access real data.

2.1.6 Planning permission for the project was secured on 24th November 2020 and a Stage 1 application for Renewable Heat Incentive (RHI) was submitted on 30th November 2020 – to lock in the existing tariff values for both ground source and air source heat pumps. The SPCHN project is now waiting for Ofgem to invite it to submit a Stage 2 application and provide evidence of an investment decision/financial close to be eligible for the RHI. The financial close must be externally audited, and this must be provided to Ofgem with the stage 2 submission. Once approved the SPCHN must deliver construction of the project by 31st March 2022 and have started delivering heat to homes.

2.2 A set of high-level principles have guided the development of the Project.

2.2.1 The principles set out below have guided the development and design of the project by putting the consumer at the heart of the solution:

- Net-zero carbon emissions reduction for heating and hot water for participants;
- No cost barrier to join the scheme at the start of the project*. This provides an opportunity for all households on oil in the village to participate - an equitable solution for everyone, not just those able to pay up front;
- Low carbon heating solution that is more cost effective than existing oil boilers and tanks**;
- A quality assured heat supply service, delivered by a single contractor (Design, Build Operate and Maintain (DBOM)) to ensure performance risk is managed by experts; and
- A project that can be replicated elsewhere for other off-gas communities.

* If homes join post-construction a fee will be charged to cover connection costs.
** Oil prices pre-Covid 19.

2.3 What are the heating and hot water options for oil dependent communities?

2.3.1 The main options include:

- Individual Air Source/Ground Source Heat Pumps for every home;
- District heating networks with renewable energy for the community; or
- Biomass boilers for individual homes (The detailed comparative costs are not included for individual biomass boilers as biomass supplies and air pollution make this option less attractive than the first two options.)

2.3.2 Comparing the costs of the SPCHN project versus 'do nothing' (remain with oil boilers) or investing in individual Air Source Heat Pumps (ASHPs) into all homes across the village, the cost is significantly less with the proposed community district heating scheme over the lifetime of the project. Please see Table 1: Extract: Net Present Value (NPV) impact summary below. Over 60 years, the SPCHN would provide energy more cheaply than the 'do nothing' oil counterfactual, while also achieving a large carbon reduction and improving air quality. The SPCHN is also significantly less costly than individual ASHPs for each household and has a number of other advantages as well, e.g.

- higher expected take-up as a result of no required capital contribution by the household;
- the single point of demand for additional electricity means it will be easier to manage any required grid upgrade;
- low-carbon electricity is sourced reducing future CO2 emissions significantly more than individual ASHPs; and
- has built-in redundancy to provide better security of continued heat production than individual ASHPs.

Table 1: Extract : Net Present Value (NPV) impact summary vs counterfactuals

SPCHN	Oil comparator	Individual ASHP for every home comparator	
£12.1m	£16.9m	£21.4m	Cost to householders
£2.8m	£0	£1.6m	Cost to central government
£14.9m	£16.9m	£23.0m	Total cost
79k	0	72k	Tonnes of carbon saved to 2081

2.4 Investment Case for the Project.

2.4.1 The proposed commercial structure for the project is set out in Appendix D and is informed by government finance incentives, grants and state aid compliance. The overall finances for the project, in net present value terms, are as follows:

	£'000
Build cost - Energy Centre	4,589
Build cost - Heat Network	4,436
Grid connection costs	1,819
CCC costs	539
Contingency	570
HNIP Grant Funding (assumed)	-2,833
CAPITAL BORROWING REQUIREMENT	9,120
Heat Purchase Agreements	-10,484
Carbon credits and CCL	-6,850
Renewable Heat Incentive	-2,697
TOTAL REVENUE (NPV)	-20,031

Operation and maintenance	2,210
Energy costs*	2,490
SPV and site costs	2,310
Lifecycle costs	1,284
Total loan costs	10,750
TOTAL COSTS (NPV)	19,044
TOTAL NET INCOME (NPV)	-987

*Based on assumed supplies at wholesale price from North Angle Solar Farm.

2.4.2 The total capital cost of the project is £11.9 million including contingency. HNIP grant totalling £2.8m has been assumed towards the cost of the construction of the heat network as set out above. The residual cost to be funded by Council borrowing would be £9.1m and the anticipated return on this investment is set out in the following table:

Outputs before and after HNIP grant

	Before grant	After grant
IRR	3.83%	5.03%
Annual Net Yield	6.29%	8.42%
NPV	-£2,351,585	£987,299
Payback (years)	31.3	24.5

2.4.3 The pre-intervention and post-intervention financial outputs in the above table show the comparative financial returns, excluding and including HNIP grant funding, over a 60-year period (the minimum expected life of the heat network). Assuming the £2.8m of grant funding is secured, the project is expected to generate an average annual net yield of 8.42%, with a payback period of 24.5 years and Net Present Value (NPV) of £1.0m.

2.4.4 Across such a long period this level of NPV is very small and the proposed business case would not be attractive as a purely commercial investment. However, as members have already agreed, the primary motivation for the project is not commercial, but to deliver substantial social and environmental benefits – not just relating to carbon savings, but also cleaner air and fuel poverty prevention. The Social Value of air pollution savings, which are not currently included in the business case, would be £0.8m. The Social Value of carbon reductions would also be slightly higher (£0.3m) than the financial value of the intended sale of carbon credits already included in the business case.

2.4.5 The overall project will be split into two parts. The Energy Centre will produce the energy required and will be directly under the control of the Council, though detailed operations will be carried out by Bouygues as part of the DBOM contract. This element will be fully financed from Public Works Loan Board (PWLB) borrowing by the Council. In March 2019 the Council submitted a successful bid to the Treasury to borrow over £60m at the Local Infrastructure Rate (LIR) for energy investment projects. The anticipated financial returns for the project assume that the Council can secure LIR borrowing at a rate of 1.39% - that's the current market rate, though that is subject to change up to the point a loan is actually taken out.

2.4.6 The other element of the project will be to set up a Special Purpose Vehicle (SPV) to construct and maintain the heat network of pipes between the Energy Centre and individual homes and businesses. The use of an SPV is a requirement to receive the HNIP grant, which will part-fund the cost. CCC will provide the finance for the remaining cost, but the exact

details of how this will be done will depend on the rules that replace the state aid requirements that previously applied under the EU. Government has not yet clarified how the new rules will work.

2.4.7 The project is benefiting from a commercialisation grant of £355k from HNIP, in addition to the grant supporting capital costs. The commercialisation grant is specifically to facilitate the setup of the heat network and the Council will need to pick up any costs purely associated with the energy centre. The type and value of costs to be covered by the grant is still subject to final determination but based on current projections it's possible that up to £40,000 of costs that were originally intended to be covered by this grant will not be eligible. Such costs would then need to be covered by contingency funding.

2.4.8 Income for the Energy Centre will be generated through the following mechanisms:

- Heat sales to customers
  There are a total of around 330 potential homes and businesses and the business case assumes that at least 160 of these will wish to participate in the project initially. An outline application for 28 new homes for the village has recently been submitted to East Cambridgeshire District Council. If approved, the SPCHP will look for these homes to connect to the network. Household Surveys have running during October and November 2020 - already 90 homes have completed surveys and more will take place in 2021. It is anticipated that more than the target of 160 will be achieved. Sanctuary Housing has over forty homes in the village and is keen to participate in the project. Project and heat costs are under discussion with the Diocese of Ely that run the primary school. The pub landlords have also expressed a willingness to be involved. The business case forecasts nearly 300 homes and businesses will be connected within 5 years of commencement of heat generation.

- Renewable Heat Incentive (RHI)
  To incentivise uptake of low carbon heating solutions, the government set up the RHI for non-domestic and domestic projects. This project will access the non-domestic RHI and a Stage 1 application for Tariff Guarantee was submitted 30th November 2020. Payments under the scheme are made once construction is completed and based on the amount of energy distributed to customers.

- Carbon credits
  The project will save over 79,000 tonnes of carbon emissions over 60 years. A CUSPE 2020 research project identified the opportunity for a Cambridgeshire Decarbonisation Fund. This Fund would attract investment from businesses for carbon credits and the SPCHN will be included as a project in this Fund if it progresses. Carbon credit sales are assumed in the business model to contribute £6.8m to NPV over 60 years and this source of funding is essential to secure the viability of the business case.

2.4.9 As part of the HNIP grant conditions, the Council has signed up to The Heat Trust, and its customer service standards. In addition, the metering, billing and customer service arrangements (Retail function) is currently being developed. The intention is to run this in-house using ERP Gold linked to a data platform. The costs of these retail services are included in the project.

3. Investment Risks and Sensitivity Analysis

3.1 A project risk register is attached at Appendix E and provides an overview of the technical and investment risks. The key investment risks are discussed below, and Appendix F is a sensitivity analysis on how this impact the business case.

3.2 Sale of carbon credits

3.2.1 The government publishes very detailed advice on how best to undertake project appraisal (the Green Book) and this advice includes values to include for carbon savings – these values have been used in our business case. However, the actual values that carbon credits can be sold for in future will depend very heavily on future political decisions about the structure of any future carbon trading scheme. As sales of carbon credits form a significant element of the total income expected in the business case, this means future performance of the project will be significantly affected by future political decisions.

3.2.2 As this is a significant risk to the project, the Council has initiated discussions with BEIS, the local MP and the relevant minister to consider ways the risk could be mitigated. That could be done for instance through influencing future government policy, or by additional grant funding aimed at reducing the level of income required from the sale of carbon credits. At present, there is no assurance these discussions will be successful. Valuing carbon reductions and identifying where this fits into new business models is strategically important. It impacts the scale and pace of achieving early carbon savings and the overall net zero by 2050 commitments. As a champion for rural communities, developing this dialogue with Government could bring support relevant for other off-gas rural villages looking to shift off oil and put together viable business cases.

3.3 Availability of Renewable Heat Incentive (RHI)

3.3.1 There was a substantial increase during September and October 2020 in heat pump projects seeking RHI. As a result, the government budget for this type of scheme was exceeded and our application for RHI, submitted at the end of November, was placed in a queue to await the possibility of funding becoming available. BEIS announced on 18th December 2020 that additional budget would be made available to allow all applications already in the queue to receive funding. While there are still financial, technical and compliance requirements to receive the grant – in particular reaching financial close to submit a Stage 2 application and to have an operational project by 31st March 2022 – the change in budget available has greatly reduced the risk associated with RHI but the RHI tariff has decreased reducing substantially during the last year. The Stage 2 application requires an independent audit report to confirm that a financial investment decision has been made and funds committed to the project. This is being procured. The Stage 2 application must be made within 3 weeks of Ofgem approving the Stage 1 application and no later than 31st March 2021.

3.4 Loan requirement

3.4.1 The loan requirement represents the total net initial cost of the project. This is made up of the capital cost, less grant available.

3.4.2 The capital cost of the project has increased in recent months for several reasons. In particular it has been influenced by:

- Covid-19
  The direct and indirect effects of the pandemic have put pressure on the supply chain, reducing the number of suitable suppliers to choose from and hence tending to raise quoted prices. The requirements for social distancing during construction have also had a direct impact on expected construction costs.

- Brexit
  The general uncertainty over Brexit has had an impact on recent prices tendered. Administrative costs associated with customs declarations and exchange rate risk have increased recent prices tendered.

- RHI timetable
  As noted above, the project must be operational by the end of March 2022 to qualify for RHI. This is a tight timetable for a complex project and, in order to reduce the risk of project delays, some decisions have been taken that result in increased costs. For instance, the route taken for the trenches that will hold the heat network pipes will now be along public highways. The costs of 'hard-dig' are greater than the alternative 'soft-dig' across privately owned fields, but avoid the potential delays associated with negotiating access rights.

3.4.3 While the current business case is based on tendered prices, these are not yet final figures and it is possible that capital costs will change further until we have received the final Investment Grade Proposal from Bouygues.

Table 2: Indicative timeline for the SPCHN Project

Activities/Timeline	Feb 2021	March 2021	April 2021	September 2020	March 2022	March 2022-2025
Finalise all costs resulting from Brexit and Covid impacts						
Finalise RHI and HNIP grants						
Finalise and sign DBOM contracts						
Project Mobilisation						
Construction of heat network and energy centre						
Customer connections Phase 1						
Customer connections Phases 2-5						

3.4.4 The other element to the loan required is grant funding. HNIP have already offered us a grant of £1.8m towards the costs of construction, but we are in the process of applying for an increase of £1.0m to this grant to recognise the increased capital costs referred to above. While responses from HNIP have been positive so far, and they have recently formally agreed a methodology to consider requests for additional funding, no additional funding can be guaranteed at this point. The business case assumes that HNIP will provide all the additional funding requested.

3.5 Connection to North Angle Solar Farm

3.5.1 Commercial and Investment Committee recently approved in principle the business case for the proposed North Angle solar farm near Soham. This proposal included supplying Swaffham Prior with electricity at the equivalent wholesale price supplied to the Grid (£0.05/kWh). The SPCHN business case includes the costs for a private wire connection to the North Angle Solar Farm but if for any reason this is not possible, the SPCHN planning application included for a small solar park near the energy centre to offset electricity costs and deliver green electricity directly to the project. The latter would provide a substantially lesser proportion of the energy centre's electricity demand compared with the North Angle Solar Farm, but the additional demand would be purchased on a green tariff at retail price (around £0.12/kWh). Although there would be a considerable capital cost saving, there would still be a net negative impact on the business case.

3.6 Starting tariff

3.6.1 The business case assumes that the cost of heat supplied to householders would be set at a level equal to the cost of oil at the point householders are required to sign up. The projected cost of oil is currently taken as the BEIS price projection for 2021, but actual prices could potentially vary considerably – for instance as a result of the economic impact of Covid-19 restrictions.

3.7 Number of customers signing up

3.7.1 The impact of small variations in the number of customers signing up is marginal. However, there is limited ability to scale the size of the Energy Centre and heat network. That means that, if customers fall below the initial target number of 160, it would not be possible to reduce the costs to reflect the lower numbers and the impact of such lower numbers would then be much more significant.

4. Alignment with corporate priorities

4.1 A good quality of life for everyone

Fuel for heating and hot water is a significant cost for householders dependent on oil and an increasing fuel poverty concern. This project has been designed to help manage future fuel costs and offer the community better environmental choices for heating and hot water than oil, a fossil fuel. The benefits of shifting off oil onto renewables also include local air quality improvements.

In addition, approximately 30 organisations most of which are local are involved in the design, development and future construction of the SPCHN project. It is important that projects like

this can secure jobs and support the supply chain as the County moves towards a green recovery from the Covid-19 pandemic.

4.2 Thriving places for people to live

Cambridgeshire is a predominantly rural County with a large network of villages. Many of our villages are reliant on oil for heating and hot water, systems that are not fit for the future in a low carbon world. This project will lead by example, share its learning with others and support other oil dependent communities to shift off oil.

4.3 The best start for Cambridgeshire's children

Swaffham Prior school children have been directly involved in the project. During science week in 2019 the school input to making a video shared in paragraph 1.4 on how a heat pump works and projected an image of the borehole drilling onto the side of the school wall for everyone to see what was happening on site in July 2019, but at a safe distance. The impacts of climate change will be felt most keenly by future generations and developing projects now that use clean energy supplied locally is positive learning for our communities.

4.4 Net zero carbon emissions for Cambridgeshire by 2050

Cambridgeshire's carbon emissions in 2017 reached 6.1million tonnes per annum plus peatland emissions of 5.5Mt/CO2 per annum. This project is forecast to reduce annual emissions in Swaffham Prior by 1,338 tonnes per annum when connections reach 90% of the village. 53,000 tonnes of carbon emissions are forecast to be saved over 40 years. For Cambridgeshire to deliver net-zero by 2050 all buildings across Cambridgeshire will need to reduce carbon emissions to net-zero. Tackling the more polluting homes dependent on oil stops further carbon emissions sooner rather than later.

5. Significant Implications

5.1 Resource Implications

Section 2.4 sets out the project's outline business case. The Energy Investment Unit staff costs (including finance support) for the development of the project has been partly covered by the transformation fund agreed in May 2019 and with the remaining costs included in the total project capital costs. For further community heat projects like this, dedicated project management support will be required. It is also important to note that the rural estate land for the energy centre is integral to the Swaffham Prior project business case and the rural estates team have also supported the project development.

5.2 Procurement/Contractual/Council Contract Procedure Rules Implications

The Council appointed Bouygues Energies and Services Solutions Ltd in November 2017 as a result of a mini competition under the Refit 3 Framework. It is this procurement that has been used to develop the project.

The Rural Estates team have liaised with the tenant farmer for Goodwin Farm regarding the land earmarked for the energy centre and ongoing access to the land for the development of the project. The Swaffham Prior Board has also met the tenant farmer and the tenant is supportive of the project. The existing barn on the land is planned to host the new energy

centre and a new equivalent barn, will be built in a location agreed between the Council and the tenant. This cost is included in the outline business case.

5.3 Statutory, Legal and Risk Implications

The investment and project risks are set out in section 3 above and the accompanying risk register in Appendix E.

5.4 Equality and Diversity Implications

Please see section 2.1 describing the strategic purposes of the project and offering access to all in the village.

5.5 Engagement and Communications Implications

BEIS Heat Network Delivery Unit (HNDU) grant has helped to fund community engagement for the village recognising that the community and its residents are crucial to the project's success. Last year 166 homes agreed in principle to sign up to the project and further work is planned to engage the community during the next few months to confirm this commitment.

Four community presentations have been held in the village hall to report project progress, along with drop-in sessions such as a 'techy' walk for those more interested in the engineering design details, attendance at village events and working with the school. A session with residents in the local pub also examined a model heat agreement to identify and understand residents' concerns over signing up for heat sales.

An information booklet was shared with the village in 2019 and ongoing news is posted on the project website. Facebook posts, newsletters, school magazines and articles in the local Crier magazine have also been published during the year, as well as items on TV (Look East, July 2019), radio interviews and local newspapers.

5.6 Localism and Local Member Involvement

Progress updates have been provided to the Swaffham Prior Parish Council meetings and to the Local Councillors.

5.7 Public Health Implications

Air quality monitoring: There are two schemes to measure air quality underway with the project. The first is with East Cambridgeshire District Council, where a number of diffusion tubes have been set up across the village to monitor NOx and background emissions. This data will be provided monthly and is a high-level indication of pollutants. A more detailed, granular level of monitoring was installed in July 2020 to monitor particulates and NOx in strategic locations in the village. Air quality is being measured to provide evidence for the emissions reduction as a result of the project, to inform Public Health, future CUSPE research proposals as well as providing insights for post Covid -19 air quality emissions, lifting of lockdown and implementation of the heat project.

Have the resource implications been cleared by Finance?
Yes
Name of Financial Officer: Matthew Rathbone

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?
Yes
Name of Officer: Gus de Silva

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law?
Yes
Name of Legal Officer: Fiona MacMillan

Have the equality and diversity implications been cleared by your Service Contact? Yes
Name of Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications?
Yes or No
Name of Officer:

Have any localism and Local Member involvement issues been cleared by your Service Contact?
Yes
Name of Officer: Emma Fitch

Have any Public Health implications been cleared by Public Health?
Yes or No
Name of Officer: Iain Green

6. Source Documents

Documents

- Swaffham Prior Community Heat Project, Committee Report, November 2018
- Commercial and Investment Committee paper, 22nd May 2020 on the outline business Case for Swaffham Prior Community Heat Project.
- Heating Swaffham Prior Community website – updates and newsletters
- Swaffham Prior Community Heat Project – Information Booklet
- Heating Swaffham Prior video

Internal files

- Round 9 BEIS HNDU application for Detailed Project Development, October 2019
- HNIP application, April 2020, including Finance and Energy Modelling
- Financial model (FEAMv014)

Swaffham Prior Community Heat Project

Sketch of the Energy Centre and Air Source Heat Collectors and Expansion vessels

The HIU fits into a kitchen cupboard. It may replace an existing boiler and water heater, or these may be retained in addition to the HIU.

The HIU performs a number of functions, it:

- Transfers heat from the network to water
- Establishes the boundary between 'the network' and your home
- Removes the need for hot water storage
- Measures energy usage through an integrated meter

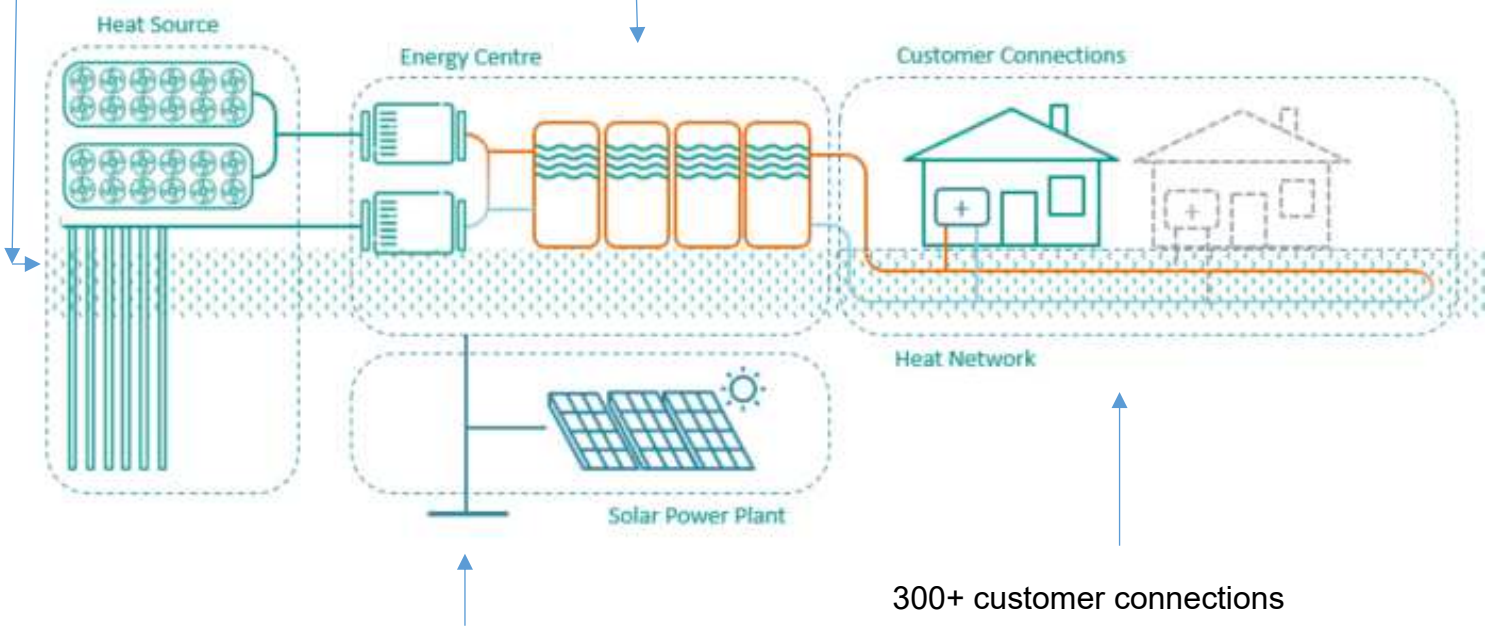
Schematic of the Swaffham Prior Community Heat Project

1,600kW high-temperature ground source heat pump
130x 200m boreholes

500kW high-temperature air source heat pump

200m^3 thermal energy storage system

~7km Heat Network



300+ customer connections

(heat interface units)

solar power plant

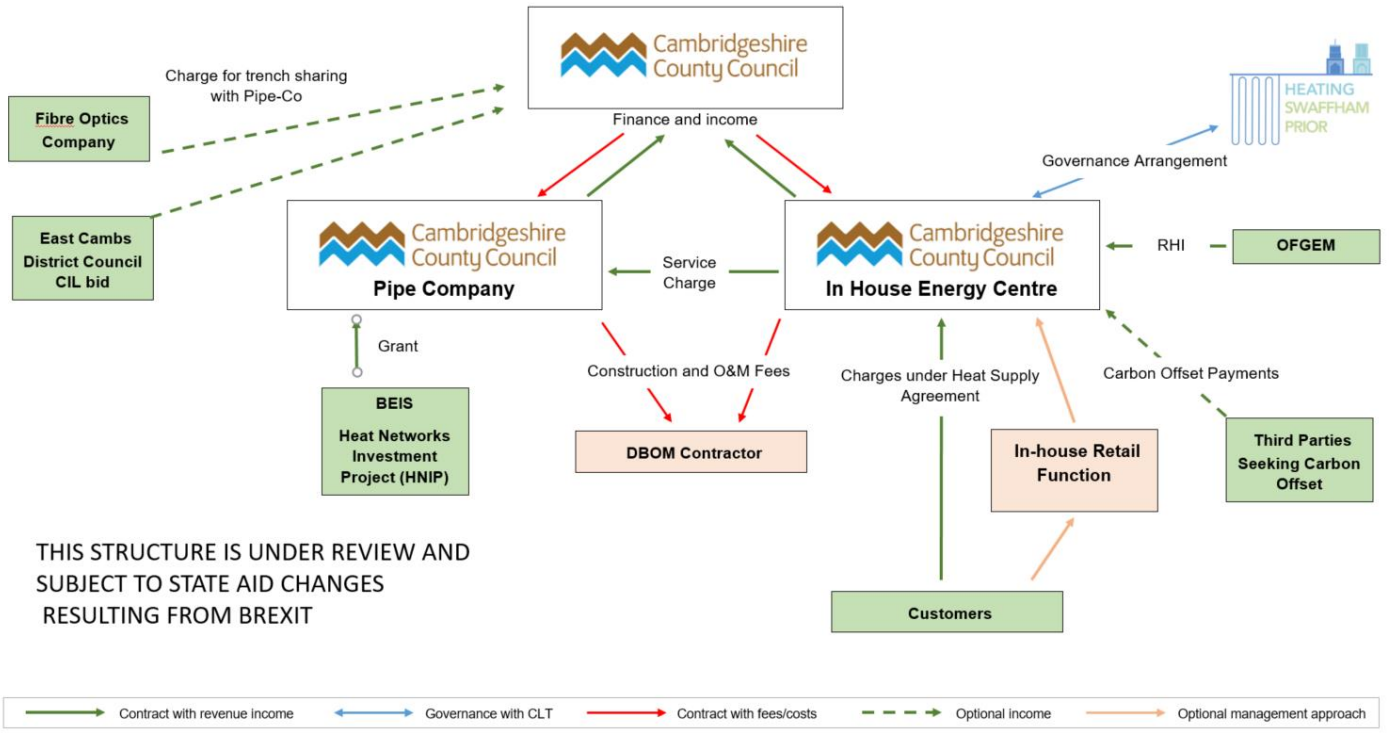
Summary of the Project Development and deliverables to date

Project Phase	Grant (£)	Match Funding (£)	Total (£)	Key deliverables
High level Feasibility	20,000 Waste and Resources Action Programme (WRAP)	-	20,000	Identification of two community heat project options for Swaffham Prior village
Techno-economic modelling	40,200 BEIS HNDU	20,000 (CPCA)	60,200	Options appraisal of key technologies Techno-economic model for preferred technology option A draft Heat Agreement for customers Installation of seven heat meters to measure distribution and level of consumption
Detailed Project Development - 1	100,300 BEIS HNDU	29,700 (CCC)	130,000	200m borehole planned and drilled to assess heat availability for ground source heat pump 166 homes signed up to be part of the heat project as an anchor load Detailed design work for energy centre and heat network to RIBA stage 2 Updated techno-economic model to reflect new designs, technologies, better data and soft market testing
Detailed Project Development - 2	232,000 BEIS HNDU	66,000 (CCC)	298,000	Scheme design, EIA scoping and development and submission of the planning planning application developed and submitted Commercial structure designed Funding – Heat Network Improvement Project (HNIP) incl outline business case Income identification Risk management
TOTAL	392,500	115,700	508,200	

Commercialisation	355,000 (HNIP)	–	355,000	Current Phase Set up of commercial structure Final scheme designs Archaeology and other planning conditions inform final scheme designs and final business case Household Surveys to identify heat loads and network connections – 90 completed Procurement strategy Investment Grade Proposal - finalisation RHI Stage 1 Application - completed RHI Stage 2 Application (Ofgem) confirm stage 1 application and invite stage 2 application) Set up retail function and sales strategy- underway Best value reviews by Local Partnership – scheduled February 2021 Heat Agreements with customers – contract agreed and sign ups start after investment decision Finalise DBOM contracts - underway
Construction – District Heat Network	Capital grant 2,799,065 (TBC)	1,637,092 (CCC)	4,436,157	On finalisation HNIP grant - Notice to Proceed and mobilisation of project. Capital investment into the heat network by the Council.
Construction – Energy Centre	-	4,589,462 (CCC)	4,589,462	Capital investment by the Council to draw down Revenue income estimates 2,697,000 from the RHI

Commercial structure of the Project

The preferred commercial structure for the project is set out below in diagram 1.



The Pipe Company will be responsible for installing and maintaining the heat distribution network and heat interface connections with customer properties; these are the elements of the project that are eligible for HNIP grant funding. The HNIP funding conditions dictate that local authority-controlled projects must be held off the National Accounts which requires the establishment of a Special Purpose Vehicle (SPV), such as a Council-owned limited company. The Pipe Company will be financed by grants from the Company and the Council will generate income to pay operational costs via the Service Charge.

The in-house Energy Centre will generate renewable heat for distribution to the community via the heat network. Heat Purchase Agreements will be established between customers and the Energy Centre under the legal powers set out below. Keeping the Energy Centre in-house satisfies state aid restrictions on borrowing for commercial projects at below-market rates.

Government Powers and State aid: Under the Local Government Act 1976 s.11 the Council has the powers to design, construct, operate and maintain an energy centre to generate renewable heat; supply and bill customers for the heat and to lay district heating networks. These 'powers' allow the Council to invest directly into the energy centre for the provision and sale of heat to customers and to access the Renewable Heat Incentive (RHI), on a no aid basis (although review is still being taken to confirm the availability of RHI more generally).

The LGA 1976 powers also apply for investment into the heat network. However, we note that as a matter of a requirement for HNIP purposes, a Special Purpose Vehicle must be set up, a Pipe Company, and the Council must pass any grant directly to the company, for no aid to apply. This is particularly relevant for the project as an application for grant submitted to the Heat Network investment Project (HNIP) in April requested 50% grant towards the network costs. The proposed commercial structure for the project has been tested and found acceptable to HNIP (subject to any final questions they may raise). Although this will be re-examined in further detail following the Commercialisation Phase.

Selling heat: The powers conferred to the Council through the Local Government Act 1976, s11 mean that it can sell heat directly to customers. The billing and metering arrangements can be set up in-house or sub-contracted.

Governance: Originally, the project was conceived as a joint venture between The Swaffham Prior Community Land Trust and the Council. With the identification of the LGA 1976 powers, the proposed structure has moved away from a joint venture, to one where the SPCLT exerts influence by sitting on the project board. The community representatives on the project Board have requested a covenant or something similar to be applied to the project to protect its interest in the project, should the Council decide to sell the project at a future point in time. Although a sale is unlikely, this issue is important to the SPCLT members.

Contracting: The Project will need to put in place a range of contracts. Since the Pipe Company and Energy Centre are distinct corporate entities, both will contract with the Design, Build, Operate and Maintain Contractor (Bouygues Energies and Services Solutions Ltd). Both the PipeCo and Energy Centre will be democratically accountable to the Council as Council owned and Council operated entities respectively.

Other contracts include:

Contract	**Parties**	**Progress**
Heat Supply Agreement (including connection letter) – both domestic and non-domestic	Council and Customers	Consultation with residents completed. Has now finalised and awaiting final tariff.
Governance agreement	Council/SPCLT	First draft.
HNIP Grant	HNIP/Council	First HNIP grant agreement secured.
Grant	Council and Pipe Co. This will need to be provided to the Pipe Co for the remainder of the money to construct the distribution network.	To be started.
Design, Build, Operate and Maintain (DBOM)- Energy Centre	Council and Bouygues E&S	Detailed negotiations completed.
DBOM- Heat Network	Pipe Co. and Bouygues E&S	As above.
Interface Agreement	Agreement between the Council and the Pipe Co. for the management of Bouygues.	To be started.
Service Contract	Council and Pipe Co.	HNIP commercialisation

Third party Income Contracts	Council and third parties– e.g. Fibre Optics Company, CIL and Carbon credits (see structure above)	Work is underway.

Appendix E

Project Risk Register – see excel spreadsheet

Appendix F

Sensitivity of business case to changes in assumptions

Major areas affecting results	Base case assumptions	Sensitivity adjustment
Sale of carbon credits	Sell at Green Book traded price	Sell at 50% of Green Book traded price
RHI funding	Full funding claimed available	No RHI funding available
Initial loan requirement	Capital cost £11.9m; HNIP grant £2.8m	Increase required loan by £1m
Electricity supply	Supply from NASF at £0.05/kWh	Supply from local Grid at £0.12/kWh
Starting tariff	BEIS predicted oil price of £0.053/kWh	Reduce price by £0.005/kWh
Homes connecting	Initial 198, rising to 297 over 4 years	Reduce connections by 5%
Operational costs	Total costs £131k in first year	Base case + 10%
Loan interest rate	1.39%	Add 0.2%
Inflation	2.75% RPI, 2.00% CPI	3.75% RPI, 3.00% CPI
Discount rate	4.62% (social discount rate)	3.42% (commercial discount rate)

	Base Case	Carbon credits	RHI funding	Loan requirement	Electricity supply	Starting tariff
IRR	5.03%	3.46%	3.99%	4.55%	4.15%	4.73%
Average Cashflow	8.42%	4.95%	7.64%	7.53%	7.06%	7.91%
NPV	£987,299	-£2,219,970	-£1,710,069	-£191,452	-£890,809	£271,193
Payback (years)	24.5	31.4	32.1	27.0	30.7	26.2

	Base Case	Homes connecting	Operational Costs	Loan interest rate	Inflation rate	Discount rate
IRR	5.03%	4.99%	4.79%	4.93%	6.18%	5.03%
Average Cashflow	8.42%	8.37%	7.97%	8.34%	12.79%	8.42%
NPV	£987,299	£906,535	£409,362	£752,742	£1,278,301	£4,975,844
Payback (years)	24.5	24.8	25.9	25.4	21.4	24.5

SWAFFHAM PRIOR PROJECT - RISK PROFILE

SEVERITY

High (3)

- The Council is unable to claim projected levels of HNIP for the project
- DBOM and O&M contracts are
- Failure of the system
- Injury, illness or death
- Environmental disaster occurs
- Commissioning - Unavailability of heat / hot
- Major legal issues delay the programme
- Project become unviable
- The Council is unable to claim projected levels of RHI for the project
- Project is economically unviable / unattractive to prospective
- Project is not attractive to prospective customers
- Businesses do not want to offset their carbon
- Project cannot secure power connection to the energy centre
- Programme delays
- Project affected by external events (Brexit, Covid-19)
- Project is negatively impacted due to legal procedures
- A change in regulations / legislation drives changes in the design or development of the project.

Medium (2)

- Insufficient resources available to develop project
- Customers are not able to connect
- Suboptimal design or geological issues make the project unviable
- Installation works fail to achieve Employer's Requirements
- Breach of planning conditions
- The energy centre or network is unable to meet the customer thermal requirements
- Disturbance and disruption caused by construction
- Failure to discharge pre-construction planning conditions

Low (1)

- The Council is unable to achieved projected levels of supplementary income for the project
- Retail price for electricity too high
- Trespassing of construction site, theft or vandalism of construction materials
- Customer connection is damaged

Low (1) | Medium (2) | High (3)

LIKELIHOOD

DEVELOPMENT

No.	Element	Risk Description / Trigger	Causes	Impacts	Likelihood	Severity	Risk Level	Control Measure	Owner	Status Update Notes	By	On
2	**RESOURCES**	**Insufficient / inadequate resources available to develop project**	1. Insufficient / inadequate local supply-chain contractor resources available to deliver project 2. Limited resource availability across partnership and delivery partners through the summer season and during COVID-19 3. Board members and/or consultants not available at key moments 4. COVID-19 restrictions mean ecologists and other specialist surveyors are not available to stay overnight at site	1. Delays to / unable to complete development programme 2. Need to source from further afield - increased costs 3. Community disconnected from development 4. Additional costs associated with subsistence, delays due to lost travel time.	Low	Medium	Medium	1. The Council to ensure that appropriate resources and financial provisions are committed to the development of the project. 2. Consultant to identify prospective supply-chain resources, deliver soft market engagement process and appoint the Design Team. 3. Monitor government advice regarding personal and commercial activities as pandemic develops. 4. Confirm availability of all partners at kick off; ensure handover/cover arrangements in place as necessary. 5. Subcontractor resource availability to be evaluated as part of the tendering process. Ensure that subcontractor has sufficient capacity to undertake the works through procurement and supply-chain vetting processes.	HT	Development phase due to close December 2020/January 2021. Supply chain resource & Covid risk to be retained (see Construction)	HT	19/10/2020
4	**FEASIBILITY**	**Project become unfeasible/ unviable**	**Technical issues:** 1. **Test Boreholes -** Results of test boreholes indicate that the volume / depth / flow rate of the aquifer is insufficient for required heat capacity or to meet thermal load 2. Underground utilities identified imply restrictions on network route on digging on CCC land **Project management:** 3. Tight timescales; slippage at this stage could make entire scheme unviable 4. Unable to secure funding/ [illegible] 5. Business case is commercially unviable: DPD Tendered costs associated with design and build of scheme are significantly higher than the estimations set out in Technoeconomic Feasibility Study 6. A change in regulations / legislation drives changes in the design or development of the project.	1. Loss of capital to fund project, project cessation. 2. Sunk costs 3. Damage to reputation 4. Decisions delayed, potentially putting whole scheme at risk 5. Consumers expectations frustrated; difficult to engage other partners and potential investors 6. Anticipated returns / revenues at DPD stage are significantly lower than that set out in Technoeconomic [illegible] 7. Increased costs, changes to economic business case.	Medium	High	High	1. Undertake further due diligence as part of the DPD stage, including further desk top analysis and specialist engagement . Construct test boreholes, to enable physical testing of abstraction rates and volumes. 2. Continue in the exploration and development of alternative technological options (such as closed loop or air source) to act as a 'fall back plan'. Identify alternative local aquifers and establish additional infrastructure requirements and costs to make connection with energy centre. 3. Complete a subterranean utility survey of the network route entire land parcel 4. Prioritise planning activities and proactive risk mgmt. approach 5. Apply asap to HNDU; regular updates to the community to keep everyone up to date. HNDU have confirmed they are assessing applications monthly to speed up project development 6. Ensure HNDU R8 requirements are captured and understood and that responsibilities are effectively distributed across stakeholders as appropriate. CCC to monitor and govern compliance throughout the DPD. 7. Undertake additional soft market engagement to corroborate subcontractor costs at the earliest opportunity. 8. Client to review assumptions set in the scenario manager and confirm approval. Appropriate research to be conducted to review assumptions. 9. Continual monitoring and research into prospective regulatory or legislative changes that may impact the viability of the proposal. Early awareness of prospective changes to enable design / proposal to be adapted / alternative solutions sought.	SF	Will account for changes to capex in financial modelling.	HT	05/11/2020
5	**EXTERNAL EVENTS**	**Project affected by external events**	**COVID-19 restrictions** 1. Investor decision - COVID-19 restrictions delay commercial and political decision making **Others:** 2. Brexit - tariffs , exchange rates, supply chain, labour availability	1. Delays to / unable to complete development programme 2. Increased costs, changes to economic business case. 3. Uptake of household surveys is too low; sign ups to network too low 4. Higher project costs 5. Project delays due to labour and product availability	High	High	High	1. Maintain frequent comms with the board; key messages in plain English; confirm core roles and decision-making requirements 2. Monitor CCC processes as they move online / to virtual decision making. 3. Ensure community engagement plans reflect resident availability	HT	Control measures complete / ongoing.	HT	04/01/2021
6	**LEGAL/REGULATORY**	**Project is negatively impacted due to legal procedures**	1. A change in regulations / legislation drives changes in the design or development of the project. 2. NASF connection traverses third party land, thus necessitating wayleaves/easements	1. Programme delays, additional costs e.g. legal 2. Increased costs, changes to economic business case.	High	High	High	1. Continual monitoring and research into prospective regulatory or legislative changes that may impact the viability of the proposal. Early awareness of prospective changes to enable design / proposal to be adapted / alternative solutions sought. 2. NASF route to be determined through engineering workprogramme. 3. The Council to agree third party engagement approach.	SF	1. Reducing. We have re-routed the network to use the highways, and CCC's powers, to avoid third-party negotiations. When red line route is clear , appoint lawyer to do full land registry sweep . 2.BYES to produce GIS map of the route - land ownership and highways.	HT	02/12/2020
7	**PLANNING**	**Breach of planning conditions**	1. Lack of competence in the team 2. Failure to adhere to Environmental and Construction plans	1. Damage to the Council's reputation 2. BYES at risk of financial impact or prosecution 3. Project extention / delays	Medium	Medium	Medium	1. Project execution plan highlights all key conditions imposed on the project 2. All subcontractor contracts to include planning conditions as appendices / included in all tender procurements/ distributed as PCI 3. BYES site supervision / control to monitor operations onsite and identify any potential breaches	BYES			05/11/2020
8	**PLANNING**	**Failure to discharge pre-construction planning conditions**	1. Failure to prepare and produce suitable documentation 2. Failure to submit to the LPA ahead of construction commencement 3. Ambiguities in pre-construction conditions 4. Lack of resources within LPA to respond in timely fashion	1. Project extension / delays	High	Medium	Medium	1. Review pre-construction conditions and revert to LPA for clarification ahead of programme, if required 2. Appropriate financial and project resources to deliver	BYES			05/11/2020

TECHNICAL

No.	Element	Risk Description / Trigger		Impacts	Likelihood	Severity	Risk Level	Control Measure	Owner	Status Update Notes	By	On
1	**CUSTOMER SYSTEM/ UTILITIES**	**Customers are not able to connect**	1.Customer systems are incompatible with the heat network 2. Lack of knowledge of customer systems - assumptions on point of connection prove erroneous and actual requirements are far more onerous.	1. Additional costs associated with customer connections. 2. Programme delays. 3. Reputational damage.	Medium	Medium	Medium	1. Undertake surveys and inspections of individual customer properties during DPD to ensure customer system details and requirements are fully captured and incorporated into design. Appropriate peer design reviews to ensure that any errors or oversights are captured and remedied in design process 2. Ensure competent and qualified engineering resources are assigned to the project and that effective QA / PDR is in place to minimise the likelihood or impact of design / specification oversights.	BYES	1. Home surveys completed for ~75 properties between October 2020 and December 2020. Continued C19 restrictions make physical surveys difficult. It is hoped that this situation will change in early 2021. 2. Design team in place and mobilised. 3. Designers have been commissioned with specific requirement to allow for future connection to the heat network.	MM	04/01/2021
2	**HEAT NETWORK**	**Suboptimal design or geological issues make the project unviable**	1. Actual heat losses from network are far higher than that projected in the design. 2. Underground obstacles, such as services infrastructure, atypical materials, rivers/watercourses, artefacts result in suboptimal routing of heat network. 3. Green sands makes open loop GHSP unviable 4. Heat pump - Change of heat source alters project timelines and/or cost	1. Increased electricity demands to meet heat loads, increase in operational costs. 2. Additional heat network costs, higher operational costs (energy) 3. Open loop technical solution is not progressed 4. Additional funding required from BEIS; greater uncertainty in viability of project	Low	Medium	Medium	1. Appropriate and scrutinised specification of trenched pipework - manufacturer's thermal performance claims to be verified by operational field data, TUV test certs (or equivalent) and factory acceptance tests. Regular QA inspections throughout installation phase 2. Undertake subterranean utilities surveys, geotech surveys, archaeological assessments and hydrology surveys ahead of detailed design, to ensure that any issues are identified and addressed at the earliest opportunity (and pre-tender). 3. Confirm ground conditions via geological survey. Revisit closed loop as a potential technical solution. 4. Propose revised scope to BEIS for sign off and/or early application to Round 9.	BYES	1. M&E due diligence complete by Max Fordham 2. Designers have been supplied with relevant survey information to enable coordination. 3. Archaeology and desktop utilities surveys complete. Subterranean / GPR surveys commissioned and completed.	MM	04/01/2021
3	**SYSTEM CAPACITY**	**The energy centre or network is unable to meet the customer thermal requirements**	1. Lack of actual energy (heat) demand data for customer connections - baseline estimates are proven to be inaccurate / erroneous. 2. ~~Client~~ Customer is unable to provide requested energy data within required timescale. 3. General design or specification errors are made, resulting in the system failing to perform as intended. 4. Required capacity of mains gas, electricity or water supply is not available for connection in the vicinity of the proposed energy centre	1. Customer discomfort, complaints, reputation, withdrawal from the scheme. 2. System fails to deliver expected performance. 3. Additional costs associated with utilities connections, including network reinforcement, added infrastructure and wayleaves etc. Potential programme impact due to lead times in making connections. 4. Additional costs associated with adding capacity at a later date	Medium	High	Medium	1. Undertake surveys and inspections of individual customer properties during DPD to ensure customer system details and requirements are fully captured and incorporated into design. Appropriate peer design reviews to ensure that any errors or oversights are captured and remedied in design process 2. Install heat meters at selected properties during winter 2018 in order to obtain better clarity on heat demands from the various archetypes. Baselines to be developed using actual energy data and not benchmarks 3. Prioritise data acquisition. Continue with development using reasonable assumptions regarding capacity requirements, with a view to updating when information becomes available. 4. Ensure competent and qualified engineering resources are assigned to the project and that effective QA / PDR is in place to minimise the likelihood or impact of design / specification oversights. 5. Undertake connections applications to local Distribution Network Operator, Cadent / NG and Local Water Company at the earliest opportunity during DPD stage. Make suitable budget provisions in Technoeconomic Feasibility Study to account for potential connection costs.	BYES	1. BYES has completed Thermal Energy Baselines using different approaches for CCC's review 2. closed. Heat meters installed in winter 2018. Data used to inform baselines. 3. CCC has issued thermal baseline model for BYES use (in line with CIBSE CP1) 4. Complete. 5. Complete. Prioritising private wire to North Angle Solar Farm	HT	19/10/2020
4	**UTILITIES CONNECTION**	**Project cannot secure power connection to the energy centre**	1. North Angle Solar Farm connection is not technically feasible 2. NASF connection is prohibitively expensive 3. NASF connection introduces delays to project programme 4. NASF connection falls through and UKPN cannot connect affordably	1. Power connection not secured for the energy centre 2. Project financials not viable 3. Project cannot supply heat to customers on time	Medium	High	Medium	1. Commission feasibility study by appropriately qualified engineers for the connection of NASF to the project. 2. Engage CCC Rural Managers in identifying and securing routes across CCC-owned and third-party land. 3. Prepare design and specification documents as required to confirm technical scope and include in tender package. 4. Engage ICPs and UKPN in procurement / tendering for the works.	BYES	1. Feasibility study completed Nov. 2020. 2. Rural Manager is mobilised and working on potential route	MM	04/01/2021
5	**TECHNOLOGY**	**Unable to source technologies that meet the performance / economic requirements of the project**	1. The required heat pump specification is unconventional to the UK market - there are limited manufacturers that are able to offer the required technology.	1. Reliability / reputation, cost, commercial / legal.	Medium	Low	medium	1. Undertake soft market research into prospective heat pump manufacturers. Prepare detailed specification and confirm compatible technology upfront with prospective manufacturers. 2. Undertake pre-qualification of prospective manufacturers to ensure capacity to supply, stability of business, service in the UK etc. 3. Perform comprehensive tendering process to select preferred supplier.	BYES	1. Completed. 2. Completed. 3. Completed.	MM	04/01/2020
	HEALTH & SAFETY	**Design of the project gives rise to health, safety or environmental hazards in its construction and / or operation**	1. Failure to comply with CDM Regulations. 2. Lack of QHSE governance / inadequate resourcing during design development stages.	1. Cost, legal, reputation.	Low	High	High	1. Ensure that appropriate budget is made available for QHSE compliance during the design development stages. 2. CCC to fulfill obligations as CDM Client. 3. Ensure that Principal Designer has the required skills, knowledge and experience to fulfill CDM obligations.	CCC / BYES	1. Budget includes for Principal Designer role. BYES has commissioned BYES as PD. 2. Continued. 3. BYES has prepared a Skills Matrix for CDM purposes. 4. Design Risk Management System implemented to ensure	MM	04/01/2020

CONSTRUCTION

No.	Element	Risk Description / Trigger		Impacts	Likelihood	Severity	Risk Level	Control Measure	Owner	Status Update Notes	By	On
1	**CONNECTION**	**Customer connection is damaged or not properly installed during construction**	1. Inadequate / inaccurate design information on existing customer sites 2. Poor / inadequate designs 3. Improper installation methods 4. Negligent / poor quality workmanship 5. Unable to gain access to customer property to complete installation 6. Trenched Heating Mains - Unforeseen complexities in the construction of trenched services. 7. Unforeseen complexities in the construction of boreholes	1. Reputational, remedial costs 2. Programme delays, abortive costs 3. Programme delays, cost overruns	High	Low	Medium	1. Ensure that customer is in full agreement with proposed installation and positioning of equipment and pipe routes. Ensure that appropriate budget provisions are made for remedial works to property, including landscaping and interior decoration. 2. Ensure that suitable obligations are passed to the customers in terms of providing access to facilitate installation. Communicate dates for installation for each customer (utilise appropriate CRM software?) with sufficient notice - ensure that dates are adhered to (with back-up resources if required). 3. Undertake up-front surveys and tests to establish potential obstructions. Coordinate heat network layout to identify most practicable / economical routes. Identify any uncertainties and risks, make appropriate allowances in programme and cost to account for risks. 4. Ensure that all construction operatives follow design and workmanship requirements, are competent and qualified to undertake the works and are supervised / managed by competent BYES clerk of works.	CCC/BYES	1. Construction phase. Budget includes remedial works (w/o contingency).	HT	19/10/2020
2	**REGULATION**	**A change in regulations / legislation drives changes in the design or development of the project.**	1. BREXIT 2. Covid-19 3. A change in funding stream	1. Increased costs, changes to economic business case. 2. Changes to planning consent must be sought for any material amendments	High	High	High	1. Continual monitoring and research into prospective regulatory or legislative changes that may impact the viability of the proposal. Early awareness of prospective changes to enable design / proposal to be adapted / alternative solutions sought.	CCC/BYES	Senior level engagement with politicians and funders (Nov 2020). Revised financial model - options include: - revising plant operation - prioritising ASHP and NASF power - seek additional HNIP grant - pursue non-RHI model	HT	05/11/2020
3	**COMMUNITY**	**Disturbance and disruption caused by construction**	1. Noise/vibration, roadworks, dust, lighting etc.	1. Reputation and relationship with customers 2. Complaints	Medium	Medium	Medium	1. Develop Construction Environmental Management Plans and Risk Registers to identify and minimise potential nuisances, such as noise, vibration etc. 2. Share plans with community and ensure awareness of any residual disruption and confirm comfort with plans.	BYES	Construction phase.	HT	16/10/2020
4	**ENVIRONMENT**	**Environmental disaster occurs during construction phase.**	1. Leaching of hazardous fluid pollutants into ground 2. Uncontrolled release of airborne pollutants 3. Damage to natural habitat by construction activities	1. Legal, remedial costs and damage to local habitat 2. Programme delays	low	High	Medium	1. Ensure effective environmental controls, policies and procedures are in place on site. Commission Environmental Aspects & Impacts Assessment and develop and implement Construction Environmental Management Plan prior to construction.	BYES	Construction phase.	HT	16/10/2020
5	**HEALTH & SAFETY**	**Injury, illness or death caused in the construction of the project**	1. Insufficient safe systems of work in place on site / insufficient risk management practices 2. Insufficient management / supervision resources 3. Unforeseen or unidentified hazards 4. Incompetent workers 5. Unsafe designs 6. Insufficient security and segregation of construction sites	1. Legal costs 2. Programme delays 3. Reputational damage	low	High	Medium	1. Ensure effective H&S controls, policies and procedures are in place on site. Adopt BYES Safe Systems of Work, commit appropriate H&S personnel to project. Ensure CDM Principal Designer and Principal Contractor, Designer, Contractor & Worker duties are fully satisfied.	ALL	Construction phase.	HT	16/10/2020
6	**COMMISSIONING**	**Commissioning - Unavailability of heat / hot water during changeover**	1. Poor coordination and execution of commissioning	1. Reputation and relationship with customers, potential remedial costs	low	Medium	Low	1. Develop and implement phased commissioning strategy to prove system prior to switchover, minimise any risk of downtime for the end customer. Undertake commissioning outside of the heating season. Develop contingency plan to implement in the event of commissioning failure	BYES	Construction phase. Household surveys (Oct - Dec 2020) to identify any properties unable to connect or where commissioning may be challenging. Any outcomes to report here?	HT	05/11/2020
7	**SECURITY**	**Trespassing of construction site, theft or vandalism of construction materials**	1. Insufficient security and segregation of construction sites	1. Legal & remedial costs 2. Programme delays	Medium	Low	Low	Implement appropriate security controls, including hoardings, signage, locks, security lighting, smart water system and remotely monitored, CCTV Ensure adequate construction phase insurance is in place	BYES	Construction phase.	HT	16/10/2020
8	**PROGRAMME**	**Programme delays during the construction phase.**	1. A lack of coordination or availability of resources 2. UK borehole drilling firms are fully booked to 2021 3. Coronavirus outbreak reduces availability of solar PV panels 4. COVID-19 restrictions / unavailability of resources delay site mobilisation and build schedule 5. Site is inaccessible at the agreed time / date.	1. Programme delays, cost overruns 2. Cannot procure cost-effective PV system	Medium	High	High	1. Undertake comprehensive supply-chain vetting to establish resource capacity, commit resources as part of tender process, develop a realistic and functional delivery programme and project execution plan, ensure effective contractual terms to incentivise deliver against programme, employ project planners/coordinator and project managers to coordinate and monitor contractor works against programme, establish contingency plan to expedite programme in the event of delays. 2. Instigate wider soft market testing for other drill companies. 3. Instigate wider soft market testing for other PV suppliers. 4. Ongoing monitoring of government advice regarding personal and commercial activities as pandemic develops.	BYES	1 & 2. Supply chain now engaged through formal tendering process. 3. Closed. Priority is private wire connection to NASF.	HT	19/10/2020
9	**LEGAL ISSUES**	**Major legal issues delay the programme during construction phase**	1. Contractor or subcontractor breach / cessation leads to termination of contract mid way through the construction phase 2. Heat main is required to traverse third party land, thus necessitating wayleaves/easements 3. Highways Act required a statutory undertaker to adopt and manage a heat network	1. Programme delays. 2. Additional costs, e.g. legal 3. Cannot secure statutory permits to install the heat network	Low	High	Medium	1. Supply-chain vetting and tender selection to evaluate prospective contractor / subcontractor historic performances, capacity and capability. Develop a contingency plan that identifies alternative contractors, such that in the event of cessation or breach, the alternative may be commissioned to continue works. 2. Establish land ownerships of heat main routes set out in TEFS to determine any privately owned land. Seek no/low cost alternatives, or, where unavoidable, engage in initial dialogue with the owner prior to any detailed design or specialist survey work to confirm no objections. Otherwise, seek up-front legal advice on how best to proceed. 3. Commission Sharpe Pritchard to review Local Government powers for heat.	BYES CCC/BYES BYES	1. Construction phase. 2. Closing. Re-routing to lay pipework in the highways and leverage CCC powers. 3. The Council has powers under the Local Government Act 1976 section 11 to generate, distribute and sell heat to tis community and has statutory undertaking powers that cover highways.	HT	05/11/2020
10	**QUALITY**	**Installation works fail to achieve Employer's Requirements**	1, Poor workmanship 2. Substandard materials	1. Programme delays, cost overruns, poor performance in operation	Low	Medium	Medium	1. Implement proper and effective quality control procedures. Quality acceptance tests to be undertaken prior to handover of any works. Client / BYES to appoint clerk of works to monitor the works on site and confirm compliance with Employers' Requirements.	BYES		HT	05/11/2020

OPERATIONAL

No.	Element	Risk Description	Causes	Impacts	Likelihood	Severity	Risk Level	Control Measure	Owner	Status Update Notes	By	On
1	**AVAILABILITY**	**Failure of the system**	1. Heat network failure / leak, causing downtime of the system. 2. Energy Centre primary plant failure , causing downtime of the system. 3. Utilities supply failure	1. Customers left without heat supply whilst system is repaired, causing discomfort, complaints, reputational impacts.	Low	High	High	1. Appropriate specification of materials, resilience in design through local isolation and pipework layout arrangements, appropriate selection of competent and qualified installers, quality assurance inspections, integrated commissioning and testing, leak detection. 2. Undertake a single point of failure risk assessment on design and ensure appropriate back-up resilience is in place. Ensure that appropriate emergency call-out services are in place.	BYES	Operational risk. 1. Contingency planning meeting w/c 30/11/2020 - proposed messaging for the community to be circulated shortly.	HT	01/12/2020
2	**ENERGY PERFORMANCE**	**Failure to meet energy performance expectations**	1. Heat network pipework deteriorates faster than projected, early failure / end of life. 2. Heat pump's coefficient of performance is significantly lower than that projected in the energy model / business case	1. Increased electricity demands to meet heat loads, increase in operational costs.	Medium	Low	Medium	1. As above, review data captured for similar installations that have been in operation for several years. Review material composition, causes and rates of degradation to confirm accuracy of manufacturer's claims. 2. Selection of heat pump from a reputable company, with performance as a key factor for selection. Manufacturer claims to be supported by evidence of performance from similar installations. Factory acceptance tests and integrated commissioning required. Seek run hour warrantees. 3. Energy Performance of the plant and heat network to be covered by BYES performance guarantees.	BYES		MM	04/01/2021
3	**SYSTEMS PERFORMANCE**	**Failure to meet design performance requirements**	1. Equipment errors. 2. Design errors 3. Poor installation / commissioning workmanship. 4. Operational failures. 5. Change in customer requirements	1. Customer demands unsatisfied, leading to complaints, need to undertake temporary fixes at additional cost.	Medium	Medium	Medium	1. Ensure that appropriate factory acceptance testing and equipement in-situ testing is undertaken to evidence that the equipment is performing as per design. 2. Integrated commissioning and quality acceptance inspections to be performed to evidence that all aspects of the system has been installed to the required design specification. Seasonal monitoring to be undertaken to ensure that performance expectations are met under all operating conditions. 3. Ensure that O&M scope and requirements are fully captured and that appropriate resources / supply-chains are commissioned to undertake specialist maintenance activities.	BYES		MM	04/01/2021
4	**MAINTENANCE**	**Inadequate maintenance of equipment**	1. Maintenance Resources - A lack of local contractor resources to undertake specialist maintenance and servicing of the equipment. 2. Poor quality of service provided by BYES	1. Increased operational costs, longer maintenance downtimes, deterioration in systems performances and shortening of equipment lifespan.	Low	Medium	Medium	1. Early engagement with local prospective supply-chain partners. Consider training needs of local resources and incorporate training programmes into project. Allocate appropriate resources to the completion of O&M contracts, ensure suitable provisions for planned preventative maintenance and reactive maintenance, with KPI penalties for performance failures.	BYES		MM	04/01/2021
5	**LIFECYCLE**	**Early lifecycle failure of equipment**	1. Poor equipment specification 2. Poor maintenance of equipment 3. Improper operation of equipment	1. Increased operational cost. Potential unscheduled downtime.	Low	Medium	Low	1. Negotiate comprehensive and extended warranties for major equipment items wherever possible. Avoid contracting with less stable businesses for major equipment. 2. Ensure that PPM is in place in accordance with manufacturers requirements and that evidence of servicing is retained for future warranty claims. 3. Ensure that any changes to the operating strategies, unexpected events etc. are recorded and subject to authorisation by CCC. Major equipment suppliers to be notified where required, so as to	CCC/BYES		MM	04/01/2021
6	**MANAGEMENT RESOURCES**	**CCC fails to perform duties as owner / manager**	1. Insufficient budget 2. lack of suitable resources	1. Poor customer experience, complaints / reputation.	Low	Low	Low	1. Ensure that CCC 'owner operator' responsibilities are clearly understood and that suitable systems, processes and resources are in place. 2. Ensure that end customers are given appropriate instructions on contact details / methods.	CCC		LC	04/01/2021
7	**WARRANTY**	**Unable to access warranty for early equipment failure.**	1. Supplier ceased trading 2. Breach of Warranty Conditions 3. Supplier ignorent / unwilling to / slow to respond	1. Prolonged equipment downtime and loss of performance - reputation / revenue. Unplanned cost of replacement.	Medium	Medium	Medium	1. Ensure only stable and resilient supply-chain is used for major equipment items. 2. Ensure that warranty exclusions / conditions are clearly highlighted and that appropriate O&M regimes and contract terms are in place to protect against breach. 3. Ensure that warranty is fully enforceable by UK law	CCC		SG/MM	04/01/2021

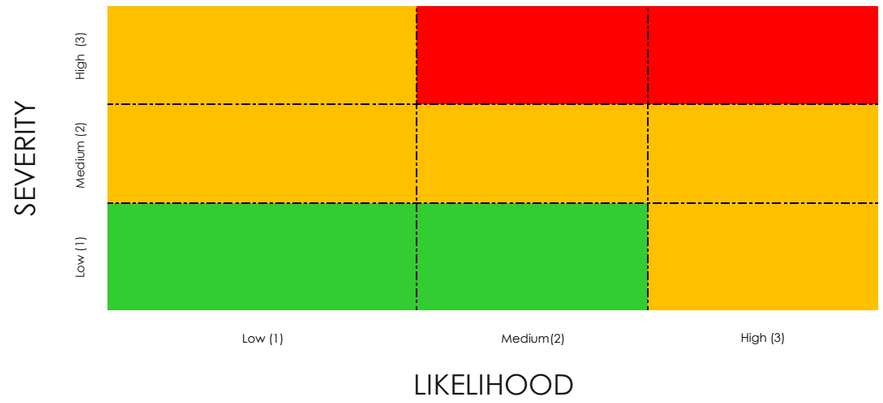
SEVERITY FACTOR

Severity Level	Impact Types						Severity Factor
	Quality	Environment / Community	H&S	Reputation *Adverse publicity*	Schedule	Cost	
Highly significant	Serious errors, misscalculations and wrong assumptions during the development and construction phase of the project causing that the project can't be delivered on time and on budget or the projected revenues or enviromental benefits not been delivered or make the project unviable.	Extensive damage to critical elements of local infrastructure (e.g. school, hospital, motorway, parks, lakes, biodiversity) causing prolonged disruption. E.g. realised environmetal hazradous material or material escape from the lanfill on Stangroud Site . Gas emission	Multiple or single fatalities and / or multiple incidences of permanent disability or ill-health. Recovery difficult or even impossible. Risk of prosecution from enforcement agencies.	Sustained adverse publicity in regional media and / or national media coverage. Extensive / prolonged recirculation via social media channels. Hostile interviews by Council Leader / Chief Exec. to be interviewed on national TV or radio. Possible resignation of senior officers and / or elected members. Total loss of public confidence.	Significant issues threaten entire project. Could lead to project being cancelled or put on hold.	Losses / costs incurred of more than 80% of budget. Not covered by insurance. Financial value: Over £TBC	3
Moderate	Some residents dissatisfaction but services restored before any major impacts. Less level impact based on above as well	Medium damage to local infrastructure (e.g. minor road) causing some disruption.	Moderate injury / ill-effects requiring hospitalisation.	A number of adverse articles in regional / social media mentioning CCC. Some recirculation via social media. Single request for senior officer / member to be interviewed on local TV or radio. Adverse reaction by Cambridgeshire residents in social media / online forums. Short-term reduction in public confidence.	Delays causing cost overun and reduction of potential benefits (Slippage causes delay to delivery of key project milestone but no threat to anticipated benefits / outcomes.)	Losses / costs incurred of 20% -80% of budget. Financial value: £TBC	2
Minor	Minor inconvenience for service users and staff. No impact on project delivery.	Limited effect on local infrastructure, communities or the environment.	Short-lived / minor injury or illness that may require First Aid or medication. Small number of work days lost. Services quickly restored.	Single adverse article in local media or specific professional journal that is not recirculated (e.g. through social media). Minimal adverse publicity reduction in the public confidence.	Minor delays but can be brought back on schedule within this project stage. Or it cant but doest have anticpated benefits No threat to anticipated benefits & outcomes.	No or minimal financial cost. Cost incresed <20%	1

LIKELIHOOD FACTOR

Frequency How often might it / does it happen	**Likelihood** Will it happen or not over the risk timescale	Uncertainty description	Likelihood Factor
This will probably never happen / recur	Less than 5% chance	**Low**	1
Might happen or recur occasionally	Around 25% chance	**Medium**	2
Will undoubtedly happen / recur, possibly frequently	Around 90% chance	**High**	3

RISK MAP



Annual Carbon Footprint Report 2019-20

To:	Environment and Sustainability Committee
Meeting Date:	14 January 2021
From:	Steve Cox, Executive Director, Place and Economy
Electoral division(s):	All
Forward Plan ref:	N/A
Key decision:	No
Outcome:	To enable monitoring of progress against our targets for reducing greenhouse gas emissions.
Recommendation:	Members are asked to accept the 2019-20 annual carbon footprint report as a record of the Council's greenhouse gas emissions in that year.

Officer contact:
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Post: Energy Manager
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Tel: 01223 729157

Member contacts:
Names: Cllr Joshua Schumann
Post: Chair
Email: joshua.schumann@cambridgeshire.gov.uk
Tel: 01223 706398

1. Background

1.1 Data has now been gathered on the Council's greenhouse gas (GHG) emissions for the financial year April 2019 to March 2020. This year 2019-20 was prior to the publication of the Council's Climate Change and Environment Strategy. The vast majority of the year was also prior to the COVID-19 global pandemic which changed ways of working for many people from March 2020 onwards.

1.2 In February 2020, the Council adopted a fourth corporate objective to deliver net zero carbon for Cambridgeshire by 2050, and in May 2020, Full Council approved the Council's Climate Change and Environment Strategy and associated Action Plan.

1.3 The Council's Climate Change and Environment Strategy contains a commitment to a number of targets, including reducing our 'scope 1' (direct) emissions by 50% by 2023 (compared to 2018 levels), reduce our 'scope 3' (indirect) emissions by 50.4% by 2030, and to deliver Government's net zero carbon target for Cambridgeshire by 2050. In order to monitor progress against these targets, it is necessary to measure the Council's carbon footprint each year.

1.4 The Action Plan commits the Council to publishing annual carbon footprint calculations to demonstrate progress, and also includes additional agreed actions to identify ways to improve the data provision for carbon footprinting, in order to enable greater accuracy, fill gaps and further expand the scope of what we can report on in future.

1.5 The full findings are presented in the attached report (Appendix A). As well as presenting the Council's organisational carbon footprint, the report also looks, separately, at the carbon footprint of the whole county, beyond the Council's own operations.

2. Main Issues

2.1. County-wide emissions. CO_2 emissions from the county of Cambridgeshire in 2018 (the most recent year of data available) were just over 4.5 million tonnes. This is a reduction of 1.8% since the previous year. This 4.5m tonnes does not include emissions of other, non-CO_2 GHGs such as methane (CH_4) or nitrous oxide (N_2O), which are not broken down by local authority area in the published statistics. Across the whole UK, CO_2 accounts for 81% of all GHG emissions. Last year's CUSPE report found that total GHG emissions (including all gases) for both Cambridgeshire and Peterborough combined, were 6.1million tonnes. Both of those figures exclude emissions from peatland, which are thought to be very large across the county, although the exact figure is currently unknown. Our action plan has identified that further research is required in this area.

2.2. Council's own emissions. CO_2 equivalent (CO_2e) emissions from Cambridgeshire County Council (as an organisation) were 206,579 tonnes in 2019-20, which includes indirect ("scope 3") emissions from our supply chain partners and contractors. This is very similar to the previous year (1% increase), which is reflective of the fact that the reporting year 2019-20 was prior to the implementation of the Council's Climate Change and Environment Strategy in May 2020.

2.3. In gathering the data for this report, some gaps were identified. There has been some improvement on this since the previous year, but there is more to do. The biggest gaps are

in our ‘scope 3’ (indirect) emissions, which accounts for the largest share, but is also where we have the least control, since much of the required data lies with other organisations.

2.4. The majority of the Council’s ‘scope 1’ (direct) GHG emissions is from burning gas and oil for heating buildings. This accounts for 1,403 tonnes carbon dioxide equivalent (“CO_2e”), out of a total of 2,240 tonnes CO_2e in scope 1. Gas consumption increased by 16% compared to the previous year, likely to be due to increased heating requirement because of more days with colder weather. Since this reporting year 2019-20 was prior to the commencement of our low carbon heating programme, we expect to see greater reductions of emissions from heating from 2021-22 onwards after the first projects will be completed.

2.5. Our gross ‘scope 2’ (electricity) emissions were 5,183 tonnes CO_2e. This is 10% lower than the previous year, despite the amount of electricity we used being about the same. The lower emissions is due to the UK electricity grid becoming greener (less coal and more renewables). However, the net emissions for scope 2 were zero, because the Council continues to purchase 100% renewable electricity through its supply contract. 61% of the Council’s electricity consumption is for street lighting.

2.6. Transport accounts for 10,606 tonnes CO_2e in 2019-20, the majority of which is in scope 3 (contractors’ vehicles and employees’ own vehicles) but a small amount is in scope 1 (CCC fleet vehicles). Employees’ business travel (mileage claims) in 2019-20 accounted for 1,803 tonnes CO_2e in scope 3. The number of miles travelled was lower than in 2018-19. Employee commuting is estimated at 5,155 tonnes CO2e, which is 13% lower than the previous year. This is based on the annual travel survey.

2.7. As the Council is the Waste Authority, treatment and disposal of waste from Cambridgeshire residents is responsible for a large share of our scope 3 (indirect) emissions. In 2019-20 this was 56,516 tonnes CO2e, a reduction of 1% compared to 2018-19.

2.8. Construction materials for building projects, mostly building new schools, accounted for the largest share (almost half) of all our emissions.

2.9. Some other scope 3 emissions are not included in this report as we do not have the data to calculate them. This is a problem common to many organisations, and for that reason it is common for organisations to report on scopes 1 and 2 only. However, for the purposes of greater transparency and accuracy, we have also reported all scope 3 emissions where known.

2.10. The Council is currently working on a project in partnership with University College London, funded by the Local Government Association through their innovation programme, to research ways to identify more scope 3 emissions in future through procurement mechanisms.

3. Alignment with corporate priorities

3.1 A good quality of life for everyone
There are no significant implications for this priority.

3.2 Thriving places for people to live
There are no significant implications for this priority.

3.3 The best start for Cambridgeshire's children
There are no significant implications for this priority.

3.4 Net zero carbon emissions for Cambridgeshire by 2050
The report above sets out the implications for this priority in all paragraphs. This entire report is about how we are taking the first steps towards net zero with our own emissions, as well as using our influence to drive down emissions across the county where we can.

4. Significant Implications

4.1 Resource Implications
There are no significant implications within this category. However, some staff time will be needed to further improve data collection in future.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications
There are no significant implications within this category. However, separately, we are exploring whether we may be able to improve data collection on emissions through future procurements.

4.3 Statutory, Legal and Risk Implications
There are no significant implications within this category.

4.4 Equality and Diversity Implications
There are no significant implications within this category.

4.5 Engagement and Communications Implications
There are no significant implications within this category.

4.6 Localism and Local Member Involvement
A cross-party Member Advisory Group was involved in developing the Climate Change and Environment Strategy.

4.7 Public Health Implications
There are no significant implications within this category.

Have the resource implications been cleared by Finance? Yes
Name of Financial Officer: Sarah Heywood

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement? Yes
Name of Officer: Gus de Silva

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law? Yes
Name of Legal Officer: Fiona McMillan

Have the equality and diversity implications been cleared by your Service Contact? Yes
Name of Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications? Yes
Name of Officer: Bethan Griffiths

Have any localism and Local Member involvement issues been cleared by your Service Contact? Yes
Name of Officer: Emma Fitch

Have any Public Health implications been cleared by Public Health Yes
Name of Officer: Kate Parker / Iain Green

Source documents

- Cambridgeshire County Council Climate Change and Environment Strategy
- UK greenhouse gas emissions national statistics
- UK local authority carbon dioxide emissions national statistics
- UK Govn ernment carbon conversion factors for company reporting
- CUSPE 2019 Net Zero Cambridgeshire report
- Appendix A – CCC Carbon Footprint Report 2019-20

Carbon Footprint Annual Report 2019-20 Appendix

Contents

Introduction

This is our annual carbon footprint report for the period April 2019 to March 2020.

We published our Climate Change and Environment Strategy in May 2020, so this report covers emissions from the period prior to the Strategy's launch. Many of the actions and projects now underway as a result of our Climate Change and Environment Strategy have not yet had time for the results to take effect, but will do so over the coming years, and so we expect to see greater emissions reductions in future, especially from 2021-22 onwards.

This report examines both the carbon footprint of Cambridgeshire County Council as an organisation, and that of the geographical area of Cambridgeshire as a whole.

Cambridgeshire County Council's Carbon Footprint

The carbon footprint of Cambridgeshire County Council (as an organisation) comprises emissions that occur as a result of the Council's own operations. We have calculated the carbon footprint of the County Council's own operations for the financial year 1 April 2019 to 31 March 2020.

The Council's own carbon footprint has been calculated in line with the UK Government's Environmental Reporting Guidelines for Voluntary Greenhouse Gas Reporting (1). For further details on the methodology, scope, boundary of reporting and exclusions, please see section 0 below.

1.1 Key findings

Scopes 1 and 2

We found that our scopes 1 (direct) and 2 (purchased electricity) emissions amounted to **7,623 tonnes CO_2e** (gross). This includes emissions from gas and oil for heating our buildings, electricity for our buildings and street lighting etc., emissions from fleet vehicles, and fugitive emissions from air conditioning units. The breakdown of this is shown in Figure 1. The largest share was for purchased electricity. This shows gross emissions, before any reductions or offsets.

Our scope 1 and 2 emissions together were 1% lower than the previous year. This is mainly due to emissions from electricity (scope 2) being 9% lower this year, despite using a similar amount of electricity, as the national grid becomes greener with more electricity generated from renewable sources. Scope 1 emissions are higher than the previous year, however this is partly due to having more accurate and more complete data than the previous year, and partly due to increased gas usage in 2019-20 because of colder weather.

Net GHG emissions for scopes 1 and 2, after taking into account purchasing of 100% renewable electricity, were reduced to **2,440 tonnes CO_2e**. The breakdown of this is shown in Figure 2 below, with the largest share coming from gas to heat our buildings.

We have started a programme of low carbon heating projects in order to reduce gas and oil usage in future.

All Scopes

By also including those ‘scope 3’ (indirect) emissions sources for which we have data, the total amounted to **206,617 tonnes** gross CO_2e. This is a 1% increase compared to the previous year, which is mainly due to having more accurate and more complete data.

The breakdown of all these known emissions sources is shown in Figure 3 and there is also a more detailed breakdown in Table 1 on page 7.

The vast majority (96% or **198,956 tonnes** CO_2e) of gross emissions were scope 3 (indirect). This includes transport emissions from vehicles not under Council control (such as employee’s own cars or contractors’ vehicles), emissions from county waste disposal and treatment, emissions from Local Authority maintained schools’ energy usage, agricultural emissions from the County Farms estate, and emissions associated with purchased goods and services delivered by third parties, such as capital construction works.

Importantly, some additional emissions associated with purchased goods and services are not included, because we do not have the relevant data to calculate these. However, this could potentially account for a significant quantity of additional unknown scope 3 emissions. Our action plan includes steps to identify more of this data in future.

A full list of what has been included and what is excluded, together with reasons for exclusions, is in section 0 below.

Net GHG emissions for all scopes, after deducting the emissions offset through our renewable electricity generation assets and for purchasing 100% renewable electricity, were **198,025 tonnes** CO_2e.

Outside of scopes

There were 37 tonnes CO2e emissions outside of scopes, from biofuels.

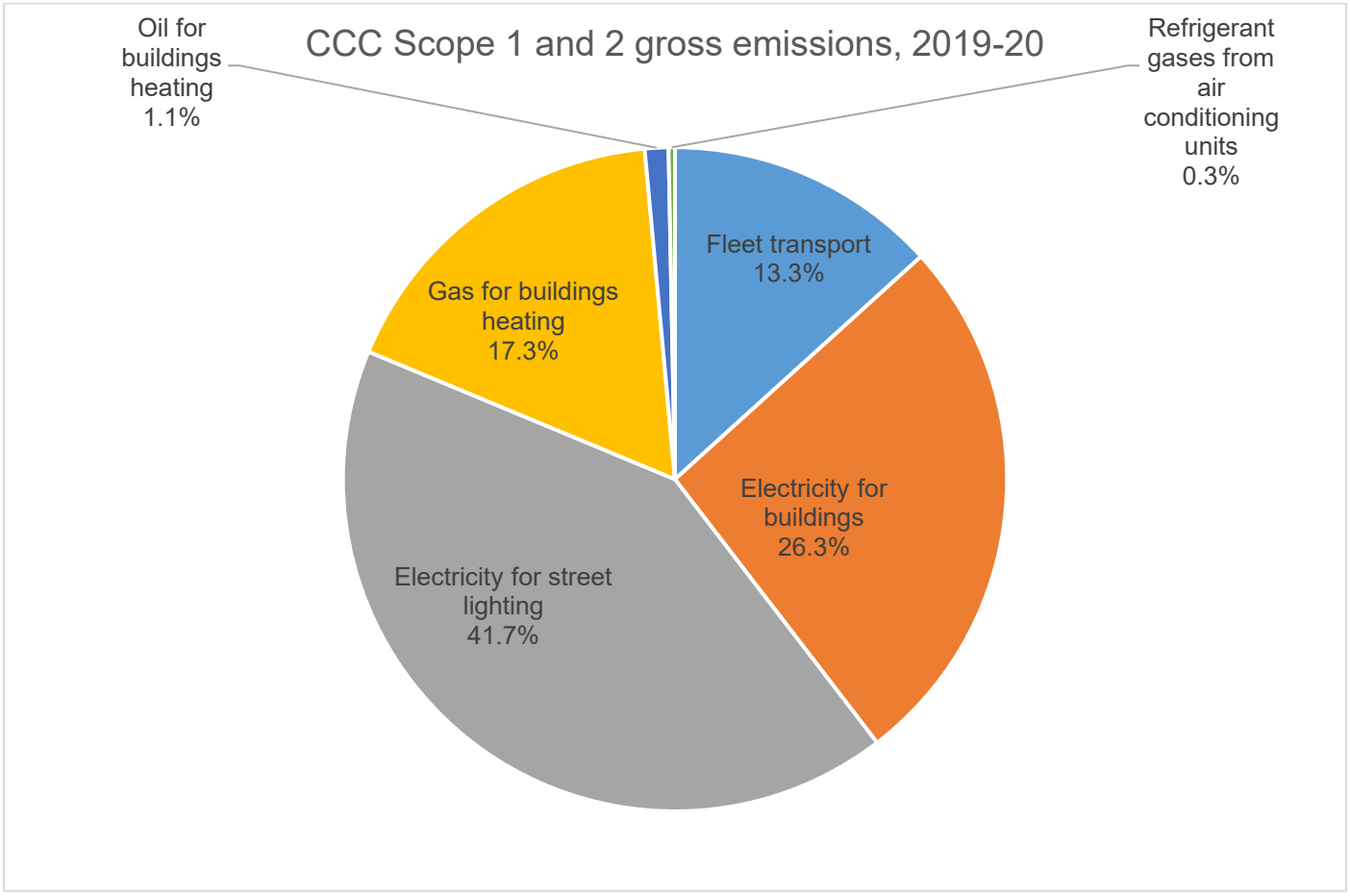

Figure 1: CCC Scopes 1 and 2 gross emissions sources, 2019-20

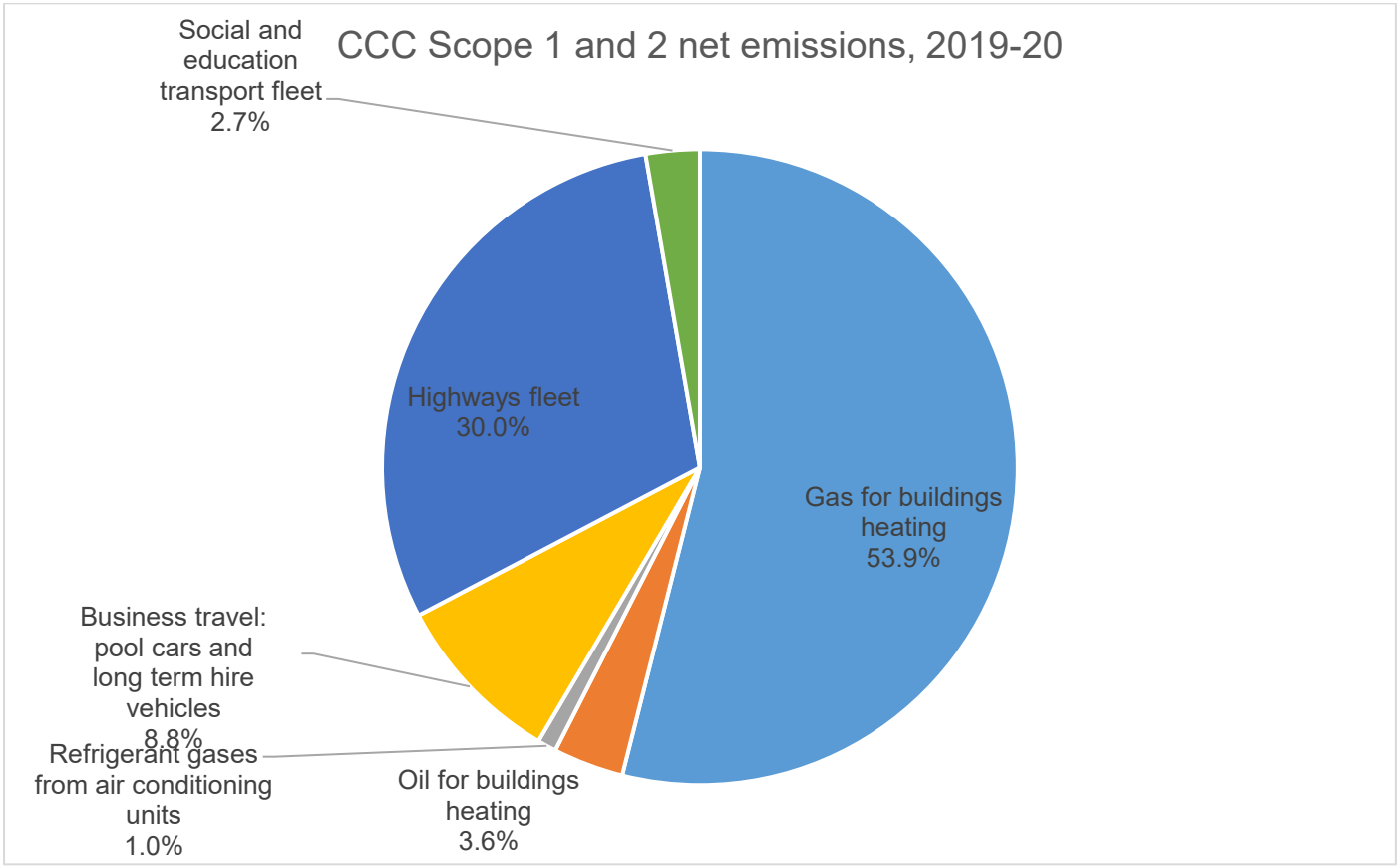

Figure 2: CCC Scopes 1 and 2 Net emissions sources

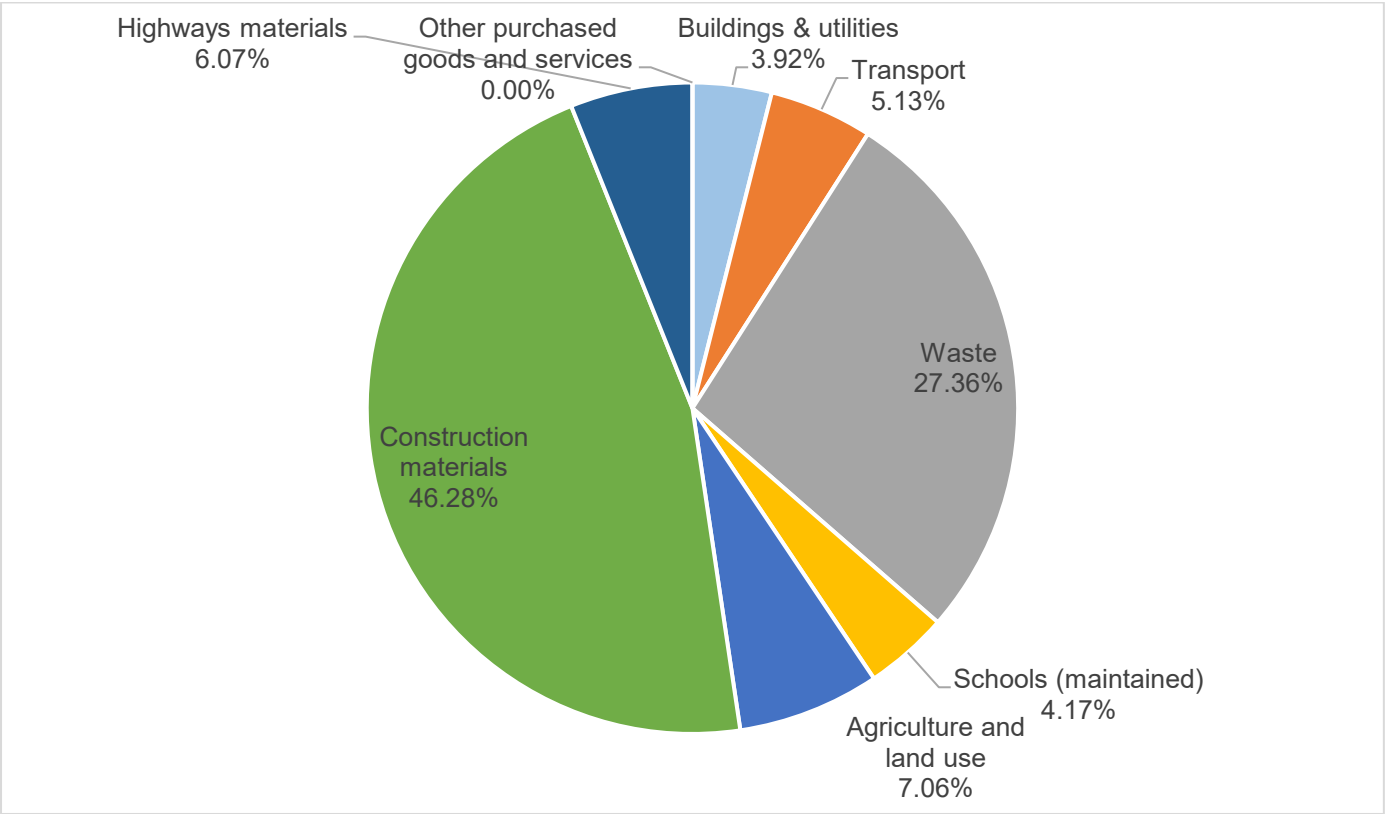

Figure 3: CCC Carbon footprint 2019-20, by source (All scopes)

1.2 Full Breakdown

Table 1: Cambridgeshire County Council Greenhouse Gas emissions 2019-20, breakdown by source and scope

Greenhouse Gas Emissions (Tonnes CO_2e)	Scope 1 (Direct)	Scope 2 (Electricity indirect)	Scope 3 (Other indirect)	Total (Tonnes CO_2e)	Change year on year
Buildings & utilities	**1,427**	**5,183**	**1,497**	**8,108**	**-8%**
Electricity for CCC buildings & sites	0	2,005	474	2,478	-6%
Electricity for street lighting	0	3,179	751	3,930	-13%
Gas for CCC buildings	1,316	0	171	1,487	+16%
Oil for CCC buildings	88	0	18	106	-4%
Refrigerant gases (from air con units)	24	0	0	24	-80%
Water supply and sewerage treatment	0	0	84	84	-43%
Transport	**1,013**	**0**	**9,593**	**10,606**	**-5%**
Highways services vehicles	731	0	241	903	+43%
Social and education transport	67	0	341	295	-32%
Business travel	215	0	1,887	2,102	-15%
Subsidised public bus routes	0	0	876	876	+33%
Employee commuting (estimated)	0	0	5,155	5,155	-13%
Waste contractor transport	0	0	1,093	1,093	-5%
Schools (maintained)	**0**	**0**	**8,616**	**8,616**	**-3%**
Electricity	0	0	3,198	3,198	-13%
Gas	0	0	4,480	4,480	-3%
Oil	0	0	804	804	+43%
Other heating fuels e.g. LPG	0	0	133	133	+546%
Waste	**0**	**0**	**56,516**	**56,516**	**-1%**
CCC site waste	0	0	151	151	+12%
Highways waste	0	0	54	54	n/a
County waste disposal to landfill	0	0	37,785	37,785	-1%
County waste recycling, composting	0	0	18,526	18,526	-2%
Agriculture and land use	**0**	**0**	**14,585**	**14,585**	**0%**
Agriculture (estimated)	0	0	14,585	14,585	0%
Land use, land use change and forestry	*0*	*0*	*Unknown*	*Unknown*	*n/a*
Purchased Goods and Services	**0**	**0**	**108,149**	**108,149**	
Construction materials for building works (estimated)	0	0	95,603	95,603	-2%
Materials for highways resurfacing, transport infrastructure projects etc.	0	0	12,546	12,546	+18%
All other purchased goods and services	0	0	*Unknown*	*Unknown*	*n/a*
Total (Gross)	**2,440**	**5,183**	**198,956**	**206,579**	**+1%**
Reductions					
100% renewable electricity tariff	0	-5,183	0	-5,183	-9%
Electricity generation at solar assets	0	0	-3,371	-3,371	-10%
Net Total	**2,440**	**0**	**195,585**	**198,025**	**+1%**

1.3 Buildings and utilities

Figure 4: Shire Hall, Cambridge

Buildings and utilities are responsible for 87% of all scope 1 and 2 emissions, and account for **8,108 tonnes CO_2e**. This is a reduction of 8% compared to last year.

The biggest source of *gross* greenhouse gas emissions within the buildings and utilities category is electricity usage, accounting for 5,183 tonnes CO_2e in scope 2 (including both buildings and street lighting). It also accounts for another 1,224 tonnes for transmission and distribution losses, and 'well to tank' (WTT) in scope 3. The Council purchased **20,279,057 kWh of electricity** in 2019-20, 61% of which was for street lighting. This is similar to the amount purchased last year. However, the associated emissions from electricity are nearly 10% lower than last year, due to the UK electricity grid being powered more by renewables and less by coal.

However, all of the gross CO_2e for scope 2 is offset to zero in the *net* emissions, by purchasing 100% renewable electricity through our supply contract.

The next biggest source of GHG emissions related to buildings and utilities is gas, which accounts for 1,316 tonnes CO_2e, plus 171 tonnes for 'well-to-tank' emissions. Gas is currently used to heat the majority of our buildings. The Council purchased **7,157,250 kWh of mains gas** in 2019-20. This is 16% more gas than last year, due to an increased requirement for heating, likely to be because of more days of colder weather. Shire Hall, the Council's headquarters in Cambridge (pictured in Figure 4), was the building with the highest usage of gas.

Oil, although more carbon intensive than gas, accounts for only 88 tonnes CO_2e, (plus 18 tonnes for WTT) because there were only four CCC sites that use oil. These used **354,763 kWh of heating oil** in 2019-20. This is 4% lower than last year.

Water and sewerage services for our buildings accounts for 84 tonnes CO_2e, based on an estimated annual water consumption of 110,594 cubic metres, 90% of which is assumed to return to the sewers. This is a 43% reduction compared to last year, due to more accurate data on water consumption becoming available this year.

Finally, leakage of refrigerant gases from air conditioning units is estimated at 24 tonnes CO_2e. This is 80% lower than reported last year, due to more accurate data becoming available this year.

This section does not include school buildings, which have been counted separately.

1.4 Transport

Figure 5: Some of CCC's Highways gritting fleet

Transport accounts for **10,606 tonnes CO_2e**, including 1,427 tonnes (42%) of scope 1 emissions. The majority of transport emissions are scope 3 because they are from vehicles not under the control of the Council.

Of the scope 1 (direct) transport emissions, the largest share was from our Highways services, accounting for 731 tonnes CO_2e. This includes the road gritters pictured in Figure 5. Highways transport also accounted for 241 in scope 3.

Also in scope 1 transport is the social and education transport fleet, which produced an estimated 67 tonnes CO_2e emissions. **Other social and education transport** (including volunteers driving, some contracted out social care journeys and **home to school transport** by bus and taxi) accounted for 341 tonnes CO_2e in scope 3. Some of these journeys are estimated.

Business travel (including pool cars, vans and other fleet vehicles) accounted for 215 tonnes CO2e in scope 1, and an additional 1,887 tonnes CO2e in scope 3, which includes flights and travel by public transport. This includes emissions associated with business travel in employees' own vehicles

(over 5 million miles in 2019-20) and travel by public transport (trains, buses and taxis), flight and hotel stays. Journeys by public transport are estimated due to incomplete data.

Scope 3 transport also covers vehicles not under the Council's control. The largest part of the transport section is the scope 3 (indirect) from our 3,978 **employees[1] commuting from home to work**, which has been estimated at 5,155 tonnes CO_2e. According to the 2019 staff travel survey, 77% of commuting miles were made by car or motorbike (including car sharing), with 17% of miles travelled by public transport. 1% of commuting miles were walked and 5% cycled. This estimate is based on 504 responses to the survey and has been extrapolated based on the total number employees and assuming an average of 47 weeks worked per year. However, the relatively small sample size of the survey responses means that this is only a rough estimate.

Waste transport by our waste management contractor Amey accounted for 1,093 tonnes CO_2e. This includes travel for servicing the containers at our nine Household Recycling Centres, and bulk haulage of waste from the waste transfer stations at Alconbury and March to treatment sites such as Waterbeach. (It does not include household waste collection, which is the responsibility of the City/District Councils.)

Although the Cambridgeshire and Peterborough Combined Authority is the Transport Authority responsible for provision of public transport, they have delegated this responsibility back to Cambridgeshire County Council for 2019-20. We have therefore included the transport undertaken by passengers on those **public bus routes** which are subsidised by the Transport Authority, as a Scope 3 emissions source here, accounting for 876 tonnes CO_2e. There were 534,712 such passenger journeys in 2019-20, 40% more than the previous year, across 51 bus routes. It is important to note that had these passenger journeys been made by car, total emissions would have been much higher (although outside of the Council's total).

Travel by contractors other than those mentioned above was not included due to not having access to this data.

1.5 Maintained schools

Schools emissions (which are all counted as scope 3) for all the Local Authority maintained schools in Cambridgeshire account for 8,616 tonnes CO_2e. The largest share of this is 4,480 tonnes CO_2e from **mains gas**, followed by 3,198 tonnes CO_2e from **electricity**, and 804 tonnes CO_2e from **heating oil**.

We do not currently have any data for schools' water and sewerage services or air conditioning gases in schools.

Academy schools are not included in these figures since these are not under the Council's control.

1.6 Waste

Waste accounts for the second largest share (27%) of our known emissions, at 56,516 tonnes CO_2e.

The vast majority of this (estimated at 56,311 tonnes CO_2e) is due to the Council's statutory responsibility as the Waste Authority for **treatment and disposal of waste** from Cambridgeshire

[1] Number of employees as at 30 September 2019, mid-way through the financial year 2019-20.

residents. In 2019-20 there were 317,665 tonnes of waste collected from both the household kerbside collections and the Council's nine Household Waste Recycling Centres. Of that, 45% went to landfill, whilst 55% was either composted or recycled. Note that waste collection is the responsibility of the City and District Councils, therefore transport of waste is not included in these figures, whereas treatment and disposal is the responsibility of the County Council and is included.

The remainder of the waste category is from the waste generated at the Council's own sites (249 tonnes of general waste, 180 tonnes mixed recycling and 55 tonnes of confidential waste paper, together accounting for 151 tonnes CO_2e emissions).

1.7 Agriculture and land use

Agricultural emissions from the County Farms estate are estimated at 14,585 tonnes CO_2e, or 7% of all known emissions in the Council's total carbon footprint. The vast majority of the County Farms estate is cropland, with a small area allocated to livestock.

Other emissions from land use, land use change and GHG removals from forestry have not been included, because we do not have the relevant data.

1.8 Purchased goods and services

The largest share (46%, or an estimated 95,603 tonnes CO_2e) of our carbon footprint is from **materials for construction or building works**. This comprises of emissions associated with extraction/mining, production/manufacture and transportation of materials to the point of purchase. The majority of construction works was building of new schools. Other works include renovations and maintenance works to our assets.

Materials for **Highways** work, including resurfacing schemes and highways services works, contributed an estimated 12,546 tonnes CO_2e.

Emissions from other purchased goods and services are unknown. This includes:

- Social care provision (other than our own buildings and staff travel);
- Legal, consultancy, insurance, pensions, investments, banking, telecommunications, post and other business services (other than our own buildings and staff travel);
- Education services;
- Office machinery, IT equipment, furniture and the like;
- Food and drink;
- Other goods and services not mentioned elsewhere.

Since the emissions data for these goods and services lies with other organisations it is more difficult to collect the relevant data. However, we are continually working to improve this.

1.9 Reducing our carbon footprint

There are two reasons for the difference between gross and net emissions; a reduction of 8,555 tonnes CO_2e.

Firstly, because we buy electricity generated from 100% renewable sources, although the gross emissions for electricity (based on grid-average carbon intensity) are 5,183 tonnes CO_2e, the net emissions (based on the supplier fuel mix for the tariff we purchase) are zero.

Secondly, our solar assets including the 12MW solar farm in Soham generated enough electricity to offset 3,371 tonnes CO_2e in 2019-20, which is enough to power more than 3000 homes.

Cambridgeshire County Council also already has several other key measures in place to reduce our gross carbon footprint and help mitigate against climate change. These include a range of energy efficiency projects across our property portfolio, such as on-site renewable generation assets (rooftop solar PV), Building Energy Management Systems (BEMS), and installation of LED lighting.

This year we are also starting a programme of low carbon heating works, which will see our scope 1 carbon footprint reduce over the next few years.

Without these projects, the Council's carbon footprint would have been higher. However, we recognise that there is more work to do. This is set out in our Climate Change and Environment Strategy and Action Plan (published May 2020).

3. Methodology

A carbon footprint is a measure of the greenhouse gases (GHGs) emitted into the atmosphere from sources in a specified region or organisation. The most common GHG is carbon dioxide (CO_2). Emissions of other GHGs such as methane (CH_4) or nitrous oxide (N_2O), are measured in 'carbon dioxide equivalent' (CO_2e), which takes into account the different global warming potential (GWP) of different gases. Quantities of GHGs are multiplied by their GWP to give results in units of carbon dioxide equivalent (CO_2e).

Different activities emit different gases, for example, burning fossil fuels releases carbon dioxide, methane and nitrous oxide into the atmosphere.

Nationwide, emissions of CO_2 make up 81% of GHG emissions, with the remainder from methane (11%), nitrous oxide (5%) and fluorinated gases (3%), when weighted by GWP (2), as shown in Figure 6.

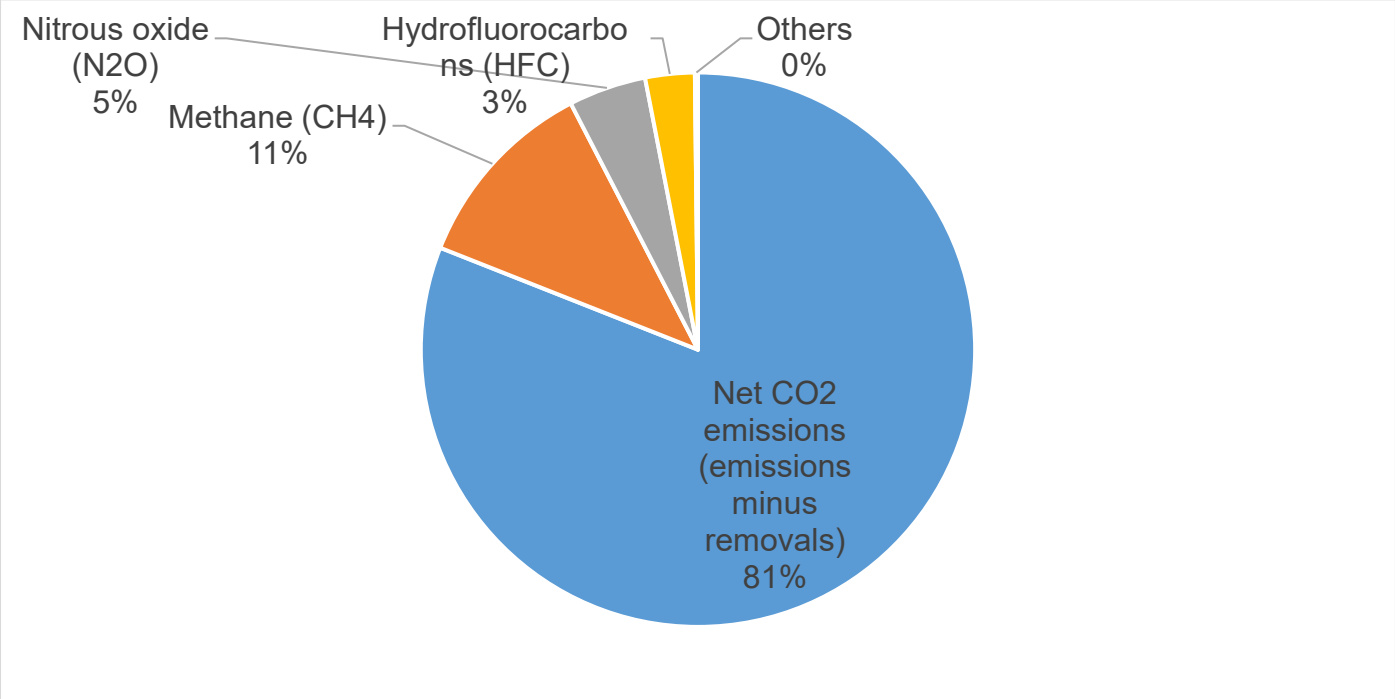

Figure 6: UK-wide Greenhouse Gas Emissions, 2018, by type of gas (tonnes CO_2e)

The Council's own carbon footprint has been calculated in line with the UK Government's Environmental Reporting Guidelines for Voluntary Greenhouse Gas Reporting[2], which is based on internationally-recognised standards from the World Resources Institute and World Business Council for Sustainable Development: the GHG Protocol Corporate Accounting and Reporting Standard, and the GHG Protocol Scope 3 standard.

Broadly, the methodology used was as follows:

1. Collect data on all activities under Cambridgeshire County Council control that emit GHGs (e.g. energy used, miles travelled, materials purchased). Actual data has been used wherever it is available.

[2] 2019 Environmental Reporting Guidelines, Chapter 3

2. Assumptions and estimates are only used where actual data was not available. Some activities have been excluded in cases where there was no data available and no basis upon which to estimate. Where this is the case, this is clearly stated below.
3. Convert data to metric tonnes of carbon dioxide equivalent (CO_2e), to calculate gross emissions using appropriate carbon conversion factors.
4. Note actions taken to reduce emissions (e.g. green energy tariff, solar generation), then also report net emissions.

The reporting period is the financial year 1 April 2019 to 31 March 2020.

The carbon conversion factors used for this reporting period are the 2019 UK Government published carbon conversion factors, except where there is no appropriate emissions factor given, or a more accurate conversion factor is available.

1.10 Scopes

Emissions-releasing activities are classified into three groups known as scopes. These are defined in the GHG Protocol Corporate Standard, and are described in Table 2 below.

Table 2: Scopes

Scope	Application to organisational carbon footprints	Application to geographical area carbon footprints
Scope 1 (Direct)	Emissions that occur directly from sites or assets owned or controlled by the organisation (e.g. gas boilers at own premises, fleet vehicles).	Emissions that occur within the boundary of the area being reported (e.g. houses, offices, factories, and roads within the County).
Scope 2 (Energy indirect)	Emissions from purchased electricity, heat or steam.	Emissions from electricity that is used within the area being reported.
Scope 3 (Other indirect)	Emissions that occur due to the organisation's activities / products / services, but at assets not owned or controlled by that organisation (e.g. travel in employee-owned vehicles or public transport, purchased goods and services).	Emissions from imported goods or services – i.e. used within the area being reported, but produced elsewhere.

Activities in all three scopes have been included in this report. However, Scope 3 emissions are more difficult to account for, because the required data often lies with other organisations. As a result, there is a higher degree of estimation in the scope 3 categories.

Carbon dioxide produced from biologically-sequestered carbon, e.g. from the combustion of biomass for electricity and / or heat generation, is not included in either scopes 1, 2, or 3. This is because the carbon dioxide would have been emitted anyway when the plants - from which the biomass is derived - decayed naturally at the end of their life. However, two other GHGs – nitrous

oxide and methane – are commonly emitted when biomass is combusted. These would not be emitted during natural decay and any nitrous oxide or methane emissions from biomass / biofuel consumption is included in the emissions under the three scopes. This is the approach generally taken in international accounting standards.

1.11 Boundary of Reporting, and Data Sources

All activities under the operational control of Cambridgeshire County Council are in scope, including those outsourced to third parties in cases where the overall control or responsibility still lies with the County Council.

A complete list of emissions sources included is shown below in Table 3.

Table 3: CCC Emissions Sources Included

Area	Activity	Methodology / Data source	Accuracy / Confidence level
Buildings and utilities	Gas burned for heating and hot water at CCC-controlled buildings	Usage data from utility bills	High
Buildings and utilities	Oil burned for heating and hot water at CCC-controlled buildings	Usage data from utility bills	High
Buildings and utilities	Electricity used at CCC-controlled buildings	Usage data from utility bills	High
Buildings and utilities	Electricity used for CCC street lighting, traffic signals and similar	Usage data from utility bills	High
Buildings and utilities	Refrigerant gases leakage from air conditioning units in CCC-controlled buildings	Based on leakage assumed from top-ups at servicing, applied to CCC list of A/C units, type of refrigerant gas and capacity.	High
Buildings and utilities	Water supply and wastewater collection and treatment	Usage data from utility bills. Some of this is estimated.	Medium
Buildings – maintained schools	Gas burned for heating and hot water at Cambridgeshire schools, where purchased through ESPO.	Gas usage data. Some schools will not have gas data because they do not use any gas, for example those with oil heating. A small number of schools we do not have data for.	Medium
Buildings – maintained schools	Electricity used at Cambridgeshire schools, where purchased through ESPO.	Electricity usage data.	High
Buildings – maintained schools	Oil and LPG used for heating at some Cambridgeshire schools.	Heating fuels usage data provided by the schools.	Medium
Transport	Travel in CCC pool cars. Travel in hire cars.	Data from a combination of mileage reports for pool cars and invoices for hire cars. Based on miles travelled and type of car where known.	High

Area	Activity	Methodology / Data source	Accuracy / Confidence level
Transport	Social and education transport in own fleet. Social and education transport by contractors (including home to school transport). Social and education transport by volunteer drivers.	Data from a combination of fuel card reports for some vehicles and estimated mileage for others. Fuel consumption data and type of fuel is used where known. Actual mileage records used if no fuel usage data available. Estimated mileage used if neither fuel usage nor actual mileage available.	Medium
Transport	Highways maintenance vehicles. Gritting fleet. Libraries vehicles.	Data from fuel usage (covering most highways vehicles) and estimated mileage for others (mileage used only where fuel usage is unknown).	High
Transport	Employee travel on CCC business in own vehicles	Data from miles claimed on employee expenses system.	High
Transport	Travel by public transport incl flights, trains, buses and taxis, where known	Currently only have partial data on this. Some train and bus travel estimated from spend.	Low
Transport	Hotel stays on CCC business	Currently only have partial data on this. Estimated from spend.	Low
Transport	Subsidised public bus routes	Responsibility of the C&P Combined Authority, delegated back to CCC. Estimated based on routes and passenger numbers data. Total route distance calculated from maps and assumed that average passenger travels 50% of total route distance.	Medium
Transport	Employee home to work commuting	Estimated based on annual staff travel survey in October. A sample of employees provided detailed information on their modes of travel and distance travelled for one week. Assumed this was representative of all employees and based on a typical week. Extrapolated to all employees and assumed working 47 weeks per year.	Low
Transport	Waste transport	Data provided by Amey on litres of diesel used.	High
Waste	Waste produced from CCC sites – general waste, recycling and confidential paper waste	Data from waste transfer notes / invoices.	High
Waste	Disposal / treatment of Cambridgeshire waste (as the statutory waste authority)	Based on waste volumes collected by all the City and District Councils in Cambridgeshire, and from all of the Household Waste Recycling Centres in Cambridgeshire, and proportions of waste recycled, composted and landfilled. Landfill gas emissions modelled using same method as CUSPE report (3), applied to updated data set.	Medium

Area	Activity	Methodology / Data source	Accuracy / Confidence level
Agriculture and land use	County farms / rural estates land use	Estimated based on area of land used for livestock, number of cattle, number of sheep, and area of land used for crops, with UK average GHG emissions rates for these uses (based on UK GHG inventory) applied. Assumed to be the same as previous year.	Low
Purchased goods and services	Construction and buildings works	Inventory of each material used and quantity (tonnes) data from project information and/or capital works contractors (where available). Materials used multiplied by the relevant conversion factors for each material. This data was available for the majority of the total spend on capital works, with the remaining spend assumed to have a similar composition of materials and emissions estimated on a pro rata basis.	High
Purchased goods and services	Highways works	Inventory of each material used and quantity (tonnes) data from project information and/or capital works contractors (where available). Materials used multiplied by the relevant conversion factors for each material. Data provided by our highways contractor (Skanska) for the works they did on our behalf.	High

1.12 Exclusions

The following activities have been excluded from this carbon footprint calculation:

Table 4: Exclusions

Area	Activity	Reason for exclusion
Buildings and utilities	Diesel used for on-site generators	No data currently available. Unable to estimate. Expect this to be very low.
Buildings and utilities	Energy used at sites outside of CCC control e.g. space in a shared building, third party premises, and CCC-owned sites let to commercial or private tenants.	We do not have access to this data.
Buildings and utilities	Biomass	There are currently no biomass facilities at any CCC sites or maintained schools.
Schools	Gas used at those schools that do not purchase energy through ESPO.	We do not have access to this data.
Schools	Electricity used at those schools that do not purchase energy through ESPO	We do not have access to this data.
Schools	Oil and other heating fuel data for some schools	We only hold partial data for heating fuels used at schools.
Schools	All data for Academy schools.	These schools are outside of Council control.
Transport	Travel by public transport other than that included in scope above.	We do not have access to this data.
Transport	Other travel by third parties, contractors and suppliers (other than those mentioned in scope)	We do not have access to this data.

Area	Activity	Reason for exclusion
Waste	Other waste streams from CCC sites not mentioned in scope above e.g. batteries, WEEE, skip waste, green waste.	We do not have access to this data.
Waste	Collection and transport of Cambridgeshire waste	This is not CCC's responsibility.
Waste	Transport, disposal and treatment of private / third party commercial waste	This is not CCC's responsibility.
Purchased goods and services	All other goods and services purchased by CCC not accounted for elsewhere	Only spend data available. No accurate method available to convert spend to emissions.
All	All other activities not mentioned in scope above.	No known GHG emissions other than those already listed.

Cambridgeshire's Carbon Footprint

The carbon footprint of the geographical area of Cambridgeshire comprises GHG emissions from commercial and industrial sources, domestic homes, transport, agriculture, waste and land use. The vast majority of this is outside of the control of the Council.

There are a number of ways to identify the carbon footprint of the geographical area. We have used two methodologies, each of which have different merits:

- CO_2 emissions by local authority area, data published by the UK Government (BEIS)
- Research by the Cambridge University Science and Policy Exchange (CUSPE)

Each of these methods is discussed below.

1.13 BEIS CO_2 Emissions Data for Cambridgeshire

The Government Department for Business, Energy and Industrial Strategy (BEIS) currently publishes detailed data at a local authority (district) level, on emissions of carbon dioxide (4), but does not provide data at a local authority level on emissions of other greenhouse gases. Carbon dioxide (CO_2) emissions account for 81% of nationwide GHG emissions.

2018 is the most recent year of data currently available. The total CO_2 emissions from Cambridgeshire in 2018 was 4,523,233 tonnes, and the highest share of that was from transport (44%).

The trend in Cambridgeshire is reflective of the national trend: emissions slowly and steadily declining over the last few years, due mainly to the decarbonisation of the electricity grid. See Figure 7 below. Total CO2 emissions in the county have reduced by 1.8% since the previous year.

Emissions from agriculture and waste are not included in these figures because they primarily produce methane and this data is for CO_2 only.

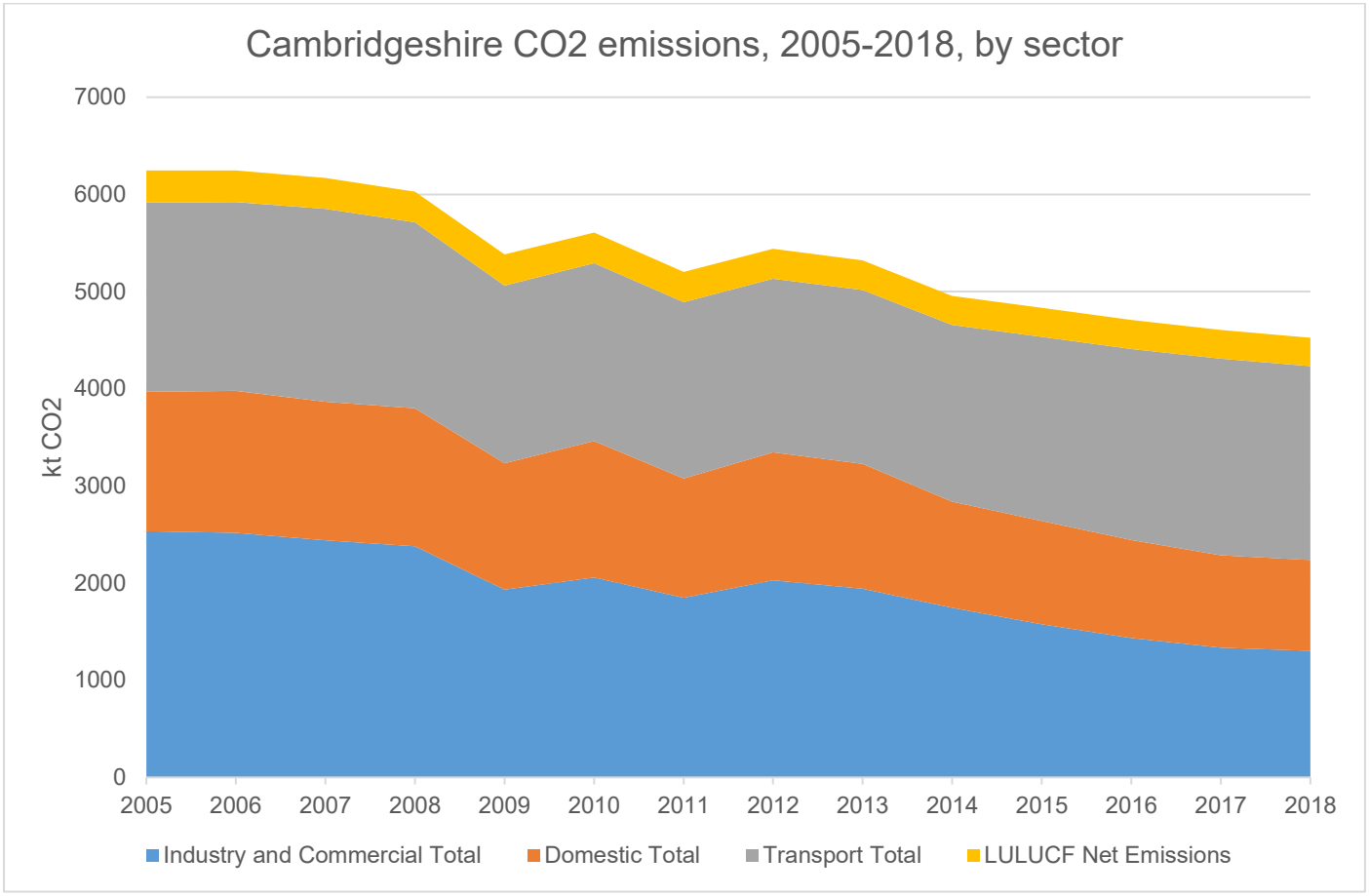

Figure 7: Cambridgeshire CO_2 emissions, 2005 to 2018. (LULUCF =Land Use, Land Use Change and Forestry.)

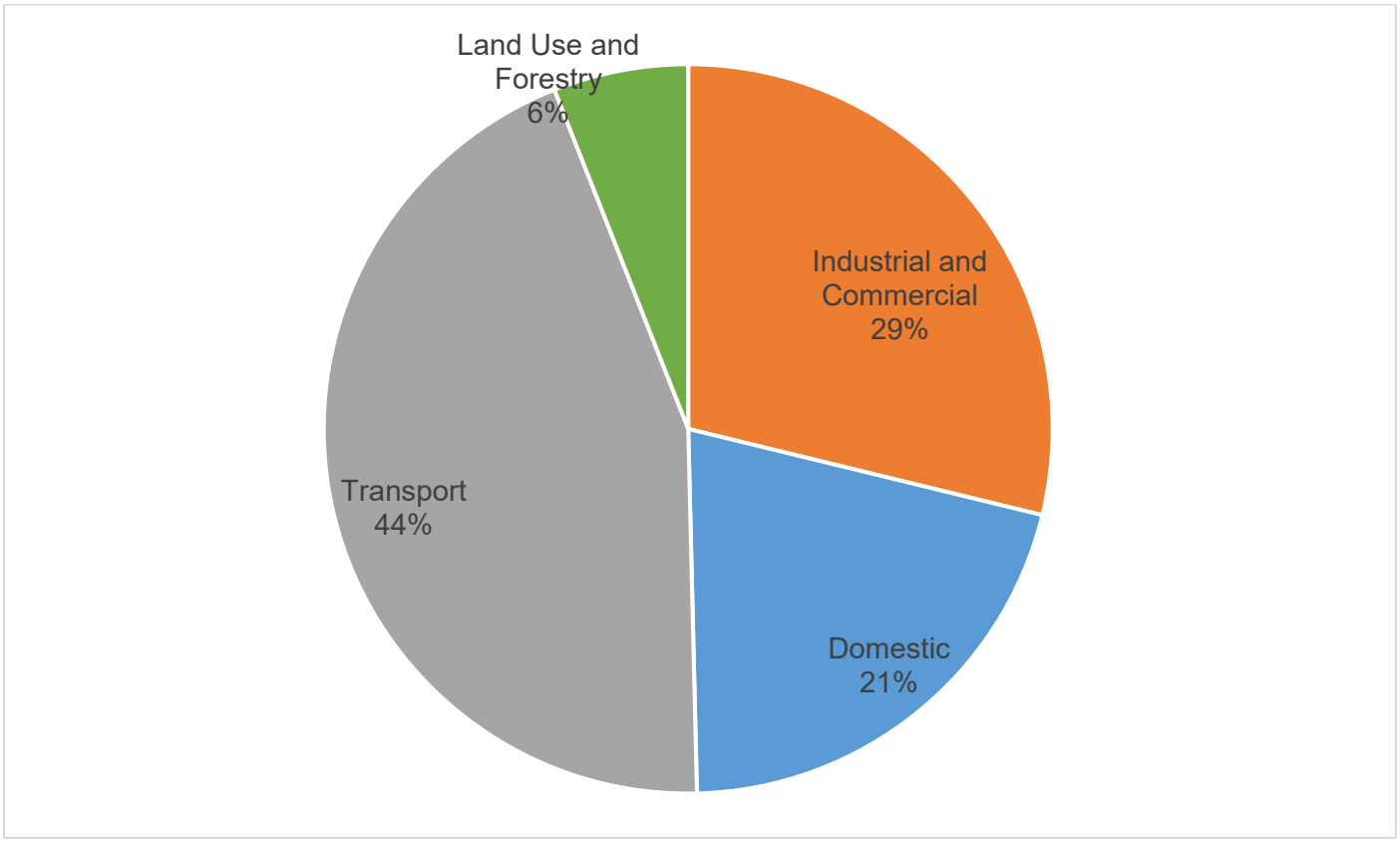

Figure 8: Cambridgeshire county CO_2 emissions, 2018, by source

This is further broken down into sub-sectors, as shown in Figure 9.

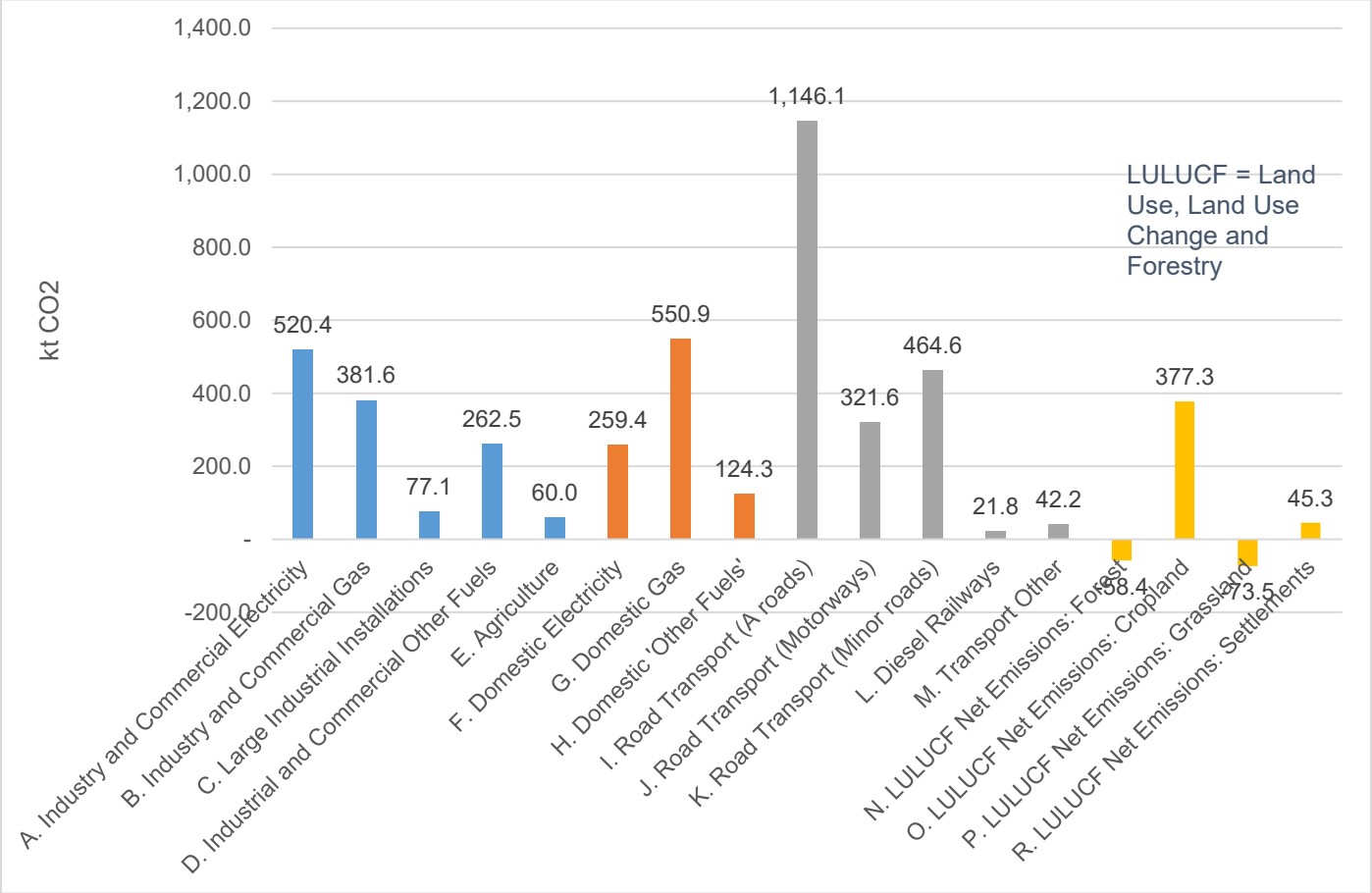

Figure 9; Cambridgeshire county CO2 emissions, 2018, by sub-sector

1.14 CUSPE Carbon Footprint Project

In 2019, Cambridgeshire County Council's annual collaboration with the Cambridge University Science and Policy Exchange (CUSPE) brought a team of researchers together to develop an evidence base of current carbon emissions for Cambridgeshire and Peterborough, improving on the 'CO_2-only' data published by the department for Business Energy and Industrial strategy, to provide a more accurate carbon footprint for the area.

In October 2019, the Council adopted the CUSPE team's report (3) as an evidence base for its Climate Change and Environment Strategy. This report found that Cambridgeshire and Peterborough communities together produced **6.1 million tonnes** of carbon dioxide equivalent (CO_2e) in 2017. This data does not show how much of that total was for Cambridgeshire and how much was for Peterborough.

The breakdown of this by sector is shown in Figure 10 below.

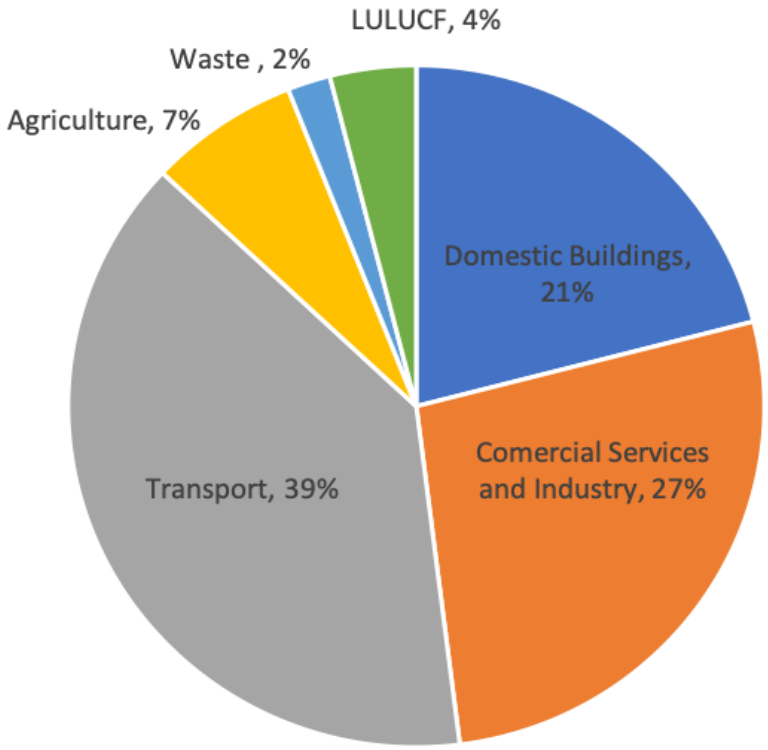

Figure 10: Breakdown of Cambridgeshire and Peterborough GHG emissions by source, 2017.

The CUSPE GHG emissions data differ from the BEIS GHG emissions data in a few key ways:

- CUSPE data includes both Cambridgeshire and Peterborough. BEIS covers all local authority areas in the UK but we have extracted the data for Cambridgeshire only.
- CUSPE data includes all GHGs, whereas the BEIS data is for CO2 only.
- The CUSPE report was a one-off research project, based on 2017 data, whereas the BEIS data is updated annually.
- Some small differences in methodology.

The CUSPE team also noted that “peatland emissions are not currently counted in the emissions inventory, but could significantly affect Cambridgeshire’s reported emissions - increasing them by as much as 90%. Whilst this is technically just a change in accounting, it does highlight the need for further research on peatland emissions and to prioritise the restoration and preservation of the area’s peatland. In time and with the correct investment, peatland has the potential to change from a net emissions source to a net sink.” (CUSPE, 2019)

Glossary

Expression	Meaning
Carbon	Used as abbreviation for carbon dioxide or carbon dioxide equivalent
Carbon Budget	An amount of carbon dioxide that a country, company, or organization has agreed is the largest it will produce in a particular period of time.
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent: A standard unit for measuring carbon footprints. It expresses the impact of each different greenhouse gas in terms of the amount of CO_2 that would create the same amount of warming, using GWPs.
GHG	Greenhouse gas: a gas that absorbs and emits radiant energy within the thermal infrared range. Greenhouse gases cause the greenhouse effect.
Greenhouse effect	The heating of the earth's surface caused by solar radiation trapped by atmospheric gases (rather like a greenhouse roof).
GWP	Global Warming Potential: this is a measure of how efficient a chemical is at trapping heat in the atmosphere relative to carbon dioxide. For example, methane has a GWP of 34 and nitrous oxide has a GWP of 298[3]. (5) By definition, CO_2 has a GWP value of 1. Quantities of GHGs are multiplied by their GWP to give results in units of carbon dioxide equivalent (CO_2e).
Kt	kilotonne = 1000 metric tonnes
LULUCF	Land Use, Land use change and forestry.
Mitigation	Methods to reduce or prevent greenhouse gases entering the atmosphere.
Net zero	Achieving an overall balance between emissions produced and emissions taken out of the atmosphere. This can take place on different scales and is often achieved through offsetting.
Offset	An action intended to compensate for GHG emissions by an equivalent quantity of reductions elsewhere or removals.
Sequestration	The long-term removal, capture or sequestration of carbon dioxide from the atmosphere to slow or reverse atmospheric CO_2 pollution and to mitigate or reverse global warming.
WTT – Well to tank	The emissions associated with extracting, refining and transporting fuels to the point of purchase.
Zero carbon	No emissions of GHGs at all

[3] Fifth Assessment Report of the Intergovernmental Panel on Climate Change

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Cambridge University Science and Policy Exchange 2020: A Cambridgeshire Decarbonisation Fund

To:	Environment and Sustainability Committee
Meeting Date:	14th January 2021
From:	Steve Cox, Executive Director, Place and Economy
Electoral division(s):	ALL
Forward Plan ref:	N/A
Key decision:	NO
Outcome:	A Cambridgeshire Decarbonisation Fund co-produced with Cambridgeshire businesses, communities and Local Authorities to deliver early investment into carbon reductions in Cambridgeshire.
Recommendation:	Members are asked to: a) Note the Cambridgeshire University Science and Policy Exchange (CUSPE) 2020 research report proposing a Cambridgeshire Decarbonisation Fund attached as Appendix A. b) Agree next steps for the development of a Cambridgeshire Decarbonisation Fund as set out in paragraph 3.1. c) Support further work with partners to assess the opportunity for Cambridgeshire to become a carbon 'sink' and quantifying the potential benefits of this approach.

Officer contact:
Name: Sheryl French
Post: Programme Director, Climate Change and Energy Investment
Email: Sheryl.french@cambridgeshire.gov.uk
Tel: 01223 728552

Member contacts:
Names: Councillors Joshua Schumann and Tim Wotherspoon
Post: Chair/Vice Chair of Committee
Email: Joshua.Schumann@cambridgeshire.gov.uk
Tim.Wotherspoon@cambridgeshire.gov.uk
Tel: 07841524007 / 01954 252 108

1. Background

1.1 In October 2016, Cambridgeshire County Council initiated an annual collaboration with the Cambridge University Science and Policy Exchange (CUSPE) society, which brings teams of researchers together to explore challenges faced by the County Council.

1.2 A successful collaboration in 2019 resulted in the Council adopting the CUSPE research report 'Net Zero Cambridgeshire, What actions must Cambridgeshire County Council take to reach net zero carbon emissions by 2050?'. The Council adopted this as an evidence base which informed the Council's decision in February 2020 to adopt net-zero carbon emissions for Cambridgeshire by 2050 as a corporate objective and the targets adopted in May 2020 as part of the Council's Climate Change and Environment Strategy.

1.3 The 'Net Zero Cambridgeshire, What actions must Cambridgeshire County Council take to reach net zero carbon emissions by 2050?' report identified the carbon footprint for Cambridgeshire and Peterborough in 2017 totalled 6.1Mt/CO_2e per annum excluding peatland emissions. Peatland emissions were estimated at up to 5.5Mt/CO_2e subject to further data collection and analysis.

1.4 In 2020, CUSPE researchers agreed to collaborate on a research project to 'identify how Cambridgeshire businesses that have set, or are interested in setting, carbon neutral and carbon negative targets could invest in local community projects to reduce carbon emissions and achieve other co-benefits such as fuel poverty'.

1.5 The outcome of this report is to work with Cambridgeshire businesses to scope a Cambridgeshire Decarbonisation Fund to bring forward detailed proposals including a business case for approval and implementation if appropriate.

2. Main Issues

2.1 The CUSPE 2019 Net Zero Cambridgeshire report identified that to achieve net-zero carbon emissions by 2050, early investment into projects to cut emissions permanently is required across all sectors. The CUSPE 2020 research project builds on the 2019 research to identify ways in which Cambridgeshire businesses can invest locally in community infrastructure and nature-based projects that reduce carbon emissions at their source or actively sequester carbon. This investment will support earlier reductions to carbon emissions than might otherwise occur through regulation and provide added value to the places and people that live and work here, whilst also benefitting businesses as part of their wider carbon emissions, environmental, social and governance (ESG) commitments.

2.2 The challenge facing all communities is balancing the cost of reaching the ambition of net-zero by 2050 fairly and equitably. No single government can cover the costs of carbon emission reductions and regulation cannot simply leave future generations, individuals or any one sector with the costs. Finding opportunities that encourage collaboration, innovation and early investment across communities and sectors to cut or sequester carbon are worth exploring and sharing. This research offers a mechanism, a Decarbonisation Fund, for businesses to invest in carbon reductions. The research report covers proposals for a 'Fairtrade model' calculation for valuing 1 tonne of Cambridgeshire carbon emissions and describes the process for measurement and verification.

2.3 The research proposal recommends setting-up a Cambridgeshire Decarbonisation Fund. The Fund is voluntary and is looking to attract Cambridgeshire businesses that have set net zero carbon ambitions looking to add value locally to the places they live and work. The idea is that the Fund will scope projects with the community, Local Authority and other partners, to identify carbon emission reduction projects that are robust and viable.

2.4 Projects designed to affect carbon emissions can differ dramatically in their mode of emissions reduction, timescales for effects to be realised and cost. For example, some projects stop emissions whilst others sequester over 30 years. For this reason, the researchers are proposing a combination of investment projects, categorised into three tiers 1, 2 and 3 which broadly fit into avoiding, reducing or sequestering carbon emissions. The type of projects that fit into these tiers could include:

- Tier 1 (Avoid): replacements of oil boilers with low carbon heating as part of housing retrofit;
- Tier 2 (Reduce): Electric Vehicle (EV) charging infrastructure or peatland land management to reduce emissions; and
- Tier 3 (Sequester): Tree planting in the right places to sequester carbon.

2.5 The researchers make the argument that investment across all three tiers is required to achieve a balance of: managing the cost of carbon emissions reductions for businesses; recognising the physical limits of Cambridgeshire's natural environment to sequester carbon; and the very real need to stop emissions at source. In general sequestering carbon is the cheapest option whilst stopping carbon emissions at source is more expensive.

2.6 The research also describes how businesses benefit from investing in the Fund, including carbon credit certificates and wider benefits to the health and wellbeing of their workforce, future attraction of top candidates to their businesses and other wider marketing opportunities. These co-benefits are highlighted as key to encouraging investment into the Fund.

2.7 The CUSPE 2020 research also raises a fundamental question which is outside this report. Does Cambridgeshire want to become a 'sink' or a 'source' for carbon emissions? The answer is not simple and further work this year is required to assess whether Cambridgeshire has the ability to become a carbon sink. The benefits this could offer would be significant. For example, attracting inward investment into low carbon solutions and infrastructure; creation of local jobs and improving productivity. Cambridgeshire has many advantages when considering this ambition including world leading green technology and innovation companies; strong Agri-tech research into farming and food production; two Universities supporting evidence based decision making; opportunities of natural resources including peatlands and tree planting; highly skilled communities and committed Local Authorities wanting to make a difference. Together these offer a strong combination for considering this ambition.

3. Next steps

3.1 The CUSPE 2020 research report identifies an opportunity to help build a green recovery and deliver carbon reductions more swiftly across Cambridgeshire through collaboration. However, more detailed development work is needed to understand how the

Decarbonisation Fund can attract investment, the criteria for this investment, the building of a credible project pipeline and develop a business case that is robust. Engagement with businesses, Local Authorities and our communities will be important for their buy-in and collaboration and to identify the governance and management processes that will be required to manage and run a successful Fund.

4. Alignment with corporate priorities

4.1 A good quality of life for everyone

The CUSPE 2020 research report set out in Appendix A itself has no significant implications but if the Council agrees to scope and deliver a Cambridgeshire Decarbonisation Fund this could have significant quality of life benefits. Cutting carbon emissions provides benefits such as improved air quality, better natural environments, greater health and wellbeing and potentially more low carbon jobs locally. Some of these benefits still need further work to identify the scale and associated cost savings on services such as the NHS.

4.2 Thriving places for people to live

As set out in paragraph 3.1 above.

4.3 The best start for Cambridgeshire's children

As set out in paragraph 3.1 above.

4.4 Net zero carbon emissions for Cambridgeshire by 2050

Cutting carbon emissions early is important. Forecast global temperature change is dependent on concentrations of CO_2 emissions in the atmosphere. Historical carbon emissions contribute to the concentration levels along with continued emissions produced today and tomorrow. Although the 2020 pandemic has resulted in one of the biggest single drops in modern history in the amount of carbon dioxide humans emit, (the International Energy Agency estimates global emissions will decline by about 8 percent compared to last year, equivalent to about 2.6 billion tons of carbon not added to the atmosphere), concentration levels are cumulative. Explaining this using the analogy of filling a bath with water can help understanding. If a bath is three quarters full and the tap is still running, unless water drains from the plughole faster than is added, the bath will overflow. Historical carbon emissions are already in the atmosphere, each year more carbon emissions are added at a rate that our environment cannot absorb. Cutting and sequestering carbon must increase substantially if we are to stop CO_2 concentration levels rising to levels that bring temperatures rises beyond 1.5 degrees.

5. Significant Implications

5.1 Resource Implications

If the research is adopted and the recommendation to scope the potential for a fund agreed, there are staff resource implications. Scoping a Cambridgeshire Decarbonisation Fund with businesses and communities will require inputs from the Commercial, Transformation,

Property and Climate Change/Energy teams. The level of input is not yet clear, and this could be subject to the submission and agreement of a Transformation Fund bid.

5.2 Procurement/Contractual/Council Contract Procedure Rules Implications

There are no significant implications from the CUSPE 2020 report set out in Appendix A and should a Fund be scoped and developed the procurement and contractual risks will need to be considered as part of the process.

5.3 Statutory, Legal and Risk Implications

There are no significant risks to accepting the CUSPE 2020 research report set out in Appendix A. However, there are a number of risks scoping and setting up a Fund including:

- Changes to Government carbon policy /regulation;
- Level of carbon emissions reductions not delivered by community projects; and
- Perception of carbon credits/off setting as 'greenwash' if not properly communicated and understood.

5.4 Equality and Diversity Implications

There are no significant implications accepting the CUSPE 2020 research report set out in Appendix A. However, if a Fund is progressed, it will need to fully support and implement the Equalities Act as part of its set up and delivery of projects.

5.5 Engagement and Communications Implications

The CUSPE 2020 researchers developed a narrated presentation on the Cambridgeshire Decarbonisation Fund which was widely distributed via the Council's commercial team to a range of different business networks in September/October 2020. A survey was attached to this presentation. Unfortunately, there has been very low response as businesses have been focused on managing their response to the pandemic however this is not thought to be indicative of lack of interest in such a fund.

The Commercial team has set up a small business group including some key local businesses and the Universities which it will look to re-start when businesses can focus once again on the future. It will be important to ensure the development of a Fund is supported and co-produced by businesses, the community and key partners including Local Authorities and nature conservation organisations.

5.6 Localism and Local Member Involvement

Councillors David Jenkins and Joshua Schumann have been engaged in on-line meetings with the CUSPE 2020 researchers to inform the research project.

A presentation for all Members was delivered by the CUSPE 2020 researchers on Monday 14th December 2020 to share key findings and answer questions.

5.7 Public Health Implications

The CUSPE 2020 research report set out in Appendix A has no significant implications, but the implementation of a Fund could offer health benefits as described in paragraph 3.1 above.

Have the resource implications been cleared by Finance?
Yes or No
Name of Financial Officer: Ellie tod

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?
Yes
Name of Officer: Gus Da Silva

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law?
Yes
Name of Legal Officer: Fiona MacMillan

Have the equality and diversity implications been cleared by your Service Contact? Yes
Name of Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications?
Yes or No
Name of Officer:

Have any localism and Local Member involvement issues been cleared by your Service Contact?
Yes
Name of Officer: Emma Fitch

Have any Public Health implications been cleared by Public Health?
Yes or No
Name of Officer: Iain Green

Source documents

Documents

a) CUSPE 2019 research report 'Net Zero Cambridgeshire, What actions must Cambridgeshire County Council take to reach net zero carbon emissions by 2050?'

b) Narrated presentation and survey for businesses, October 2020, CUSPE 2020 researchers.

See Appendix A: CUSPE 2020 Cambridgeshire Decarbonisation Fund report

Proposal for a Cambridgeshire Decarbonisation Fund to Support the Achievement of Net-Zero Cambridgeshire by 2050

Peace Adesina, Campbell Foubister, Anna Francis, Angela Harper, Sabine Matysik, Kwadwo Oti-Sarpong, Kenza Tazi

January 2021

Contents

1 Executive Summary

For Cambridgeshire to reach net-zero by 2050, targeting early investment into projects which will reduce carbon emissions most, especially in the transportation, domestic, and business sectors is needed. Government has a role to build a green economy through regulation, funding, economic incentives and other wider financial instruments, but all sectors, local authorities, businesses and communities will need to commit investment into a low carbon future to manage the climate and biodiversity emergencies. The aim of this report is to identify ways in which Cambridgeshire businesses can invest locally in community infrastructure and nature-based projects that reduce carbon emissions at their source or actively sequester carbon. This investment will support earlier reductions to carbon emissions than might otherwise occur, provide added value to the places we live, and the people that live and work here, whilst also benefiting businesses as part of their wider carbon emissions, environmental, social and governance (ESG) commitments.

Our proposal to achieve this goal is to set up a **Cambridgeshire Decarbonisation Fund** into which businesses can invest; the benefits provided to businesses and the community are carbon credits, biodiversity net gain, air quality as well as indirect benefits such as health, wellbeing and community engagement, and ultimately a greener future for Cambridgeshire. This report identifies areas in which carbon reduction projects facilitate wider "co-benefits" for businesses and the community, such as a healthier workforce, improved air quality in city centres, and business reputation boosts from investment into green technologies. By investing in this fund, businesses will improve their corporate social responsibility in a meaningful way, which extends to improving the community in which their employees work and accelerating carbon emissions reductions to prevent global temperature rises above 1.5 degrees. To ensure community support and engagement in the Fund, projects should be brought forward by the communities within Cambridgeshire, through open calls, collaborations with local organisations and charities, or facilitated by the expertise of councils as the elected representatives of local communities. This Fund follows the overall motto of "**avoid, reduce, sequester**", as we have determined that this is the order in which we need to address becoming carbon neutral. First, avoiding emissions at all, then reducing emissions when this is not possible, and finally sequestering CO_2 already in the atmosphere. A summary of the recommendations can be found below.

This report is outlined into three main sections; in the **Introduction** a global snapshot is provided for existing carbon credit systems throughout the world. Then, methodologies for Carbon Credits and Carbon Pricing are described. In the **Proposed Cambridgeshire Decarbonisation Fund Framework** we outline the necessary considerations for implementing a Cambridgeshire-wide decarbonisation plan, potential pitfalls, and several case studies to which we have applied carbon pricing. In addition, we describe what co-benefits this plan would provide to incentivise its use. Finally, we make **Recommendations and Summary** for future researchers who plan to implement this plan. Overall, the aim is to provide a comprehensive report of how a decarbonisation plan would work if applied to Cambridgeshire.

Recommendations:

1. Create a decarbonisation fund that allows businesses to invest in local carbon reduction projects
2. Identify sources of funding to initiate the decarbonisation fund
3. Have a tiered, prioritized list of projects for the fund to invest in which businesses value

4. Consider co-benefits when creating projects or choosing to pursue projects as this adds wider value to businesses
5. Support businesses to reduce their emissions at source where possible but use the fund for the hard-to-treat residual emissions
6. Reach out to businesses to identify business drivers and reasons to invest
7. Further assess the policy implications of projects
8. Encourage community involvement in project development

2 Introduction

The Climate Change Act 2008[1] has made it clear that if we are to tackle climate change, the UK must become net zero by 2050. Net zero means that the amount of carbon emitted is equal to or, ideally less than, the amount of carbon saved. On a County level, the 2019 CUSPE Net-Zero Cambridgeshire[2] report identified that Cambridgeshire and Peterborough together produce 6.1 Mt CO_2e per year according to 2017 estimates. This number does not include emissions from the 3000 hectares of peatland located in Cambridgeshire, which are estimated to contribute up to a further 5.5 Mt CO_2e per year. The peatland emissions are subject to further scrutiny and more current data is being collected to understand the true position.

Current projections show that a "business-as-usual" attitude over the next 30 years puts Cambridgeshire on track to still emit up to 3.5 Mt CO_2e in 2050 (*excluding* peatland emissions). Further policy and funding solutions and their alignment across sectors are clearly required if Cambridgeshire is to reach net-zero by the 2050 target, as well as strong collaboration between businesses, our communities and the public sector.

In order to reach net-zero as a nation, we need some communities to become "sinks" for CO_2: a community that is a **carbon sink** is one that has invested in nature-based solutions, like afforestation, and green technologies to capture more CO_2 than it emits, therefore overall actually sequestering carbon rather than emitting it. At the same time, there is no doubt that some communities will not reach this target and therefore will be **carbon sources**, continuing to emit harmful greenhouse gases in quantities that they are not able to sequester alone. At the point this document is written, in 2020, Cambridgeshire can shape its ambition of becoming either a **sink** or a **source** of CO_2.

Cambridgeshire is uniquely poised to take this path to becoming a carbon sink. It houses almost 3000ha of peatland; a strong Agritech research capability supporting innovations in farming practices and benefits from the Great Fen and Wicken Fen projects managed by the Wildlife Trust and National Trust. Together these have the opportunity to become a major carbon sink for the county. The new Environment and Agricultural Bills will look to facilitate some of this change.

With the **Cambridgeshire Decarbonisation Fund** one aim would be to invest in peatland projects to act as a carbon sink to support Cambridgeshire becoming Net Zero as a county by 2050 and attract inward investment from other areas. Admissible projects will be chosen according to our proposed "**avoid, reduce, sequester**" approach of a mixed portfolio of projects that avoid emissions at their source, reduce emissions to a lower level, or sequester existing emissions.

Of the 6.1 Mt CO_2e produced in Cambridgeshire and Peterborough, domestic buildings account for 21% of these emissions, and the commercial services and industry account for 27%, with additional business-related emissions arising from transportation. It is only in partnership between Government, local government, businesses and communities that carbon emissions will be reduced to the levels that are needed. For Cambridgeshire this means we need to plan and invest in local, clean energy for buildings and services; retrofit homes and businesses to be more energy efficient and install low carbon heating systems; bring forward new mass transport solutions and EV charging solutions;

[1] Gov.uk - "Climate Change Act", 2008: https://www.legislation.gov.uk/ukpga/2008/27/contents
[2] CUSPE Policy Challenges Team of Researchers -"Net Zero Cambridgeshire", 2019: https://data.cambridgeshireinsight.org.uk/sites/default/files/2019%20CUSPE%20Policy%20Challenge%20-%20Net%20Zero%20Cambridgeshire.pdf

support new agricultural and land management practices to reduce carbon emissions and pollutants and support increased biodiversity. Our natural assets such as peatland and trees are some of our biggest opportunities to store carbon.

The UK government has committed to funding a greener future in several ways, with decarbonisation a key feature of the new Energy White Paper, published December 2019. At the national level, the UK government is invested in providing industrial decarbonisation funds of up to £140m to make the country's largest industrial outputs carbon neutral[3]. The National Lottery has a Climate Action Fund that is committed to providing £100m over 10 years to counties throughout the UK, for their climate efforts[4]. In 2014 the Department for Transport (DfT) invested £500,000 in providing local authorities funding for green modes of transport. Since 2018 the UK has had an established "prospering from the energy revolution fund" – administered by UK Research and Innovation (UKRI), the fund enables investment into local energy systems and research on green technologies[5]. As part of the COVID-19 recovery, the Government has also created the "Green Homes Grants" scheme, part of a £3bn plan to make all homes in the UK more energy efficient[6]. In late March of this year, the DfT published a "Decarbonising transport" paper which set the scene for how different transport partnerships could work together to create a green transport network throughout the country[7]. Following consultation on that report, the full Transport Decarbonisation Plan is anticipated in Spring 2021.

On the nature-based side, Government is equally active, bringing forward policy and legislation to deliver nature-based solutions to the climate and environment crises. The England Tree Strategy, expected during 2021, will set the pace for planting trees across England incorporating biodiversity benefit as well as carbon sequestration[8]. Similarly, the England Peatland Strategy, anticipated by the end of 2021, is expected to set out how improved peatland management can aid in carbon sequestration.

Government funding will not cover the full costs for decarbonisation; significant levels of private investment must also be leveraged into the system. The Cambridgeshire Decarbonisation Fund, funded by businesses, could be the link between communities, public sector and government financing to support wider decarbonisation, faster and deeper.

Cambridgeshire is fortunate in that it is home to a wide variety of businesses which are spread across each of its five districts, which may provide support for local projects through funding. **Figure 1** shows a map of the top 100 businesses in Cambridgeshire[9] based on their annual turnover as of 2019. Many of these businesses have publicly pledged to reduce their carbon emissions or take part in the reduction of emissions in their area. For example, in South Cambridgeshire, Excell Group provides a

[3] UKRI -"Industrial decarbonisation", 2020: https://www.ukri.org/innovation/industrial-strategy-challenge-fund/industrial-decarbonisation/
[4] The National Lottery - "Climate Action Fund | The National Lottery Community Fund", 2020: https://www.tnlcommunityfund.org.uk/funding/programmes/climate-action-fund.
[5] Gov.uk. - "Prospering from the energy revolution: full programme details", 2018: https://www.gov.uk/government/news/prospering-from-the-energy-revolution-full-programme-details
[6] Green Homes Grants – "Get up to £5,000 towards improving ...." https://greenhomesgrant.campaign.gov.uk/
[7] Gov.uk - "Creating the transport decarbonisation plan," 2020: https://www.gov.uk/government/publications/creating-the-transport-decarbonisation-plan
[8] DEFRA Consultation Hub - "England Tree Strategy", 2020: https://consult.defra.gov.uk/forestry/england-tree-strategy/
[9] "Cambridgeshire's top 100 businesses in 2019 revealed: Study ....", 12 Dec. 2019, https://www.cambridgeindependent.co.uk/business/cambridgeshire-s-top-100-businesses-in-2019-revealed-growth-continues-but-there-s-a-note-of-caution-9093264/

"Cycle to Work" scheme[10] and has funded 16 community projects at the time of writing. The Raspberry Pi Foundation in Cambridge is committed to making its business carbon neutral by 2030, by creating sustainable IT projects[11]. In Huntingdonshire, farmers at Hilton Food Group have committed to reducing their cattle greenhouse gas emissions by 2025, and, since 2016, they have made their Scope 1 and 2 emissions publicly available from 2016 in their annual report[12].

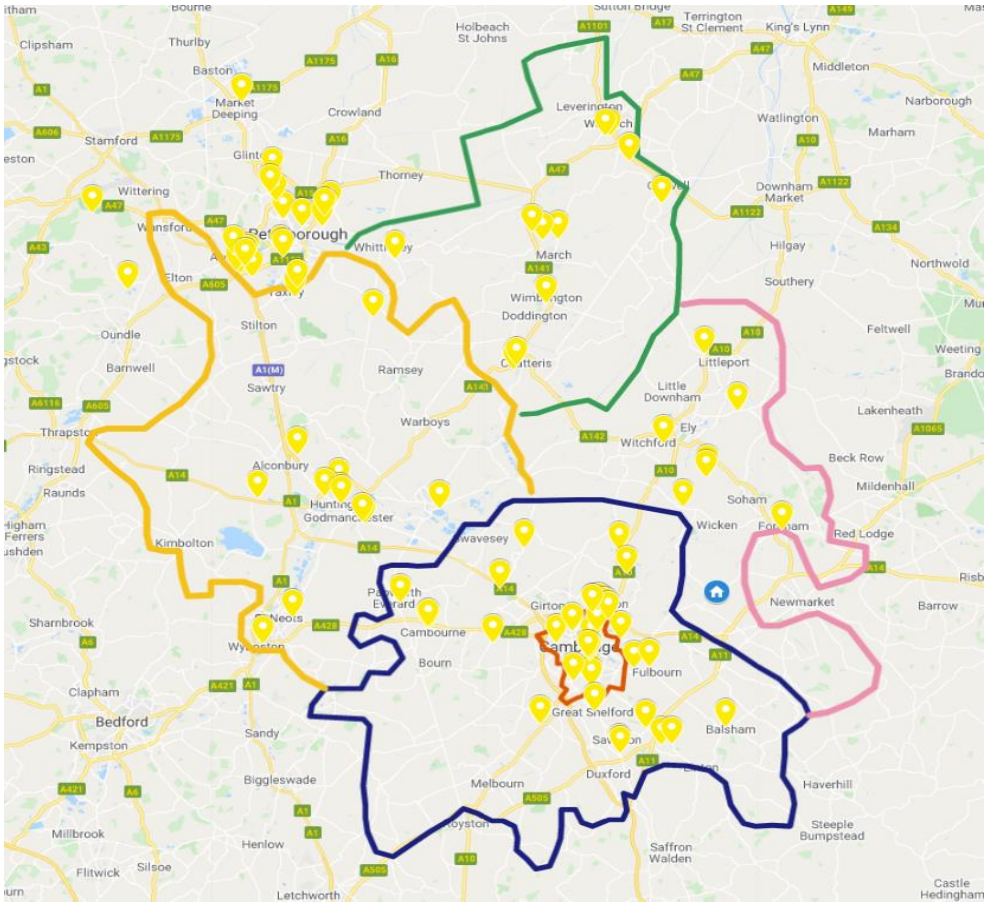

Figure 1: Map of the top 100 businesses in Cambridgeshire in 2019 based on Turnover. Districts are outlined in colour: Cambridge in red, South Cambridgeshire in blue, Huntingdonshire in orange, Fenland in green, and East Cambridgeshire in pink. The businesses are denoted by their headquarters location by yellow pins in the map. Additional businesses located in Peterborough are in the top left, and not within the district outlines.

As of April 1st, 2019, Streamlined Energy and Carbon Reporting (SECR)[13] requires that all businesses report their Scope 1 and 2 GHG emissions annually. Scope 1 emissions are "direct emissions from controlled or owned sources", including the combustion of fuel and facility operation. Scope 2 emissions are "indirect energy emissions from generation of purchased energy"[9]. With this data now being more publicly accessible than ever before, we can better understand how high individual

[10] "Social Value | Excell Group: Cloud Communications.", 2020: https://www.excellgroup.com/about-excell-group/social-value/.
[11] "University of Cambridge delivers business continuity with ....", 2020: https://www.publictechnology.net/articles/partner_article/citrix/university-cambridge-delivers-business-continuity-sustainable-it.
[12] Hilton Food Group plc. - "2016 HFG plc Annual Report ", 2016 : http://www.hiltonfoodgroupplc.com/2016/doc_download/151-2016-hfg-plc-annual-report.

13 GOV.UK - "Streamlined Energy and Carbon Reporting (SECR)", 2020: https://www.gov.uk/government/publications/academy-trust-financial-management-good-practice-guides/streamlined-energy-and-carbon-reporting.

medium and large businesses' emissions are throughout Cambridgeshire and identify which businesses will need to cut back on emissions more heavily.

CUSPE researchers in 2019 identified a CO_2e baseline for Cambridgeshire and Peterborough and the range of measures that would be needed to deliver net-zero carbon emissions by 2050. The report suggested that all existing buildings, both homes and commercial, would need low carbon heating solutions (e.g., heat pumps) and transport emissions would need to be reduced through mass transport solutions, more walking and cycling and electric vehicle (EV) charging to support electric vehicle uptake. There are many Cambridgeshire businesses that have set or are setting carbon neutral targets. Supporting businesses to decarbonise will be as important as the role of businesses to support the communities in which they operate and where staff live. On this basis, the question this research is looking to answer is:

"How can Cambridgeshire businesses that have set, or are interested in setting, carbon neutral and carbon negative targets invest to reduce carbon emissions and also reduce fuel poverty both for oil dependent communities and the wider public?"

For Cambridgeshire to strive towards becoming a **carbon sink**, by 2050, all businesses, communities and the public sector will need to work together. Businesses based in Cambridgeshire, whether a local or global business by nature, emit carbon emissions locally through their buildings, transport and products. The aim of this research is to offer businesses that emit emissions locally to consider investing in local carbon reduction schemes in existing housing or transport and nature-based solutions to prevent or sequester carbon emissions in Cambridgeshire rather than going elsewhere. The idea of a local carbon credit scheme is being explored as part of this research which supports businesses to deliver their carbon targets, reduces Cambridgeshire's overall emissions and brings other health and environmental "co-benefits" to people and nature through improvements such as air quality and local wellbeing. Businesses benefit from not only the carbon-credits in this scheme, but also from the longer-term societal benefits, and ultimately by making Cambridgeshire a desirable community in which their employees enjoy living.

A Cambridgeshire carbon credit, for the purposes of this report, is a non-tradable certificate through the voluntary market bought at a price that allows for offsetting 1 tCO_2e. The voluntary market offers carbon offsetting to businesses which are not legally obliged to fulfil an e.g., national emissions reduction goal but are offsetting their generated emissions voluntarily. Carbon credits are produced through decarbonisation projects (e.g., Swaffham Prior Community Heat Network) and purchased by Cambridgeshire businesses as a sign of their commitment to reducing carbon emissions in Cambridgeshire. By creating a system through which businesses, communities, and Cambridgeshire (and Peterborough) Local Authorities can work together to reduce emissions, this will ultimately support cohesion throughout the community and accelerate the pace at which Cambridgeshire is able to become carbon neutral.

2.1 Cost of Decarbonisation

In this section, we forecast the cost of delivering Cambridgeshire and Peterborough to net zero by 2050, and the projected cost on the local economy if nothing is done to reduce carbon emissions.

The 2019 CUPSE report[2] found that Cambridgeshire and Peterborough currently produce 6.1 Mt CO_2e per year, excluding estimates of up to 5.5 Mt CO_2e for peatland emissions. In June 2020, following the UK's departure from the EU Emissions Trading Scheme – in which carbon prices were established - the UK Government published its decision on the future of UK carbon pricing. This confirms that a **UK Emissions Trading Scheme** will be established, with phase 1 running from January 2021 to 2030 for traded emissions e.g., electricity. The intention is for the UK scheme to be complementary to the previous EU Scheme but with more stringent targets and pricing intended to accelerate the UK towards net-zero.[14]

The Department for Business, Energy and Industrial Strategy (BEIS) publish forecasts of carbon values from emissions in the traded and **non-traded** sectors. Based on the marginal abatement cost (MAC) required to meet UK emissions reduction targets. Forecast carbon values increase over time, reflecting that the costs of measures required to meet the 2050 net zero target will be higher if left to a later date – since those emissions that are easier (and less costly) to abate are generally reduced first.

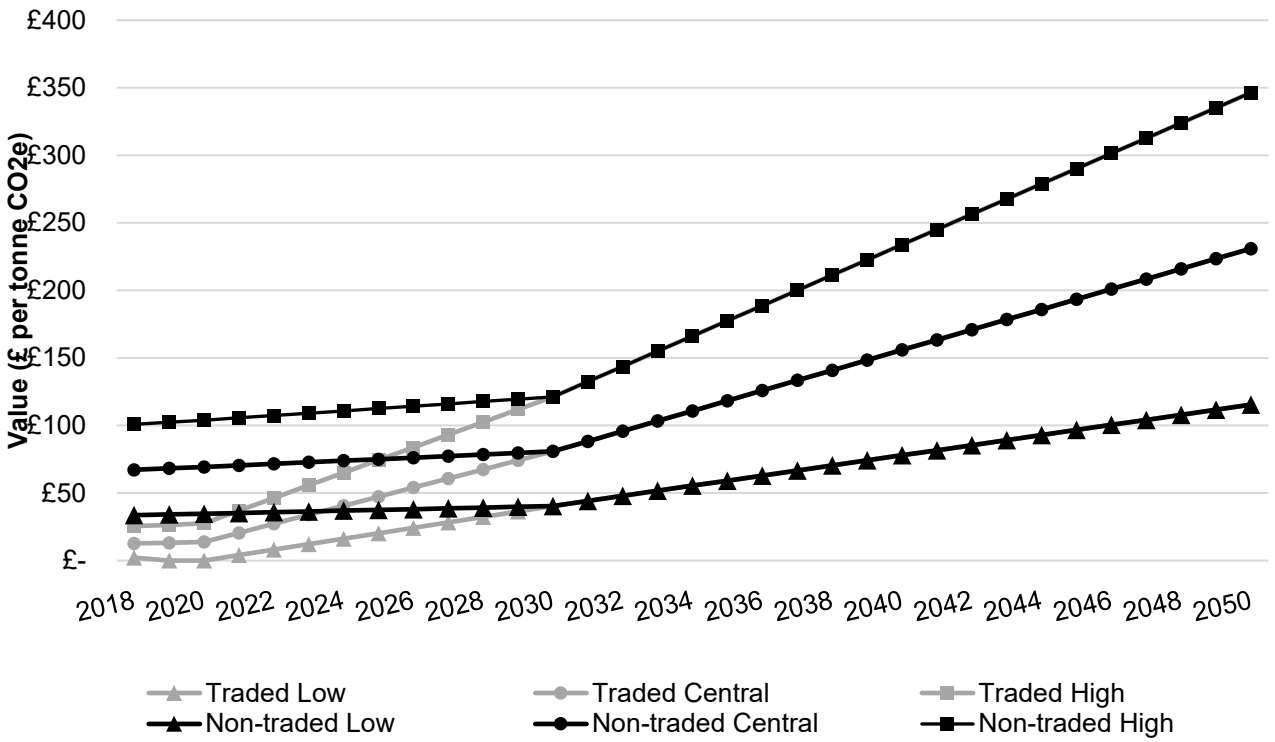

Figure 2: Carbon prices and sensitivities 2018-2050, 2018 £/tCO_2e, forecast for the traded and non-traded sectors to 2050. Values shown are for the three modelled price scenarios: high, central and low, for the traded and non-traded sectors.

This figure can be broken down into their respective sectors, as shown in Table 1: Breakdown carbon emissions and decarbonisation costs **Table 1**.

[14] HM GOV - "Powering our Net Zero Future", 2020: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf. Accessed on 04/01/2021

Table 1: Breakdown carbon emissions and decarbonisation costs

Sector	Proportion of emissions arising from each sector [2]	Cambridgeshire and Peterborough based on case studies Decarbonisation cost per year (2020) £117/tCO_2e	Estimated carbon total carbon costs for each sector, based upon the central traded/non-traded carbon costs by 2030 using £81 per tonne
Peatland emissions	47%	£643 million	£445 million
Transport	21%	£278 million	£193 million
Commercial Services and Industry	14%	£193 million	£165 million
Domestic homes	11%	£150 million	£104million
Agriculture	4%	£50 million	£43million
Waste management	1%	£14 million	£12 million
Other	2%	£28 million	£24 million

Although an approximation, it is helpful to calculate an order of magnitude figure to plan future investment. By applying the average carbon price (£117/tCO_2/year) calculated in our case studies (see **Project Portfolio Approach**), a total of up to £1435 million per year (£792 excluding peatland emissions) is required to decarbonise Cambridgeshire and Peterborough at the time of writing this report. Applying central traded/non-traded carbon costs of £81/tCO_2, the decarbonisation cost would still amount to £1036 million per year (£591 excluding peatland emissions).

From this initial pricing of the cost of decarbonisation, we can conclude that, given the scale of investment required, it will not be enough to decarbonise Cambridgeshire through only government grants, external carbon credit schemes, or measures in place already. To fund the types of local projects necessary to decarbonise the county, we will require an additional scheme to be implemented as we describe in this report. Indeed, other Local Authorities, including the City of London and Milton Keynes, have devised their own local solutions, and we propose herein a unique solution suited to Cambridgeshire: the **Cambridgeshire Decarbonisation Fund**.

Financially speaking, early decarbonisation is key. As GHGs accumulate in the atmosphere their detrimental effects grow. Concurrently, social costs increase and cheaper abatement opportunities, especially sequestration, decrease. These will vastly outpace anticipated cost reductions of implementing green technologies to reduce emissions. This concept is described in detail Chapter 13 in the Stern Review[15]. Early decarbonisation is therefore essential to mitigate the impact of climate change in Cambridgeshire at least cost to its communities.

2.2 A Global Snapshot

Carbon pricing is increasingly acknowledged as a key methodology to cost-efficiently enable the transition to a low carbon future. The voluntary carbon offsetting market offers opportunities for individuals and businesses to offset some of their emissions through certain projects voluntarily, often allowing for greater regionality and variance than on the compliance market because of a slightly lower competitive pressure.

[15] Nicholas H. Stern et al. "Stern Review: The economics of climate change." Vol. 30. Cambridge: Cambridge University Press, 2006.

One overarching scheme, which has 1800 carbon-offset projects in 80 countries across the world and defines a lot of the standards for the voluntary carbon market is The Gold Standard[16]. This standard is recognised by the Kyoto Protocol and supported by various countries across the world for voluntary offsetting through a broad range of verified interventions. These interventions include forestry, wind farms, biogas installations, and other carbon capture or carbon reduction measures. Investing in these projects costs between \$10-20/tCO_2. The pricing is based upon several factors including the Fairtrade price per project (discussed in the section on **Project Pricing**), social cost of carbon, and ultimately supply and demand for carbon credits[17].

Globally, the price of carbon credits ranges from £1-95[18]. The price of carbon credits can have a major impact on the financial viability of decarbonisation projects, the willingness of businesses to invest in these projects, and the overall total reduction in emissions. It is critical to price carbon credits appropriately to achieve buy-in from Cambridgeshire businesses, recoup costs associated with the decarbonisation projects, and bring rise to meaningful carbon reductions in Cambridgeshire.

2.2.1 Europe

Throughout Europe, the importance of including local and regional authorities (LRAs) for achieving national climate goals and addressing climate change is widely acknowledged. Most of the recommendations of the European Commission for national energy and climate plans rely on support from LRAs due to the strong local and regional dimension of the individual interventions[19] implemented. Recommendations include the need to improve energy efficiency; increase the share of renewable energy; enable the existence of local energy communities; tackle energy poverty; and ensure a just transition to a low-carbon economy.

Funding for these local initiatives cannot be provided by LRAs alone, so partnership with businesses that are looking to offset their emissions has been sought in many different formats. It has been found that nationally oriented, locally based businesses, preferred investing in carbon offsetting projects in the country where they are operating, while international companies preferred projects located in the countries, they work with[20]. Domestic carbon offsetting has the potential to be a crucial component in national climate strategies[21] additional to and alongside the EU-ETS (and the forthcoming UK-ETS) as most of the projects excluded from the EU-ETS are of the size and scale that is feasible on a local community level (see the section on **Project Tiers** for admissible projects).

One example of a carbon credit scheme on the voluntary market offering domestic offsetting within Europe is “Climate Austria”[22]. Climate Austria provides a framework for individuals or businesses to

[16] "The Gold Standard." 2020: https://www.goldstandard.org/.
[17] "CARBON PRICING: What is a carbon credit worth? | The Gold ....", 2020: https://www.goldstandard.org/blog-item/carbon-pricing-what-carbon-credit-worth.
[18] "The Future of Carbon Pricing in the UK - Committee on .Climate Change”, 2020: https://www.theccc.org.uk/wp-content/uploads/2019/08/Vivid-Economics-The-Future-of-Carbon-Pricing-in-the-UK.pdf
[19] Commission for the Environment, Climate Change and Energy, European Committee for the Regions - “The role of local and regional authorities in National Energy and Climate Plans taking into account the recommendations by the European Commission”, 2020: 2020https://cor.europa.eu/en/engage/studies/Documents/CoR%20LRAs%20in%20NECPs.pdf
[20] Joanneum Research - “Status quo des freiwilligen Emissionshandelsmarktes in Österreich”, 2020: https://www.ifz.at/sites/default/files/2019-12/Status%20quo%20des%20freiwilligen%20Emissionshandelsmarktes%20in%20Oesterreich.pdf
[21] Adelphi - “Documentation of the Workshop: Domestic Carbon Initiatives in Europe, Experiences and Opportunities”, 2020: https://www.adelphi.de/en/system/files/mediathek/bilder/Domestic%20Carbon%20Initiatives%20in%20Europe-Experiences%20and%20Opportunities_Workshop%20Documentation.pdf
[22] Climate Austria Homepage 2020: https://www.climateaustria.at/eng.html

offset emissions at a price of 25€ (c.£23)/tCO_2 by funding Austrian projects in the fields of e-mobility and efficient logistics, residential energy efficiency improvement and local renewable energy supply. The scheme is run by a public consulting company in close collaboration with national offices (Federal Ministry for Climate Action and Federal Ministry of Agriculture, Regions and Tourism), independent verification of the pricing method is provided by an external assessor (Lloyd's Register).

Within the UK, several local authorities have implemented carbon offset schemes for new developments, namely Ashford, Islington, Milton-Keynes, Tower Hamlets and Southampton[23]. In these areas, under an S106 agreements, new developers must offset emissions for new major developments[24] (except for Islington, where minor developments are also included) via mandatory payment into a fund, usually on commencement of the development. The price of carbon varies strongly from £200/t in Milton Keynes to up to £1800/t in Tower Hamlets. Individual funds are then used for domestic, mostly residential emission reduction projects (improved energy efficiency through refitting appliances or insulation, investments into small-scale renewables), focussing on existing building stock. There is no unanimous approach to the carbon pricing strategy of funded projects. Only Milton Keynes implemented an upper limit for the cost of carbon saving measures, which must be delivered at a lower carbon price than £176.50, which represents the initial offsetting price (£200/t) minus management costs. This maximum was based upon developers having to pay a fee of £200/t into the carbon offset fund for each tonne of carbon that their project would emit over a 20-year timescale. Eventually this limit had to be lifted, as the price of carbon offset projects rose above the £200/t maximum, and the developer fee also rose equivalently.

2.2.2 Africa

There have been rapid developments in Southern and Eastern African countries such as South Africa, Kenya, Ethiopia. Most of the projects are voluntary schemes registered under the Clean Development Mechanism (CDM), Verified Carbon Standard (VCS), Gold Standard (GS) and Climate, Community and Biodiversity Standard (CCBS).

South Africa is the epicentre of many carbon offsetting projects in Africa. Although not part of Annex 1 countries (industrialized countries) and under no obligation to reduce its carbon emissions, South Africa ratified the Kyoto Protocol and vowed to reduce its GHG emissions below its business as usual by 34% in 2020 and 42% in 2025[25]. South Africa has a unique carbon pricing system which combines a mandatory carbon emission reporting regime for businesses forming the basis of a carbon tax and carbon offsets. Companies are liable to pay taxes on any additional carbon emissions after they have used up their specified emissions threshold. The implications of the carbon tax have been carefully and rigorously reviewed since 2010 and recently a carbon tax act was signed with effect in June 2019[26]. Furthermore, a relief mechanism was put in place to aid in fully transitioning to a low carbon economy such that 5-10 % of the taxable emissions can be offset through carbon projects at a price

[23] NEF - "Review of Carbon Offsetting Approaches in London", 2020: https://www.london.gov.uk/sites/default/files/gla_cof_approaches_study_final_report_july_2016.pdf
[24] The definitions of major development vary between councils. Usually this includes all development with 5 (10 in London, Southampton and Ashford Growth area) or more dwellings, more than 500 sq m of floorspace or building on a site larger than 0.5 hectares. In London, Southampton and the Ashford Growth area the thresholds are increased to 10 dwellings and to 1000 sq m floor space.
[25] National Treasury - "Carbon Offsets Paper of the National Treasury of the Republic of South Africa", 2014: https://www.gov.za/sites/default/files/gcis_document/201409/2014042901-carbon-offsets-paper.pdf
[26] South African Government - "Carbon Tax Act 15 of 2019", 2019: https://www.gov.za/documents/carbon-tax-act-15-2019-english-afrikaans-23-may-2019-0000

lower than the carbon tax rate of ZAR 120/t ($17/t) of CO2/e[27]. These carbon offset projects are primarily in the renewable energy, energy efficiency, waste management and forestry sectors. South Africa also has well documented administration of the carbon offsetting schemes, accreditation, verification, independent auditing system and offset registry which is accessible to the general public.

Other countries like Kenya[28], Uganda[29], Ethiopia, Tanzania and Zimbabwe have continued to put in efforts to reduce their carbon emissions through voluntary carbon offset schemes mostly channelled at energy efficient infrastructure and tree-planting tailored to the context of the needs of developing countries[30]. However, a number of the projects in Africa are still being funded by the World Bank[31] and carbon offsetting organizations in developed countries[32].

2.2.3 North America

In the Americas, Canada and the United States of America (USA) there are well-established carbon offset schemes, albeit enforced only in the province of Quebec, and ten states respectively.

The Quebec Carbon Offset Credit Scheme is a voluntary scheme for individuals or organisations wishing to reduce or sequester GHG emissions. The scheme focuses on sectors of activity or sources other than those subject to compliance obligations in the province of Quebec. The scheme is established under existing legislation[33] and carbon reduction targets in the province[34] as an additional pathway for businesses to increase their impact whilst complying with established carbon emissions regulations. It is not necessarily a regulatory compliance measure and so that has been an incentive for businesses to want to use the scheme to maximise their emissions reduction strategies. Projects admissible under this scheme are for methane destruction[35] or reduction and the destruction of ozone depleting substances. Projects admissible under this scheme are required to help meet the objectives under any or a combination of the categories. These, however, do not include (re/af)forestation, transport fuel changes, and organic/biomethane project options. The eligibility to apply for the scheme and steps leading to the issuance of offset credit is underpinned by clearly established regulations. The scheme operates on a straightforward 4-stage project registration, implementation and monitoring, verification and issuance, and project renewal (if applicable) processes. This makes the operation of the scheme a relatively simple one.

[27] National Treasury - ”Carbon Offsets Paper of the National Treasury of the Republic of South Africa,“ 2014:
[28] Carbon Footprint - ”Kenya Reforestation: sequestering carbon, providing wildlife habitats and helping a local community“ n.d.: https://www.carbonfootprint.com/plantingtreesinkenya.html
[29] Uganda Carbon Bureau - ”Carbon offsetting – going neutral.“ n.d.: https://www.ugandacarbon.org/services/going-neutral
[30] Climate Neutral group – “Offset Projects”, 2020: https://climateneutralgroup.co.za/offset-projects/
[31] The World Bank - ”Expanding Kenya’s Renewable Energy Capacity“, 2015: https://www.worldbank.org/en/results/2015/08/18/expanding-kenya-renewable-energy-capacity
[32] United Nations - ”United Nations Carbon Offset Platform,“ (n.d.): https://offset.climateneutralnow.org/allprojects?specs=260
[33] Légis Québec - ”Regulation respecting a cap-and-trade system for greenhouse gas emission allowances“, 2020: http://legisquebec.gouv.qc.ca/en/showdoc/cr/Q-2,%20r.%2046.1?langCont=en#ga:l_iii-gb:l_iv-h1
[34] Ministry of Environment - ”Québec in action against climate change“, 2015: http://www.environnement.gouv.qc.ca/changements/carbone/reportage-ng2015.pdf
[35] Methane destruction is the combustion or flaring of methane gas

The Regional Greenhouse Gas Initiative (RGGI), a multi-state CO_2 cap-and-trade framework[36], and the California Cap-and-Trade scheme[37] are the most widely applied in the USA[38]. A cap-and-trade scheme is a system for controlling carbon emissions and other forms of atmospheric pollution by which an upper limit is set on the amount a given business or other organization may produce but which allows further capacity to be bought from other organizations that have not used their full allowance. The RGGI is applied in the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont. The framework operates on an emissions-allowance based system which permits power plants in participating states to obtain an allowance for each ton[39] of CO_2 emitted annually. Under the RGGI, allowances are auctioned, rather than allocated freely. The scheme is limited to businesses running fossil fuel-fed power plants with capacities of 25MW or more. Such businesses in the nine states may comply by purchasing allowances at quarterly auctions or purchasing allowances from other generators within the region that have excess allowances or supporting offset projects.

The California Cap-and-Trade scheme applies to businesses with CO_2 emissions at 25,000 tons/year or more, operating in the following sectors only in the state of California: Electricity generation (including imports), industrial sources of energy, and distributors of petroleum and natural gas. Under this scheme, emissions allowances purchases are permitted, with specific limitations on borrowing from those with emissions 'credits'. In terms of projects permissible under this scheme, protocols currently exist for: forestry (including urban forestry), dairy digesters, ozone depleting substances projects, mine methane capture, and rice cultivation. The operation of the scheme is relatively complex, requiring application and approval involving multiple regulators.

In Latin America, Mexico is the only country making notable efforts to develop a carbon-related scheme[40, 41]. This is in the form of a pricing tool under a cap-and-trade framework that follows after that of the state of California in the US. Still under development, it aims to allow for carbon credits trading[42].

2.2.4 Australasia

In Asia, the largest carbon offsetting projects run to counterbalance emissions from overseas by international charities, large businesses and governments. Examples of projects can be found on the

[36] The Regional Greenhouse Gas Initiative - "The Regional Greenhouse Gas Initiative – Elements of RGGI." n.d.: https://www.rggi.org/program-overview-and-design/elements
[37] Centre for Climate and Energy Solutions - "California Cap and Trade", 2019: https://www.c2es.org/content/california-cap-and-trade/
[38] White & Case LLP - "United States: Greenhouse gas emissions trading schemes", 2017: https://www.lexology.com/library/detail.aspx?g=0f6bf054-27dd-4cc0-b856-107b1ad0854e
[39] Note here that this refers to a US ton, or 2000 lbs as these schemes are US based
[40] Ecosystem Marketplace - "Latin America", 2015: https://www.ecosystemmarketplace.com/marketwatch/carbon/latin-america/
[41] Business News Americas - "Carbon credit opportunities and perspectives in Latin America", 2005: https://wikileaks.org/gifiles/attach/176/176960_carbon%20credits%20opps.pdf
[42] Diàlogo Chino - "Mexico launches its updated carbon market", 2018: https://dialogochino.net/en/climate-energy/10471-mexico-launches-its-updated-carbon-market/

Gold Standard website[43]. These include the Wind Energy Project in Gujarat, India[44] and the Changbin and Taichung Wind Power Project in Taiwan[45]. However, there are some interesting examples of local authorities taking ownership of their own emissions.

In Japan, cities and prefectures[46] are joining forces with energy providers and local businesses to invest and provide green energy to locals[47]. The most successful of these is the Yamanashi Power Alliance created by Yamanashi Prefecture and Tokyo Electric Power Co. Together they supply power generated by a prefectural hydroelectric and solar power plant to companies at an inexpensive price, preferentially selecting companies that match its renewable energy goals. The Alliance is also investing in the development of more efficient energy storage systems.[48]

In China, a number of cities have come up with their own schemes to deal with pollution. In Shenzhen, the local government has created a special development tax to ensure public transportation receives enough funding and space in a rapidly growing city[49]. Several cities are also building constructed wetlands to deal with their wastewater in an energy and cost-effective way[50]. The wetlands also boost biodiversity and provide a recreational area for locals.

In Australia, Sydney, Melbourne, Moreland and Yara have been certified Carbon Neutral Cities[51] through various schemes such as Melbourne's '1200 Building' retrofitting program[52].

2.2.5 Global Ideas to Apply in Cambridgeshire

Each of the different carbon-offset schemes across the globe contains several commonalities which the proposed Cambridgeshire Decarbonisation Fund needs to consider. These include transparency, verification, and local authority approval. Many of the projects in Asia have been accredited by the Gold Standard (GS) scheme, and it will be important to ensure that Cambridgeshire projects have a clear methodology to demonstrate carbon reduction which is accepted by businesses locally and consider whether a project looks for external accreditation The GS projects have defined timescales (e.g. 20 years for domestic homes in Milton Keynes), clear terms of the agreement as defined by the local organization, and transparent pricing.

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[43] Gold Standard - "Impact registry for certified projects", 2020: https://registry.goldstandard.org/projects?q=&page=1&is_certified_project=true

[44] Gold Standard - "Wind Energy Project in Gujarat India", 2020: https://www.goldstandard.org/projects/wind-energy-project-gujarat-india

[45] Gold Standard - "Changbin and Taichung Wind Power, Taiwan", 2020: https://www.goldstandard.org/projects/changbin-and-taichung-wind-power-taiwan

[46] A prefecture is the first level of jurisdiction and administrative division in Japan. They are headed by a directly elected governor.

[47] Japan for Sustainability - "Local Governments in Japan are Entering Power Retail Business as Country Shifts to Locally Produced Renewable Energy", 2016: https://www.jlgc.org.uk/en/news_letter/local-governments-in-japan-are-entering-power-retail-business-as-country-shifts-to-locally-produced-renewable-energy/

[48] The Japan Times - "Yamanashi vies for energy storage investment", 2016: https://www.japantimes.co.jp/news/2016/12/26/business/yamanashi-vies-energy-storage- investment/

[49] Guido di Pasquale *et al.* "Innovative public transport in Europe, Asia and Latin America: a survey of recent implementations", *Transport Research Proceedings 14*. 2016: https://doi.org/10.1016/j.trpro.2016.05.276

[50] Dongqing Zhang *et al.* - "Constructed Wetlands in China. Ecological Engineering", 2009: https://doi.org/10.1016/j.ecoleng.2009.07.007

[51] C40 - "Melbourne certified as Carbon Neutral C40 Blog", 2013: https://www.c40.org/blog_posts/melbourne-certified-as-carbon-neutral-city

[52] City of Melbourne - "1200 Buildings", n.d.: https://www.melbourne.vic.gov.au/business/sustainable-business/1200-buildings/Pages/1200-buildings.aspx

The GS scheme offers guidance on verifying and validating projects. Should an external validation process be a prerequisite for businesses, the Cambridgeshire Decarbonisation Fund could consider an independent third party (Validator/Validation Team[53]) that could assess:

- that the project design of a clean development mechanism project fulfils the requirements set out by the Fund
- whether the project has been implemented as planned
- that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described
- that the project provides benefits in Cambridgeshire in accordance with its project design

Finally, as in “Climate Austria” the aim is for local projects to not only reduce carbon emissions at the local level, but also identify the other co-benefits for communities which will in turn bring greater local community support for projects. In Austria especially, the projects included in this scheme were of the scale that would not be viable for the EU-ETS scheme but would be locally oriented and therefore feasible. This locality is especially important to the Cambridgeshire Decarbonisation Fund. In the details of the fund outlined in the next section, we have attempted to address each of these requirements in detail.

[53] More suitable to reduce risks of collusion or corrupt practices for validation of CDM projects

3 Proposed Cambridgeshire Decarbonisation Fund Framework

3.1 Benefits of the Cambridgeshire Decarbonisation Fund

The Cambridgeshire Decarbonisation Fund ("The Fund") represents a new approach to a 'green new deal' that will set Cambridgeshire on the path of raising locally generated investment from its businesses to tackle decarbonisation in a win-win approach.

We have identified three parties in Cambridgeshire which will benefit from the establishment of The Fund: businesses, communities, and benefits to nature and biodiversity.

Firstly, businesses that invest into The Fund benefit through being able to offset a portion of their own carbon emissions through a carbon credit scheme, which will put them one step closer to achieving their own carbon neutral pledges and support the community to achieve their emissions reductions quicker than they might otherwise.

Additional benefits are realised through the fact that this fund will invest into local projects that directly benefit local communities. For example, by reducing fuel poverty through energy efficiency retrofits; or improving air quality by investing in renewables for oil dependent communities; or by improving access to nature by investing in carbon sequestration or tree planting. This is also a direct benefit for the businesses' employees. Current and prospective employees will be able to see that the business that they work in is investing directly into their local area, thereby providing social responsibility at a direct level. Given that the projects offered by this fund are on a local level, businesses and employees will see a tangible contribution to their community.

Secondly, Cambridgeshire will benefit as projects are rolled out to reduce carbon emissions across the county thus helping to achieve the county council's target of net zero emissions by 2050. The Fund will offer carbon credit benefits to businesses and generate a small return to fund development costs for future projects i.e., reforestation and cycle ways.

Finally, local communities will benefit as their county becomes greener. For residents currently dependent on oil, projects such as the Swaffham Prior Community Heat Network (discussed further in **Case Study: Swaffham Prior Community Heat Project**), will reduce the impacts of fuel poverty and retain the health benefits of a warm home with less air pollution. Improving air quality by reducing sources of air pollutants is anticipated to reduce hospital trips for air pollution-related pathologies. Installing renewable heating projects will improve community and alleviate burden and cost on the NHS.

As the decarbonisation fund is aiming to establish a "green new deal" between communities and businesses, the projects should be **brought forward by Cambridgeshire communities** (Think Communities approach), in close collaboration with Local Authorities and existing organisations working in this field (e.g., Cambridge Zero, nature conservation organisations etc.).

3.2 Project Pricing

The proposed Cambridgeshire Decarbonisation Fund is an investment opportunity for businesses. For a business investing in the fund their return on investment is carbon reduction certificates/credits and demonstrable local benefits to staff living and working locally The model proposed serves as the basis for the Cambridgeshire Decarbonisation Fun, which, while aimed at local business, may also attract investment from outside Cambridgeshire too, as the ambition is to create Cambridgeshire as a 'positive sink' rather than paying others for carbon abatement as it is a 'source' of carbon emissions.

A Fairtrade pricing model is proposed (see **Case Study: Swaffham Prior Community Heat Project** below for approach comparison). This model is based on the cost of implementing and managing a pipeline of carbon projects across a range of sectors, combined with a margin that covers the management and governance of the fund and supports seed funding for project development. This business margin secures the viability of the fund over the longer term.

The Fairtrade model, also used in part by the Gold Standard Scheme, is considered to be a "fair trade" as it ensures that the total cost of a project will be covered by the carbon offset pricing, and that businesses or investors are receiving a fair price for their investment. This approach facilitates a variety of projects to be developed across sectors where some sectors cost more and some less for carbon abatement so allows the more difficult projects to proceed which might bring bigger societal benefits such as tackling fuel poverty alongside the readily deliverable projects such as tree planting. To calculate the overall price of one tonne of CO_2 the initial project costs, running costs, and business margin are factored in.

Adopting the Fairtrade pricing model is helpful in making businesses see themselves as partners with the communities within which they operate in the collective fight against climate change. Adapting the widely used Fairtrade pricing model to be used locally in our Cambridgeshire projects means that investors can obtain a better quality of carbon offset credits and co-benefits than going elsewhere: rather than placing their investment into projects which have little relevance to their employees, businesses in Cambridgeshire are provided the opportunity to engage in meaningful work for their employees in this community.

The successful implementation of this model is contingent on a clear operational framework that has transparent and representative governance and administration, robust methodologies for verification agreed by the Fund and the business investors and is well-aligned with the national legal/regulatory framework related to decarbonisation and local ambitions of Cambridgeshire. To demonstrate the pricing frameworks explored, the real-world example of the Swaffham Prior Community Heat Project has been used.

3.2.1 Case Study: Swaffham Prior Community Heat Project

Swaffham Prior is a village in Cambridgeshire currently dependent on oil and is the focus of a heat project designed to remove oil as the fuel source. In 2018, the Swaffham Prior Community Land Trust approached Cambridgeshire County Council to collaborate on a renewable energy project using County Council owned land in Swaffham Prior to build an energy centre. The project will use boreholes in a ground source heat pump and air source heat pumps to use residual heat from the environment to provide heat to homes in the village, thus reducing carbon emissions for hot water and heat. The important point about this project is that the community has no gas infrastructure, has low density

housing as it's a rural village. In general, rural villages have high proportions of older homes which are more expensive to successfully retrofit with individual air source heat pumps unless significant levels of energy efficiency measures are invested.

a. Fair Trade Pricing

A new business model is being developed for Swaffham Prior that looks to offer the carbon emission reductions from the scheme into the Fund to attract investment into the project. The project is keen to offer all homes the opportunity to connect to the heat project at no upfront cost. This will provide the strategic benefit of a faster route to decarbonisation for the village and for Cambridgeshire carbon emissions. To offer this opportunity to everyone, the business case for the project is dependent on the ability for it to sell the carbon reductions generated by the project. With this goal in mind, the Fairtrade carbon pricing model[54] has been used as a framework, as it guarantees income into the business model. It is clear that in order to fund carbon neutral projects and deliver the changes at the pace required to meet national objectives and offers equity to local people. The challenge with current government incentives is that the homeowner needs to make substantial upfront capital investment into their property to access grants/incentives and this is not a route open to many households especially those on lower incomes. This type of scheme will make a difference. A Carbon Fund can provide climate equity and improve the speed of carbon reductions – two very important value adds needed right now.

The Fairtrade carbon pricing model, shown in **Equation 1,** subtracts the project revenues from the total project costs which include investment, carbon cost and business margin. The cost of 1 tonne of CO_2 saved is calculated by dividing the net cost of the project by the number of tonnes of CO_2 saved by the project.

Equation 1: The Fairtrade Pricing Model

$$Fairtrade\ pricing\ = \frac{(investment\ cost + project\ cost + carbon\ cost + business\ margin) - revenues}{Number\ of\ credits}$$

By using the Fairtrade pricing model as a framework, we have devised a potential Cambridgeshire pricing strategy, the Cambridgeshire Pricing Model, shown in Equation 2, which sums project costs, ongoing costs along with a business margin before calculating the price of each carbon credit per tonne of CO_2 saved.

Equation 2: Proposed Cambridgeshire Pricing Model

$$Cambridgeshire\ Pricing\ Model\ = \frac{(project\ costs\ +\ ongoing\ costs\ +\ business\ margin)}{Number\ of\ credits}$$

Inflation will be accounted for by linking this model to an index such as Retail Price Index (RPI). Calculations have been conducted (**Table 2**) excluding potential revenues as these are currently unknown. Furthermore, there will be indirect revenues such as improved air quality reducing cases of both cardiovascular and respiratory diseases which will provide benefit to the NHS which will be monitored and monetised to demonstrate additionality.

[54] Fairtrade International - "Fairtrade carbon credits price methodology", 2015: https://files.fairtrade.net/standards/FCC_price_methodology.pdf

Table 2: Fairtrade pricing model applied to the Swaffham Prior projected carbon costing data over 25, 30, and 40 years. Carbon credits are calculated both with and without ongoing costs, and with and without a 10% business margin added. Total project costs are c.£ 5.2m

Duration	Scenario	Carbon dioxide saved (tonnes)	Ongoing costs (£)	Price/CC/yr - *ongoing costs*	Price/CC/yr + *ongoing costs*	Price/CC/yr - *Ongoing costs* + 10% business margin	Price/CC/yr + *Ongoing costs* + 10% business margin
25 years	Worst	20,845	1,239,500	£249	£309	£274	£340
25 years	Expected	26,769	1,437,500	£194	£248	£214	£273
25 years	Best	36,679	1,552,340	£142	£184	£156	£203
30 years	Worst	25,815	1,495,320	£201	£259	£222	£285
30 years	Expected	33,158	1,732,920	£157	£209	£173	£230
30 years	Best	45,185	1,867,560	£115	£156	£127	£172
40 years	Worst	35,804	2,006,960	£145	£201	£160	£221
40 years	Expected	46,005	2,323,760	£113	£164	£124	£180
40 years	Best	62,281	2,498,000	£83	£124	£92	£136

b. BEIS Pricing

The 2008 EU Legislation on Climate Change determined the EU's climate change package which divided carbon pricing into "traded" and "non-traded" sectors, and set a predicted price for these two types of carbon up to 2050[55]. The traded carbon pricing applies to any carbon emissions which are covered by the EU Emissions Trading System (power and heat generation, commercial aviation, and energy-intensive industry), and non-traded pricing applies to those which are not covered under this system. By 2030, these two prices are predicted to have converged as a result of the establishment of a global carbon market. approach. The High, Low, and Central scenarios are based on a 2012 marketing valuation on EU Allowance futures contracts and different states of the carbon market[56].

Although the implementation of a UK ETS scheme has been announced[57], as a response to UK withdrawal from the EU, we will – due to the time of writing being early January 2021 - operate under the assumption that the UK government will impose carbon pricing at or higher than the current EU predicted prices. With the knowledge that a UK based trading scheme may appear in the next 2-5 years, it could be wise to set the carbon pricing in this Cambridgeshire scheme at a target level which mirrors the likely UK predicted prices. This means that should a trading scheme be put in place

[55] Department for Business, Energy & Industrial Strategy - "Valuation of energy use and greenhouse gas: Supplementary guidance to the HM Treasury Green Book on Appraisal and Evaluation in Central Government", 2018: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794737/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal-2018.pdf. Accessed 15 Jul 2020.
[56] Department of Energy & Climate Change - "Updated short-term traded carbon values used for UK, public policy appraisal", 2012: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/245385/6667-update-short-term-traded-carbon-values-for-uk-publ.pdf.
[57] Department for Business, Energy & Industrial Strategy - "New Emissions Trading System proposal would see UK go further inn tackling climate change. New UK system to replace EU system for trading carbon emissions", 1 Jun. 2020, https://www.gov.uk/government/news/new-emissions-trading-system-proposal-would-see-uk-go-further-in-tackling-climate-change.

nationwide, it will be easy to match our prices with those of the UK government.

The Greater London Authority (GLA) has already set up a Carbon Offset Fund, based on charging new developers a price per tonne of carbon emitted for every new build in the GLA[58]. Their pricing schemes in 2018 were set at £60/tCO_2 which is the BEIS, non-traded price of carbon as of 2018, as well as the suggested Zero Carbon Hub price per tonne of carbon[59].

Using the BEIS carbon price projections, the 2020 price of carbon would be £69/tCO_2 at a central price of non-traded carbon as shown in **Table 3** below. This is the price of carbon for one tonne of carbon per year, and therefore, to buy one tonne of carbon in 2020 at a central BEIS price guaranteed for 5 years would be:

$$£60/tCO_2 \times 1tCO_2 \times 5\ yr\ = £300.$$

Using the non-traded carbon prices in 2020, we have calculated the estimated revenue assuming all the projected carbon emissions for the Swaffham Prior project are purchased in 2020, and presented those results in

[58] Mayor of London - "Carbon Offset Funds - Greater London Authority guidance for London's Local Planning Authorities on establishing carbon offset funds", 2018: https://www.london.gov.uk/sites/default/files/carbon_offsett_funds_guidance_2018.pdf

[59] Department for Communities and Local Government - "Next steps to zero carbon homes – Allowable Solutions Government response and summary of responses to the consultation.", 2014: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/327842/140626_Government_Response_to_Consultation_-_Next_Steps_to_Zero_Carbon_H__FINAL.pdf.

Table 4.

Table 3: BEIS Traded and Non-Traded prices per tonne CO2 (given in £/tCO2) projected for the years 2020-2025. Adapted from data table 3 of the BEIS 2019b Valuation of Energy Use and Greenhouse Gas.

Year	Traded price: Low estimate	Traded price: Central estimate	Traded price: High estimate	Non-Traded price: Low estimate	Non-Traded price: Central estimate	Non-Traded price: High estimate
2020	0	14	28	35	69	104
2021	4	21	37	35	70	106
2022	8	27	46	36	72	107
2023	12	34	56	36	73	109
2024	16	41	65	37	74	111
2025	20	47	74	38	75	113

Table 4: Projected possible savings from selling all CO_2 savings from Swaffham Prior project over a 30 year guarantee. The BEIS pricings are from 2020 as shown in Table 3.

Pricing Level	2020 BEIS Price £	Tonnes of carbon dioxide saved over 30 years			Max. possible revenue from selling all carbon dioxide in 2020 for 30 years		
		Worst	Expected	Best	Worst	Expected	Best
Low	35	25,815	33,158	45,185	£77,550	£1,160,530	£1,581,475
Central	69	25,815	33,158	45,185	£1,781,235	£2,287,902	£3,117,765
High	104	25,815	33,158	45,185	£2,684,760	£3,448,432	£4,699,240

The results presented in

Table 4 show only one type of scenario for a business or businesses purchasing carbon credits, and is in particular, highly reliant on a business being willing to make a significant up-front investment for the project and would be required to offset their credits for a total of 30 years.

In reality, especially given that the price of non-traded carbon is projected to rise over time, the Fund may want to look into selling carbon over periods of 5 or fewer years at a time. This would allow smaller businesses to be able to buy into the plan, offer the Fund a constant stream of revenue with the possibility of businesses getting an "automatic renewal" into the Fund, and could potentially offer higher revenue over 30 years as the price of carbon rises.

Comparing the Fairtrade and BEIS models above, it is clear that with the BEIS model, the total cost of a project such as the Swaffham Prior Heat network will not be covered. Therefore, it is suggested that the Fairtrade model be used to price each tonne of $CO_{2\,f}$, as this will ensure that the overall cost of the project is covered, while maintaining flexibility across the projects.

3.2.2 Project Portfolio Approach

Initially, fund development centred on the concept of pricing individual projects, with businesses investing directly into individual specific projects (or a designated share of the costs), as described above. However, it became apparent that the more challenging projects, such as taking communities off oil and cutting emissions at source, would be more expensive per tonne of carbon when compared to tree planting for example and may therefore not be funded by businesses.

Opting for a fund rather than a matching scheme between businesses and projects, allows for much greater security of delivering a wider range of projects and offers the businesses with a portfolio of funded projects, which they can gain greater promotional benefits according to their individual needs. It also enables averaging the carbon price over a variety of projects and thereby provides greater financial stability for the fund and the assigned carbon price against unexpected additional costs in individual projects. Funds are the option of choice for all UK-based and many other offsetting schemes worldwide and thus offer great potential for Cambridgeshire as well.

In this section, we create a theoretical "Project portfolio" of different projects throughout Cambridgeshire, which utilizes the Fairtrade pricing model to calculate each tonne of carbon, and then averages over the projects included to create a "Cambridgeshire Carbon Cost". The projects are ranged over the tiers mentioned in the following section on **Project** Tiers, and the costs and projected carbon savings are based on a single year. We have grouped each project into the "**avoid, reduce, sequester**" sections, which are further discussed in detail below, based on whether projects avoid carbon emission, reduce carbon emission, or sequester carbon.

From **Table 5**, if we were to combine the total carbon credits and project prices, the average cost of carbon in Cambridgeshire for a given year is £203/tCO_2. By combining the total projects in the portfolio, while still using the Fairtrade pricing scheme to cost out each carbon credit, we can utilize projects such as tree-planting which are low cost, high reward, to reach a lower median carbon cost for the fund.

Table 5: Example project prices which could make up a Cambridgeshire Project Portfolio for a given year

Project Type	Total tCO_2 saved	Price of Projects	Fairtrade Price

Avoid	1,500	£427,500	£285
Reduce	715	£100,000	£140
Sequester	2,750	£55,000	£20
Total	4,965	£582,500	£117

3.3 Project Tiers

Projects that could be admissible for funding through the proposed decarbonisation plan will likely differ greatly in their approach to contributing to a net zero Cambridgeshire. To facilitate assessment of this variety of projects we suggest a tier system for interventions that can be summarised as "**avoid, reduce, sequester**". All projects, regardless of their tier according to their CO2e reduction approach, should present co-benefits associated with the project and disclose relevant quantitative data or estimated outcomes to include these co-benefits in the carbon price.

Tier 1 comprises all projects that avoid emissions at the source, i.e., by providing clean energy. This tier primarily includes small-scale, off-grid renewable energy generation for local communities e.g., installing PV systems, solar water heaters, small scale hydropower, heat pumps, wood-fuelled ovens, biogas or biomass plants etc. These projects are of particular interest for voluntary offsetting because they are exempt from the EU-ETS. Projects in Tier 1 will likely have to prove robustness and sustainability over the longest timescales and against different scenarios for developments in the national and international energy sector but have the highest potential to be a driver towards a net zero Cambridgeshire.

Tier 2 projects will target emissions reduction and are split into two types. Tier 2a encompasses projects concerned with the reduction of existing emissions from residential and industrial energy use and the energy use for transportation by increasing the efficiency of that energy usage or making necessary changes to the framework where the emissions occur. Most interventions that are proposed will fall into this tier as these are much more accessible financially e.g., by retrofitting electrical appliances or better insulation of domestic buildings. Capital investment should target funding further projects which are improvements (i.e., fall into Tier 1) and provide better energy usage to ensure actual emissions reduction by these interventions and avoid rebound effects. Another sector with very high potential for emissions reduction is transportation. Interventions that focus on switching from cars to public transport or bikes, or technological changes like the transition towards e-mobility would also be included in this tier. E-mobility projects coupled with a renewable energy supply could potentially also fall into Tier 1.

Tier 2b projects focus on the reduction of emissions from natural sources, usually driven through detrimental human interactions with the environment. In the UK, this mostly concerns the use of peatlands and wetlands. The approach towards reducing emissions from peatlands and wetlands differs a lot from the treatment of the emissions targeted in Tier 2a projects and is much more intertwined with new and developing agricultural land use practices. When in good condition, peatlands not only stop emitting further CO_2 but can also become carbon sinks again; projects focussing on new farming methodologies with peatland and the creation of carbon sinks will be important and have the potential to move from Tier 2 to Tier 3 dependent on their role.

Emissions that can neither be avoided nor reduced may be tackled by "capturing" or "sequestering" some of the carbon produced by non-natural sources from the air. These projects are categorised as

Tier 3 and could include both bio-sequestration through tree planting or algae bioreactors and technological carbon capture and storage solutions. Even though tree planting is and will be an important measure in mitigating anthropogenic climate change, tree planting is restricted by the area that can be allocated for afforestation and its effect is delayed substantially compared to Tier 1 and 2 interventions. Therefore, we strongly recommend using a mix of all three projects in the decarbonisation fund, potentially including an option to prioritise Tier 1 and 2 projects over Tier 3.

Identifying this list of projects and grouping them into categories will need to be a process which includes input from both the community, the business investors and the Fund governance structure. It will be beneficial to get insight from the community as to which type of projects are the most important to them. Additionally, in order to undertake many projects in Tier 2, this will require local community approval, as it mainly involves installing new technology in villages or local communities. The levels of community engagement and project development support will need to be discussed as to develop credible projects takes time and commitment from everyone

Tier 1: Clean Energy Supply – supporting off-gas communities to decarbonise their heat e.g., Swaffham Prior Community Heat Network

In March 2017, Cambridgeshire County Council approved its Corporate Energy Strategy which contains a vision to help "build energy resilient communities through aligning the Council's assets and the potential for energy generation with local needs". It is estimated that 10,000 households and businesses are oil-dependent for heating and hot water across Cambridgeshire. The council's Climate Change and Environment Strategy of May 2020 details a commitment to help oil-dependent communities make the transition to low carbon and renewable energy generation. A pilot Community Heat Project is underway in Swaffham Prior using ground source heat pumps as a renewable energy solution. There is also a project started involving three villages in Huntingdonshire, Great Staughton, Perry and Grafham that have accessed funding from the rural energy grant fund to scope the feasibility of taking the three villages off oil. The national clean growth strategy projects that heat networks will need to provide 17-24% of the UK's heat by 2050 to meet UK carbon reduction targets effectively. Rural areas really struggle to access grants for off-gas decarbonisation projects as the housing densities are low and homes can be older and more spread out.

Tier 2: Transportation Emissions Reduction - Electric Vehicle Charging Infrastructure

Investing in new technologies, e-mobility for future developments in the county will help towards the net zero carbon goal. For example, sustainable cement uses an alternative production method which results in a reduction in CO_2 emissions of between 50-80%. This has been used for the new stretches of the A14 and should be encouraged for all new building projects. If sustainable cement proves to be significantly more expensive in the early years, the Fund could invest into this technology for a major new community scheme and bring the carbon benefit into the Fund.

Transportation emissions contributed 45% of all emissions in Cambridgeshire in 2017 (CUSPE, 2019). Accelerating the adoption of sustainable transport methods is an important part of creating a sustainable Cambridgeshire. Sustainable transport methods, such as electric vehicles (EV), have greater energy efficiency relative to traditional automobiles and contribute up to 60% less carbon

emissions[60]. EV use is rapidly rising and projected to increase significantly by 2025[61]. However, a barrier to widespread EV use is the accessibility of EV charge points. Increasing EV use across Cambridgeshire, and an associated reduction in carbon emissions, may be facilitated by increasing the number of EV charge points[62].

There are currently 12 EV charge points positioned at Park and Ride locations across Cambridgeshire. Two EV chargers were installed respectively at Babraham, Longstanton, Madingley, Milton, St Ives, and Trumpington and have supplied a total of 3402 charges since (to add year installed). These 12 Cambridgeshire EV charge points were estimated to have saved between 70 and 105 tonnes of Carbon in 2019 alone. Assuming the average internal combustion engine vehicle emits 404g of carbon per mile; this carbon saving is equivalent to a traditional automobile travelling between 170,000-259,000 miles. An additional benefit of EV charge points is the scalability. By installing more EV charge points, Cambridgeshire residents can be better supported to use electric rather than traditional automobiles.

The choice of location for new EV chargepoints will have a large impact on the amount of carbon emissions reduced by the project. We found that, in 2019, Trumpington Park and Ride contributed 46% of total EV charges compared to a total of 1 charge (0.02%) from the two EV chargers at St Ives Park and Ride. However, it is worth nothing that the EV chargers installed at Trumpington Park and Ride are owned and operated by BP Chargemaster as loss leaders. The current charge of 12p/kWh does not cover the cost of electricity. Mechanisms to introduce price-parity across Park and Ride locations are required. It may be beneficial to research EV use across Cambridgeshire to select locations which maximise their use and subsequent carbon reductions and find out those areas where commercial operators will not invest as the patronage is too low to provide the financial return on their investment. However, it is important that charge points are available ahead of need and Cambridgeshire residents have equitable access to charge points. An additional benefit of EV chargepoints is the flexibility with where they can be installed. The Fund could invest in greater levels of EV charging infrastructure to deliver wider connectivity across Cambridgeshire and in particular in the more rural areas.

Tier 3: Carbon Sequestration

As previously mentioned, Cambridgeshire is positioned uniquely well in terms of its available natural resources (peatland and unused land) to become a region for sequestration. In particular, the Great Fen Peatland Project is a 50-year restoration project to create a “living landscape” for both wildlife and people to enjoy[63]. Lowland peats are considered by the Department for Environment, Food and Rural Affairs to be among the most significant sources of CO_2 in the UK, but with appropriate conservation and restoration, could become effective sinks for CO_2 over the next few decades. In

[60] Moro, Alberto, and Laura Lonza - “Electricity carbon intensity in European Member States: Impacts on GHG emissions of electric vehicles.” *Transportation research. Part D, Transport and environment* vol. 64, 2018: https://doi.org/10.1016/j.trd.2017.07.012

[61] XIangyu Luo *et al.* - " Electric Vehicle Charging Station Location towards Sustainable Cities,” 2020: https://www.mdpi.com/1660-4601/17/8/2785

[62] Ghazale Haddadian *et al*. - “Accelerating the Global Adoption of Electric Vehicles: Barriers and Drivers,“ *The Electricity Journal.* 2015: https://doi.org/10.1016/j.tej.2015.11.011

[63] Chris Evans *et al.* - "Final report on project SP1210: Lowland peatland systems in England and Wales – evaluating greenhouse gas fluxes and carbon balances,” 2017: .http://randd.defra.gov.uk/Document.aspx?Document=14106_Report_FINAL.pdf

total the Great Fen Peatland Project aims to restore up to 3700 ha of land in Cambridgeshire, which if properly maintained could become a carbon sink of -3.56 tCO_2/ha/yr saved[64].

Additionally, the 2019 CUSPE Carbon Zero Cambridgeshire report[65] provides a detailed scenario for afforestation projects throughout Cambridgeshire. Assuming that 3,000ha of land is used in 2020 for afforestation of a biodiverse set of trees, they predict it is possible to sequester between 5-13 tCO_2/ha/year; this equates to between 15,000 and 195,000 tCO_2 sequestered per year. Using the Fairtrade pricing scheme, this puts the price per tCO_2 at less than £30/tCO_2. Clearly, this is a lucrative and necessary method to include within the project tiers, however it cannot be the only method; as the 2019 CUSPE report points out, overplanting is a biodiversity risk as not all areas benefit from tree planting, and therefore 3,000 ha of land is likely to be the largest amount of land possible to use for tree-planting. For that reason, sequestration is considered to be the bottom tier of projects, as it is limited in its possibilities and therefore cannot be our only method to reaching carbon neutrality.

3.4 Potential additions to scheme

The Fund is just one mechanism which can encourage businesses to invest in local community infrastructure projects to offset their carbon emissions that are hard to reduce e.g., from aviation.

More strategically, Cambridgeshire may need to consider how to raise capital for the Cambridgeshire decarbonisation fund or whether it needs a much larger Fund for strategic infrastructure. Although currently local government does not have the powers to raise money locally for low carbon infrastructure this could be a future opportunity. Some areas in the UK are discussing whether, a 1 penny per litre fuel tax (oil, gas, petrol and diesel) could be introduced to fund strategic electricity upgrades to facilitate local smart energy grids or mass transit solutions. Scaling the Fund or setting up a separate fund for inward investment is something to explore further.

To extend the reach of the Fund, which is currently modelled on voluntary engagement by businesses, there are examples in the UK where carbon offset funds (see **A Global Snapshot - Europe**) have been set up related to the planning system and bringing forward new developments. These have been based on where a development cannot deliver the required levels of carbon emissions reduction onsite for a very good reason, that a commuted sum is put into a fund to invest in carbon reductions in local projects. This is an option that the Cambridgeshire Local Authorities have already discussed as an option and offers the potential of a steady source of additional income drawing substantially from the experience of other UK councils.

3.5 Governance and Administration

To oversee the set up and management of the decarbonisation fund it is advised that an independent board is established with representation from the following stakeholders:

1. Cambridgeshire County Council Chair and secretariat for the Fund
2. Local Authority Partner representation

[64] IUCN UK Peatland Programme - "The Great Fen | IUCN UK Peatland Programme," 2001: https://www.iucn-uk-peatlandprogramme.org/projects/great-fen-0?destination=/projects-map
[65] CUSPE Policy Challenges Team of Researchers -"Net Zero Cambridgeshire", 2019: https://data.cambridgeshireinsight.org.uk/sites/default/files/2019%20CUSPE%20Policy%20Challenge%20-%20Net%20Zero%20Cambridgeshire.pdf

3. Businesses operating in the County
4. Community representatives
5. Voluntary appointments of Decarbonisation expert researchers (to offer informed advice on ways to improve the operation and management of the fund)
6. Auditing firm (to play a supervisory role in the operation and management of the fund)
7. Validation team

A proposed schema summarising the process for administering the Cambridgeshire decarbonisation fund, with focus on projects, is summarised in **Figure 3** below.

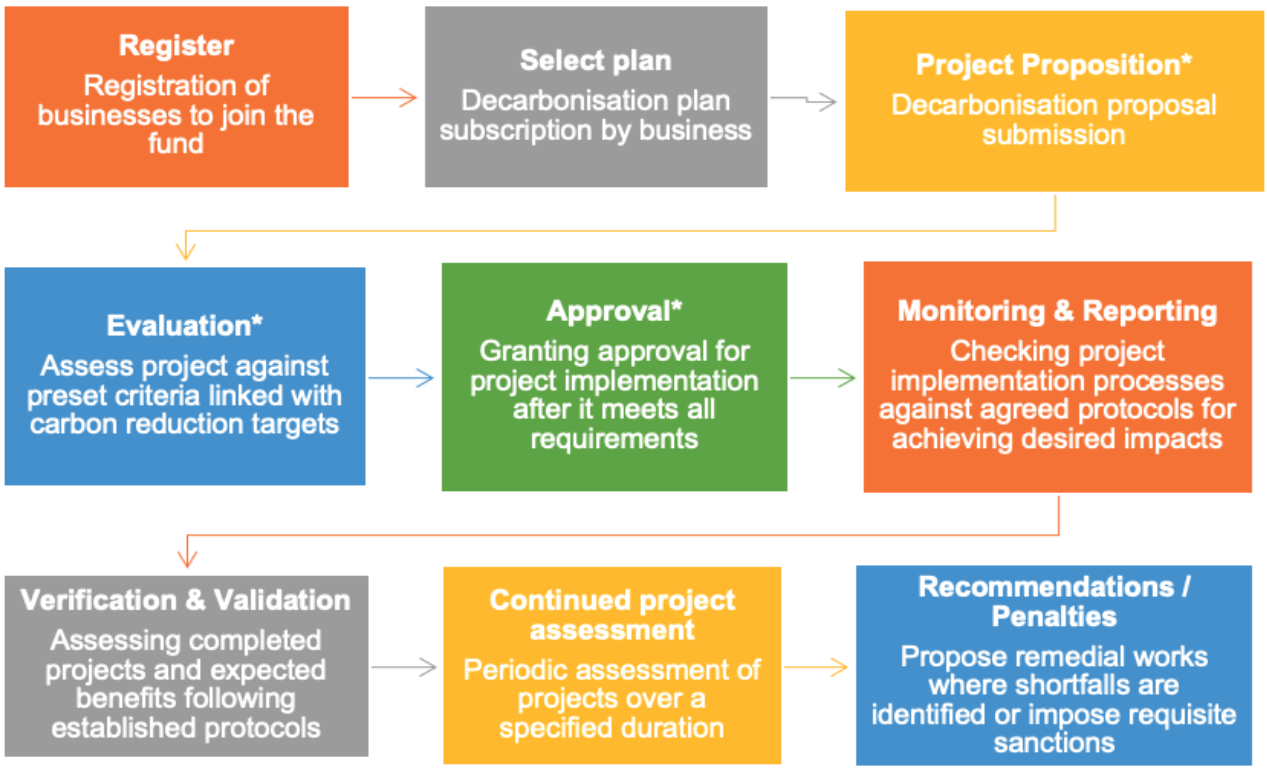

Figure 3: Proposed framework of stages for administering and operating the fund

The flowchart presented in **Figure 3** is designed for the initial stages of the fund and can be revised over time to be shorter. For instance, after a number of projects have been undertaken using the fund, a review will be useful to inform the creation of an initial set of pre-validated, ready to implement projects by the administering body. Such a list would have to be updated periodically. Approaching the implementation of the flowchart this way will facilitate innovation in the administration processes, by modifying the three stages of 'Project proposition', 'Evaluation' and 'Approval' (see **Figure 3**) into one. A business may get choice on investment scale, carbon benefits, preferred areas/sectors for investment for example which will form their plan. The preceding holds implications for the breakdown of stakeholders listed below.

A breakdown of stakeholders to be involved at each stage:

1. Register: Business; Administering body
2. Select plan: Business; Administering body
3. Project proposition: Business, Community, Local Authorities
4. Evaluation: Administering body

5. Approval: Administering body; Audit entity
6. Monitoring and reporting: Administering body; Business
7. Verification and validation: Administering body; Validation entity/team
8. Continued project assessment: Administering body; Validation entity/team; Audit entity
9. Recommendations / penalties: Administering body; Validation entity/team; Audit entity

In terms of the day-to-day operation of the fund including the performance of functions such as registering, evaluating, verifying, validating and reporting on projects and businesses that are applying for them, two alternatives are available. On the grounds of possible lack of internal capacity in the local authorities to effectively operate such a fund - an independent entity could be useful. The appointment of an organisation experienced in the operation and management of decarbonisation funds through appropriate procurement methods could help minimise overheads for the Council Alternatively, local authorities have the option to administer the fund using an internal unit. This, however, is likely to be attended by the need to hire additional individuals who already have the requisite knowledge and capabilities or hiring and training them. The choices will rest on with the decision-making body - to outsource this service within the appropriate procurement vehicles, or to use internal resources and capabilities depending on which option leads to the most effective use of resources and optimisation of operations and reporting.

3.6 Project Verification

All carbon projects within the Cambridgeshire Decarbonisation Fund need to demonstrate some key characteristics to prove their legitimacy, integrity and credibility. According to the Carbon Trust[66], these requirements are

1. **Additionality:** Additionality is a key defining characteristic of carbon offset projects. Administered carbon projects under the fund needs to demonstrate that would have not been implemented except for the revenue of the fund. This means that the establishment of the decarbonization fund is the main motivation for considering the carbon projects[67]. Project additionality is oftentimes misunderstood for carbon offset projects that would have been pursued without the sales and certification of carbon offset credits[68]. This includes projects that are mandatory by law or investments in renewable energy or energy-saving equipment mainly for their profitability. Such projects cannot be said to be additional because they would have been considered or have happened anyways. A project can only demonstrate additionality if and only if the decarbonization fund plays a pivotal role in its implementation[69]. Usually, certifying bodies like the Gold Standard[70] and CDM[71] and many others have specific protocols for demonstrating and assessing the additionality of a project.

2. **Permanence:** Reductions in carbon emissions through the execution of the projects should not be susceptible to reversibility, thus ensuring their permanence. However, some projects

[66] Parliament Office of Science and Technology - ”Voluntary Carbon Offsets,” 2007: https://www.parliament.uk/globalassets/documents/post/postpn290.pdf
[67] GHG Management Institute - ”Additionality”, 2019: https://www.offsetguide.org/high-quality-offsets/additionality/
[68] GHG Management Institute - ”Additionality”, 2019: https://www.offsetguide.org/high-quality-offsets/additionality/
[69] GHG Management Institute - ”Additionality”, 2019: https://www.offsetguide.org/high-quality-offsets/additionality/
[70] Ecofys, TÜV-SÜD and FIELD -” The Gold Standard - Premium quality carbon credits requirements,” 2008: https://www.goldstandard.org/sites/default/files/gsv2.1_requirements-11.pdf
[71] Clean Development Mechanism - “Tool for the demonstration and assessment of additionality in A/R CDM project activities,” 2005: https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-01-v1.pdf

are intrinsically susceptible to reversibility. A typical example is forestry projects aimed at increasing green spaces and sequestering carbon in trees within the community. Cutting down the planted trees, eliminating green spaces or the emergence of natural disasters like forest fires and pest outbreaks can cause reversibility in the carbon initially stored, thus creating risk. It is important that non-permanence risks such as those mentioned above are considered in the administration of carbon projects and it may necessitate a clear legal ownership and delineation of the long-term liability of the carbon credits generated by the fund[72]. To mitigate the non-permanence risks arising from forestry projects, the fund can either allow temporary credits to be issued if it foresees reversibility, buy insurance to compensate reversal, hold back a certain percentage of credits in a reverse pool or take up the liability itself[73]. Therefore, in the administration of the fund, there needs to be a clear construct of how the fund intends to manage these risks.

3. **Avoidance of leakages:** Leakages occur when the carbon offset projects carried out within a region causes emissions outside the boundaries of that region or in neighbouring cities. A carbon offset project should ensure no leakages most especially from activity shifting. A good example of this scenario is an ecological leakage where the process of restoring and rewetting peatlands leads to the death of trees and forest especially in hydrologically connected regions. An extension of this effect will be the reduction in cultivation of food within Cambridgeshire due to the unavailability of lowland peatland, giving rise to increased cultivation activities in nearby regions.

4. **Not double-counted:** By ensuring that a carbon registry is established as a part of the Fund, credits sold should be recorded and retired so that they are not double-counted.

5. **Verifiable:** Projects should also have methodologies agreed by the businesses investing in the fund. This can require an independent body to monitor and ensure that all suggested CO_2 savings from the projects are true and real if needed. In cases where the carbon savings are not realized, the Fund would need to bring forward additional projects to realise the carbon reduction. Transparency will be important. It is important that the administrative body for the projects factors this risk of not realising the carbon savings for some projects to the forecast levels and takes proper steps to mitigating them. Verification and validation procedures are discussed below.

6. **Co-beneficial:** Apart from the guaranteed emission reduction, it is important that the Fund provides health co-benefits e.g., air pollution reductions or health improvements. This is discussed in later chapters of this report.

Verification and validation

To ensure that the framework for the fund gains the needed trust among stakeholders, establishing an agreed methodology or structure for verifying and validating projects is needed. Having a good structure in place will maintain transparency among stakeholders about how the scheme is operated, which is important in building trust and legitimacy of the scheme.

[72] Scott A. Smith *et al.* -" Forest offset credits: a cornerstone of sustainable development on aboriginal lands," *Lexology.* 2009: https://www.lexology.com/library/detail.aspx?g=0d0b8a3e-a871-4e3f-8507-e628c719441a
[73] Scott A. Smith *et al.* -" Forest offset credits: a cornerstone of sustainable development on aboriginal lands," *Lexology.* 2009: https://www.lexology.com/library/detail.aspx?g=0d0b8a3e-a871-4e3f-8507-e628c719441a

To have a robust structure, the following principles are indispensable:

1. There must be clarity of requirements to be met for each clean development mechanism (CDM) project (e.g., transparent demands)
2. Evaluation methodology must be coherent across set criteria (e.g., consistent methodologies/calculations)
3. Businesses must be assured that enforcement and monitoring will be undertaken (e.g., fair compliance protocols)
4. Guarantee of measurable or impact-led benefits to local stakeholders (e.g., real benefits)

It is important to highlight that validation will be seen as a 'stamp of approval' for businesses that are seeking to make a statement with their decarbonisation efforts. Recognising this potential to act on self-serving interest that is characteristic of businesses it is important to ensure transparent auditing that align with relevant global (e.g., UNFCCC), national (UK Climate Change Act 2008) criteria, as well as local host (Regional) carbon targets.

Proposed validation process and validation protocol

To undertake a rigorous validation process, having a clearly laid out protocol is essential. A validation protocol provides guidance for the process of validation and reporting on projects by outlining requirements projects are to meet (e.g., volume of carbon to be sequestered). Structuring a validation protocol for the Cambridgeshire decarbonisation fund should follow the outline of mandatory criteria that will be established for the kinds of projects admissible, a list of the targets they are expected to meet, based on which any corrective measures may be proposed.

Figure 4 shows a flowchart of the process of validating a project under the Gold Standard scheme that can inform the establishment of a local one for the decarbonisation fund for Cambridgeshire.

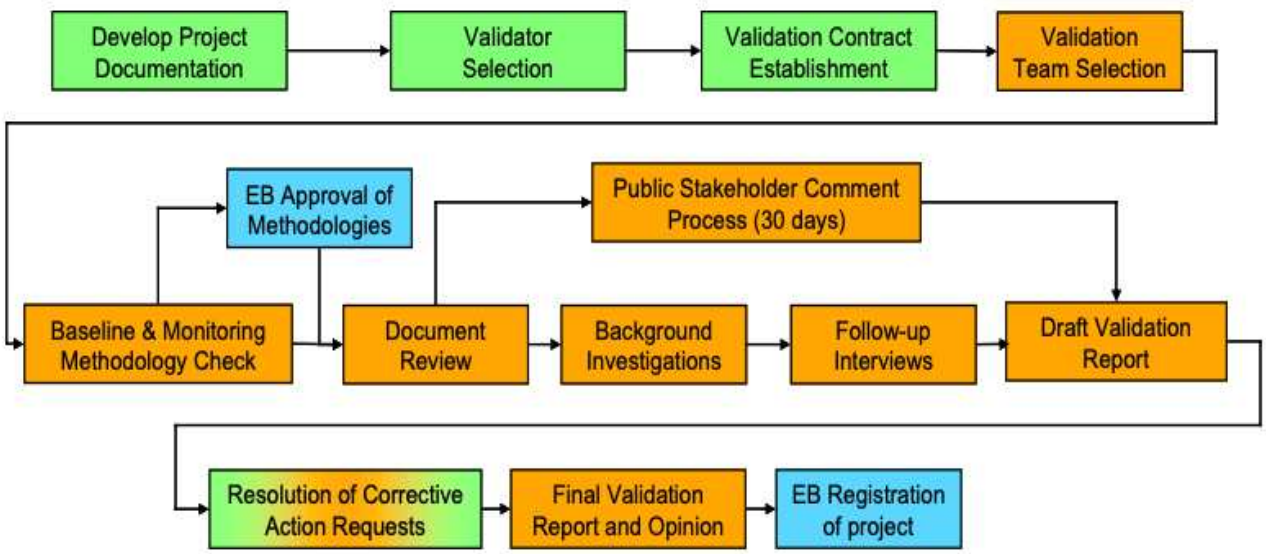

Figure 4: Validation process for projects under the Gold Standard scheme. Project Proponent(s) [Green]; Validator [Orange]; Scheme Administrators (GS in this case) [Blue]

In adopting the structure used by the Gold Standard, it is proposed that the following 4 key elements are maintained in order to assure stakeholders of a robust process:

1. A critical assessment of the requirements projects are expected to meet
2. Evaluation of project documentation
3. On-site visit for evaluation of project
4. Public stakeholder commentary

An example of a validation protocol template, based on the GS scheme, is shown below in **Figure 5** and **Figure 6**.

Table 1: Mandatory Requirements for Clean Development Mechanism (CDM) Activities

REQUIREMENT	Ref	CONCLUSION	Cross Reference to Checklist (Table 2)
The requirements the project must meet.	Reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements.	To ensure a transparent process, this refers to the relevant checklist questions in Table 2 to show how the specific requirement is validated.

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref	MoV	COMMENTS	Draft Conclusions	Final Conclusions
The various requirements in Table 1 are linked to specific checklist questions the project shall meet. The checklist is organized in different sections, following the CDM-PDD structure. Each section is then further sub-divided. The lowest level constitutes a checklist question	Reference to documents where the source to the checklist question or item is found.	The means of verification explains how conformance with the checklist question is investigated, i.e., through document review (DR) or interview (I).	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. and to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) or a Clarification Request (CL) Whenever a CAR or CL is issued, table 3 shall be used to describe how the findings have been resolved and concluded.	The final conclusion of the validation shall be documented as either OK, CAR or CL. This is based on the resolution of outstanding issues as elaborated in Table 3.

Figure 5: An example of a validation protocol structure. Adapted from the Gold Standard Validation and Verification manual for CDM Projects (2006, p.4)

Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
If the conclusions from the draft validation are either a Corrective Action Request or a Clarification Request, these shall be listed in this section.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given from the project proponent or other project participants during the communications with the validation team shall be summarized in this section.	This section shall summarize the Validation Team responses and final conclusions. The conclusions shall also be included in Table 2, in the section called "Conclusions Final".

Figure 6: An example of a validation protocol structure. Adapted from the Gold Standard Validation and Verification manual for CDM Projects (2006, p.4)

Transparency of scheme

To ensure transparency with businesses and to track progress towards both county and national goals of net zero carbon, the emissions intensity ratio (EIR) could be utilised. Used on a national scale, the emissions intensity ratio is an indicator of clean growth performance measured in tonnes of CO_2 per £1 million GDP. The EIR is currently 270 tCO_2/£1 million GDP and must decline to ~100 tCO_2/£1 million GDP by 2032 to align with carbon emission targets which require emission intensity to reduce by 5% per annum[74]. Tracking Cambridgeshire and Peterborough's EIR annually will measure progress toward net zero goals. In 2017, the Cambridgeshire and Peterborough region produced £27,101 million in GDP[75] and 6.1 Mt of CO_2. The Cambridgeshire and Peterborough EIR was 225tCO_2/£1 million GDP in 2017 which was 17% lower than the national average. In order to reach national targets, the Cambridgeshire and Peterborough EIR would need to reduce by 125tCO_2/£1 million GDP by 2032 equating to a 55% reduction over the next 12 years.

Businesses participating in the Cambridgeshire Decarbonisation Fund will need to demonstrate their commitment to reducing their carbon footprint. With both businesses and the Council publishing their carbon footprint on an annual basis, this collaboration can help to drive decarbonisation through teamwork and perseverance. It is important to note that the future of the Cambridgeshire Decarbonisation Fund will be dictated by the actual performance of existing projects, i.e., projects must deliver their expected carbon pay-out, as well as provide the further mentioned co-benefits.

[74] Department for Business, Energy and Industrial Strategy - "The Clean Growth Strategy - Leading the way to a low carbon future." 2017:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf
[75] Trevor Fenton - "Regional gross domestic product all NUTS level regions" 2019:
https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

3.7 Cambridgeshire Decarbonisation Fund Benefits

Decarbonisation is not just a measure to mitigate climate change but is closely intertwined with a multitude of social and economic issues we face as a society. As community members, we should make sure that our actions not only advance our personal interest but benefit the people at large. This notion is formalised by the Social Value Act (2013) for British governments and Corporate Social Responsibility (CSR) for businesses. CSR stipulates that businesses are required to be socially accountable to themselves, their stakeholders, and the public. Whilst not a legal requirement, CSR has both societal impacts, and bottom-line benefits for businesses (see Department for Business Innovation and Skills 2014 report). In this section, we explore how the Cambridgeshire Decarbonisation Fund participants can meaningfully contribute secure societal benefits in addition to their carbon credit advantages.

3.7.1 Social Benefits

- **Democratic oversight of Cambridgeshire carbon emissions**. The Fund's secretariat and finances will be managed by Cambridgeshire County Council. This administration will be overseen by a Board, with elected councillors and Board members, including community representatives. This means residents will have a say on how the Fund is run and what future projects it will invest in.

- **Fair energy transition**. The local government's management of the Fund will also confer a high degree of transparency to the energy transition in Cambridgeshire. This transparency means the project can be held to higher standards of fairness, receive and adapt to feedback, and thus gain more public approval than corporate initiatives alone.

- **Tailored solutions**. The local aspect of the scheme means that the parties involved can create solutions and opportunities that bring greater economic and environmental outcomes to the County as opposed to national broad stroke policies.

- **Fuel poverty reduction**. Although the upfront costs of renewable energy are higher than traditional fuel sources, they provide cheaper energy in the long term and contribute to reducing fuel poverty which affects 9.5% of Cambridgeshire's population

3.7.2 Economic Benefits

- **Ownership of local emissions**. The local nature of these decarbonisation projects helps to raise awareness of the climate challenge Cambridgeshire faces while demonstrating an accessible solution. The scheme enables businesses and communities to be less reliant on international and national projects to reduce and offset their carbon emissions.

- **Jobs and local expertise**. Developing local projects will generate new jobs but also create local expertise in sustainable transitioning. This will enable the County to move quicker and be more ambitious on climate issues in the future, while developing a market for Cambridgeshire residents to export their skills nationally.

- **Future tax mitigation.** It is very likely that new taxes[76] will be introduced by the Government to offset the UK's carbon emissions. While dependent on the terms surrounding any future taxation scheme, the fund offers businesses the potential opportunity to reduce this tax contribution in the future, instead investing directly into carbon reduction projects. Similarly, the scheme could be amended to enable complementarity with any taxation scheme, should this come forward.

- **Proof of social responsibility**. Businesses that invest in the Fund will provide evidence that they take on social and ecological responsibility for the communities most of their employees live and work in. They might also become more attractive for prospective applicants as the awareness of climate change continues to rise in the general population and particularly the young generation.

3.7.3 Health Benefits

- **Reduction of power sector and transport pollutant emissions.** The power and transport sectors are major sources of air pollutant emissions. In 2010, the power sector accounted for around 40% for global sulphur dioxide emissions, and 20% of NO_x[77,78]. These substances are important precursors for particulate matter formation (PM-10). NO_x, along with methane and other volatile organic compounds (NMVOCs) can also lead to increased ozone formation. PM-10 and ozone are particularly important health threats[79].

- **Reduced burden on the NHS.** Each year between 28,000 and 36,000 deaths are attributable to air pollution in the UK. The societal cost of air pollution as a public health risk is estimated to surpass £20 billion annually. In Cambridgeshire, 5.2% of population mortality is directly attributed to air pollution[80] (c.f. national average of 5.1%). Additionally, there are strong links between high levels of air pollution and cardiovascular and respiratory diseases resulting in reduced life expectancy[56],[81]. Public Health England (PHE) estimates that in England for every 1ug/m^3 $PM_{2.5}$ reduced, 50900 coronary heart diseases cases, 16500 stroke cases, 9300 asthma cases and 4200 lung cancer cases could be averted over 18 years. This strongly demonstrates the importance of reducing air pollution in Cambridgeshire and the benefit this will bring to society as well as the NHS.

[76] Chris. Giles and Leslie Hook. "Zero emissions goal: the mess of Britain's carbon taxes," *The Financial Times.* 2020: https://www.ft.com/content/c4e7cf36-61f5-11ea-a6cd-df28cc3c6a68
[77] Rachel Hoesly *et al.* - "Historical (1750–2014) anthropogenic emissions of reactive gases and aerosols from the Community Emission Data System (CEDS)," *Geosci. Model Dev. Discuss.* 2017: https://gmd.copernicus.org/articles/11/369/2018/
[78] Gunnar Luderer *et al.* - "Environmental co-benefits and adverse side-effects of alternative power sector decarbonization strategies," *Nature.* 2019: https://www.nature.com/articles/s41467-019-13067-8
[79] Jos Lelieveld *et al. "The* contribution of outdoor air pollution sources to premature mortality on a global scale," *Nature.* 2015: https://www.nature.com/articles/nature15371
[80] Transport and Health JSNA - "Air Pollution: Key Findings," 2015: https://cambridgeshireinsight.org.uk/wp-content/uploads/2017/08/Transport-and-Health-JSNA-2015-Air-Pollution.pdf
[81] James Stewart-Evans *et al.* - "Review of interventions to improve outdoor air quality and public health," 2019: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938623/Review_of_interventions_to_improve_air_quality_March-2019-2018572.pdf

3.7.4 Case Study Benefits

- **Swaffham Prior Community Heat Network**. A household is classified as being in fuel poverty if they have fuel costs above average and their disposable income post-fuel costs is below the poverty line. Fuel poverty status depends on energy efficiency, energy prices and income. By providing the residents of Swaffham Prior with the ground source heat pump, fuel poverty will be alleviated with both lower and with steady fuel prices, i.e., not influenced by the fluctuation of crude oil prices from foreign policy and conflict. Additionally, this project aligns with the governmental Clean Growth Strategy which states that all fuel poor homes must be upgraded to EPC Band C by 2035 where practical, cost-effective and affordable. There is a strong association between cold houses and ill-health such as respiratory illnesses, costing the NHS approximately £760 million per year[82].

- **EV Charge Point Installations[83]** These projects firstly stand to generate several important health benefits. EVs produce much lower fuel-pipe emissions compared to traditional vehicles and possess almost silent motors. With a proper deployment of EV, these attributes would lead to significant reductions in air and noise pollution (see Health Benefits). Switching to an EV also allows drivers to make financial savings on fuel due to the reduced cost of electricity compared with petrol or diesel. Over the course of 10 years and 120,000 miles, this represents an estimated saving of $4130 (£3889). There are also associated savings that can be made through the simplified operations and maintenance of EVs ($1488 or £1149). The use of EVs has also been shown to boost the economy through the creation of indirect jobs from the installation and maintenance of electric vehicle charging equipment. Spending less on transportation may also mean this money can go into the local economy through consumer spending. Finally, although cars serve an important transportation function, they are typically in use for mobility less than 5% of the time. This limited use, coupled with the storage capability of EV batteries means the EV can provide flexibility services to the national grid via Vehicle to Grid arrangements - storing energy in their batteries when there is excess electricity and releasing back to the grid when power demand is high.

- **Green Deal Communities project.** This was a Government funded project to improve energy efficiency of domestic properties. The Project helped move 1900 residents out of fuel poverty by increasing household energy efficiency, decreasing energy demand whilst also improving the county's housing stock. While the Swaffham Prior project focuses solely on homeowners, this scheme aimed to deliver better heating for rental properties where fuel poverty is particularly high. The process involved several partners creating a supply chain for energy efficiency measures and supporting the local economy.

- **The Great Fen Peatland Project.** Led by the Wildlife Trust BCN this project seeks to restore 14 square miles of agricultural land to wild fen, promoting habitat connectivity, biodiversity and sustainable peatland agriculture. The project has the potential to turn the area into a net carbon sink. Besides reducing carbon emissions and providing carbon sequestration in the long term, The Great Fen Project seeks to increase and protect Cambridgeshire's biodiversity.

[82]Department for Business, Energy and Industrial Strategy - "The Clean Growth Strategy - Leading the way to a low carbon future," 2017:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf
[83] Ingrid Malmgren - "Quantifying the societal benefits of electric vehicles," *World Electric Vehicle Journal.* 2016

The peatland also provides new sources of revenue through ‘wetland farming’, where crops able to tolerate higher water table levels are cultivated in place of “traditional” crops. Wetland farming helps preserve and enhance the wet peat beneath the water’s surface, thereby minimising carbon emissions associated with traditional agriculture in drained or reclaimed peatland. Crops include forms of grass/grain crop, historical herbs and medicinal plants such as sphagnum moss. This economic stimulus intends to make Cambridgeshire a hub for wetland conservation, farming and carbon monitoring expertise by bringing together several partner organisations such as Cambridge Acre, University of East London (wet farming) and Centre for Ecology and Hydrology (emission monitoring).

Together these three case studies develop a legacy to support the long-term delivery of energy efficiency and offsetting measures. They mobilise the market and supply chain, develop local authority capacity, raise awareness, strengthen community partnerships, and develop relationships with landlords and businesses.

4 Recommendations and Summary

For the Cambridgeshire Decarbonisation Fund to work, it needs to be very well advertised and businesses need to know why it is better to support carbon reduction in Cambridgeshire rather than abroad. It needs to be understood by all parties as a “green deal” between local businesses and local communities with the Local Authorities as facilitators. By encouraging project development ideas to come from community leaders, the fund will be actioning projects which are relevant to community well-being. The Cambridgeshire Decarbonisation Fund should be a collaborative initiative between the Local Authorities, communities and local businesses. Therefore, businesses should be consulted as to what aspects of their carbon footprint will be challenging to reduce and would benefit from the help of this Fund. For the fund to have a quick and robust impact on Cambridgeshire emissions levels we recommend a mixture of projects from all tiers, especially having active projects from Tiers 1 or 2 at all times. If a fund like this is to be rolled-out in the next year, we recommend following the recommendations in the list below, in order to create a successful fund, which will be well used by businesses and also generate revenue for the projects in question.

1. **Create a Cambridgeshire decarbonisation fund that allows businesses to invest in local carbon reduction projects**

2. **Identify a source of funding to initiate the decarbonisation fund**

    2.1. Work with UK Green finance institute to identify initial seed funding and discuss seed funding with Local Authority partners
    2.2. Identify individuals or businesses who may be willing to donate to this fund
    2.3. Create Local Plan policies that allow Section 106 agreement that allows new builders to add to the fund

3. **Have a tiered, prioritized list of projects which businesses can invest in. This list will come from both community members, Local Authorities and third sector organisations to create a diverse list.**

    3.1. We have identified three tiers of projects around the idea of “avoid, reduce, sequester”
    3.2. Tiers 1 and 2 focus on all or some removal of carbon, and include projects such as installing a heat network, and retrofitting respectively, Tier 3 describes carbon sequestration projects
    3.3. At the local level, it will be especially important to focus on Tier 2 projects as these can be most effective, while Tier 1 projects have to go hand in hand with national strategies and Tier 3 projects are limited in scale

4. **Consider co-benefits when creating projects or choosing to pursue projects which are additional to the benefit of carbon credits and beyond corporate social responsibility**

    4.1. Put businesses investing in Tier 2 projects on a priority list for retrofitting
    4.2. Ensure carbon credit methodology accepted by businesses and can be scrutinised at the national level
    4.3. Allow marketing benefits for business advertisement either through providing a list of sponsors or benefactors
    4.4. Reinforce the idea that buying in now is cheaper than waiting until 2030, 2040, or later

5. Encourage/enforce transparency in businesses emissions reduction

5.1. All large businesses will be required to report their Scope 1 and 2 emissions starting this year, and we should support smaller businesses with carbon footprinting to help them to invest and receive carbon credits.
5.2. Implementing the scheme should start off with a clear definition of requirements and approval processes for projects. This clarity is critical from the onset since a mix of perception of usefulness of the scheme, and actual usefulness will be impacted if transparency is not well managed from the onset.
5.3. Create a contract with businesses which supports them to actively take steps to reduce their emissions as and be part of this Fund

6. Reach out to businesses to gain insight into their incentives

6.1. Assess the potential uptake of this scheme
6.2. Allow businesses and community members to provide feedback on the setup of this fund, and gauge their interest
6.3. Understand the scale of investment and benefits that businesses would be willing to buy from this fund. Would a business such as AstraZeneca contribute in the millions, would a local business like a coffee van contribute as well? And what co-benefits are important to each?

7. Further assess the policy implications of projects

7.1. Collect more data to assess social, health and financial benefits of projects to Cambridgeshire residents.
7.2. Without a clear list of projects which will be included in this fund, it is difficult to assess what the full range of societal benefits are, but could include pollution reduction, alleviating fuel poverty, or improving health and wellbeing of citizens.

8. Allow for community involvement in project development

8.1. There should be strong community engagement to understand the types of projects residents may support
8.2. By including the community in the process, this makes it a real collaboration between the Local Authorities, businesses, and communities

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Michael Pollitt, CU Energy Policy Research Group
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Cllr David Jenkins, Cambridgeshire County Council
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Clara Kerr, Huntingdonshire District Council
Adrian Cannard, Cambridgeshire and Peterborough Combined Authority
Cambridgeshire Wildlife Trust
Swaffham Prior Community Land Trust

Workplace Chargepoints for Staff and Fleet

To:	Environment and Sustainability Committee
Meeting Date:	14th January 2021
From:	Steve Cox, Executive Director, Place and Economy
Electoral division(s):	All
Forward Plan ref:	n/a
Key decision:	No
Outcome:	To agree the business case for installing electric vehicle chargepoints at Cambridgeshire County Council sites for use by staff, fleet vehicles and visitors.
Recommendation:	Members are asked to: a) Note the background, progress to date, issues, challenges and opportunities regarding the installation of electric vehicle chargepoints (EVC) at Council buildings. b) Approve the business case for EVCs, using the Workplace Chargepoint Scheme, and enable expenditure of up to £120,000 of the £200,000 allocated to chargepoints in the Environment Fund.

Officer contact:
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Member contacts:
Names: Councillor Josh Schumann
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1 Background

1.1 Decarbonisation of road transport is increasingly necessary to meet local, national and global greenhouse gas emissions targets. Shifting away from Internal Combustion Engine (ICE) vehicles, particularly cars and vans, to electric vehicles (EVs) forms a crucial component to meeting these targets, alongside other measures such as increasing walking, cycling and public transport. However, the transition to a low carbon mode of transport will require upfront provision of infrastructure to stimulate the change.

1.2 The Council's Climate Change and Environment Strategy and Action Plan were approved by Full Council in May 2020. This Strategy identifies the transition to low carbon transport as a key area upon which it can aid delivery of County-wide carbon emission reductions, whilst also improving air quality, through providing enabling infrastructure for a shift to electric vehicles. This action to provide electric vehicle infrastructure built upon prior commitments in the Corporate Energy Strategy to explore the shifting of pool cars to electric.

1.3 In February 2020, the Council adopted a fourth corporate objective to deliver net zero carbon for Cambridgeshire by 2050 and included a £16million Environment Fund in its budget plan to support delivery of its commitments set out in the Climate Change and Environment Strategy.

1.4 The Environment Fund is to implement near-term targets set out in the Climate Change and Environment Strategy, including the pledge that "by 2025… all the Council's car and van fleet will be electric". For Council owned sites, the Action Plan puts forward provision of EV charging facilitates (for fleet and staff) and a shift to electric pool and hire cars as key actions, and £200,000 has been allocated to the delivery of this within the Environment Fund.

1.5 More generally, the Council has also committed to: "include EV charging at Council offices for staff and visitors, EV pool cars, and use of our assets to contribute to a credible EV charging infrastructure accessible to all". The provision of workplace chargepoints for use by staff, visitors and the Council's fleet will be the first stage of this work. To facilitate the move to an electric fleet, workplace chargepoints are essential.

1.6 The intended outcome of this report is therefore to agree the business cases (appendix 0) for workplace chargepoints at the Council offices listed in the appendix, and agree expenditure from the Environment Fund to enable implementation.

2 Main Issues

2.1 The prevalence of electric vehicles on UK roads is growing, with increasing numbers of new registrations each year: there were over 10,000 new registrations in Cambridgeshire in 2019, of which about half were fully electric. In Quarters 1 and 2 in 2020, already there have been 3,215 fully electric vehicles registered in Cambridgeshire. At the same time the sale of new petrol, diesel cars and vans will be banned from 2030[1] with the ban on new hybrids coming in five years later. EVs produce no carbon and highly reduced particulate emissions at point-of-use, making them a key route to improved air quality and carbon goals, and they form central approaches within the UK's Clean Air Strategy, 25 Year Environment Plan, Road to Zero and the upcoming Transport Decarbonisation Plan.

[1] Note, the 2030 date was announced on 18th November 2020. Further details around the use of hybrids between 2030-35 are due to come forward via consultation over the next year. The previous 2035 date has been used in the business case presented here.

2.2 Visibility of accessible chargepoints is essential in driving the transition to electric vehicles, with workplace chargepoints being particularly important for stimulating organisational change. Similarly, they can inspire a wider change in attitudes towards EVs, particularly in conjunction with electrified fleets, by strengthening staff ability to view electrified personal vehicles as ubiquitous while providing the opportunity to interact with the technology without personal expenditure. As a Local Authority this is particularly important as our staff can act as a means to spread confidence in electric vehicles.

2.3 Within the Council's organisational carbon footprint 2018/19, approximately 6,061 tonnes CO_2e originate from transport use (across all emission scopes 1,2 and 3). Encouraging and enabling a fleet and staff vehicle shift from petrol or diesel vehicles to electric through provision of charging infrastructure represents a first step in reducing this figure. This is in line with targets within the Climate Change and Environment Strategy to "reduce the Council's organisational net carbon footprint for scopes 1 and 2 from 1979.28 tonnes per annum in 2018-19 by 50% by 2023" and "to reduce the Council's scope 3 emissions by 50.4% by 2030".

2.4 Facilitating Fleet improvements: The Cambs2020 work has identified five locations for pool cars after the move out of Shire Hall: Alconbury Civic Hub; Bernard Sunley Centre, Papworth; Cambridge Professional Development Centre, Scott House and Sackville House. All have parking facilities and the latter four sites would be prioritised for chargepoints to facilitate a shift to EV pool cars. Note, the Civic Hub already has charging facilities planned as part of the construction.

2.5 Adult passenger transport is exploring how to switch two of its wheelchair friendly minibuses to EVs. Similarly, the Transformation team is exploring purchase of an electric multi-use minibus for use by Think Communities (note this project is in options appraisal currently). The Library service is already exploring how to transition to an electric fleet through their vehicle lifecycle upgrades.

2.6 Workplace Chargepoint Scheme (WCS): Government recognises the financial and technical challenges that provision of EV infrastructure can pose for organisations, and has set up the Workplace Chargepoint Scheme (WCS). Funded by the Office for Low Emission Vehicles (OLEV), the WCS is a voucher-based scheme providing grants for businesses to part fund the upfront cost of the purchase and installation of EV chargepoints at their premises. The contribution is limited to 75% of upfront costs, up to a maximum of £350 for each socket, and up to a maximum of 40 sockets across all sites per applicant. Multiple applications may be submitted until the 40-socket maximum has been reached. Note, dual head chargepoints have two sockets. This funding source has been incorporated into the business case to subsidise the capital cost of the project.

2.7 Similarly, HM Revenue and Customs (HMRC) has stated that the provision of chargepoints and/or free charging does not constitute a benefit in kind (HMRC exemption S237A ITEPA 2003).

2.8 Locations: An initial site list was agreed at Strategic Property Asset Board. This has been refined based on the quotations received developments in plans for properties. The full list of sites along with their high level costs is available in appendix 6.1. These sites have been cross-referenced with other ongoing projects including: Cambs2020, Renewable Heating Programme and service level fleet improvement ambitions to ensure locations are appropriate and projects can be managed simultaneously. Some sites are locations where work is being undertaken as part of the Cambs2020 programme, where provision of chargepoints is a planning condition. This project incorporates those requirements.

2.9 Cambs2020 Spokes works: Cambridge Professional Development Centre is currently fully included in the costing for this project. This site is undergoing refurbishment as part of the Spokes works and may be under a planning condition to install a chargepoint at site. Should this chargepoint be a requirement, the costs to install will be shared between the Cambs2020 project and this one – Cambs2020 will pick up the trenching and electricity upgrade costs. Should the site not have a planning condition, it is likely it will be dropped from this project due to the need for a potentially costly new 100Amp supply to site – the Spokes work will be fully utilising all capacity to site – and the 5 year anticipated lifespan of the property.

2.10 Parking Re-configuration: To ensure equality in the ability for all to use the chargepoints, where possible, parking bays will be widened to meet requirements of Blue Badge Bays. This will mean maximum access to the chargepoints for all staff, however, may necessitate the loss of a parking bay.

2.11 Business Case: Quotations have been received via the ESPO framework. These incorporate the capital costs of the chargepoint units and installation, and a 3-year operations and maintenance contract (to ensure and enable compliance with the WCS funding scheme). The business case has been developed over a 20year loan term to achieve a balance of payback within the lifespan of the chargepoints and a reasonable charging fee. A 10year case had been explored and ruled out as this put the fee to charge at an unviable level. The cost summary for the 20year loan term is below, with the full business case available in section 0. The business case was approved at Capital Programme Board on 23rd November 2020.

Total Capital Cost	£99,460
Minimum Fee to Charge (Yr 1)	22.7p/kWh[2]
Payback	17.63years
IRR	3.80%
NPV	£8,092

2.12 *Assumptions*: Assumptions have been incorporated into the business case on a range of unknowns:

- *Utilisation:* Modelled based on two assumptions taken from government projections:
  1) 100% of new car sales to be zero emission by 2035
  2) 10-year vehicle/fleet turnover rate

  These means that by 2045 it can be expected that 100% of vehicles driven will be electric. Taking historic DVLA licensing data, the proportion of the fleet that is plug-in was calculated then used to fit a sigmoid curve, representing the increasingly rapid uptake already being realised with a levelling off to 2045.

  This curve is then applied to CCC staff numbers and factored down by 10% to represent the proportion of charging that takes place at work (rather than elsewhere) to put a figure

[2] It is the intention that all workplace chargepoints across the Council's assets will have a uniform charging structure and cost across comparable chargepoints, regardless of the project that led their installation. This may mean prices will fluctuate more than outlined in the business case for this project. In all instances, the intention will be to charge staff the minimum possible.

on the number of vehicles in the grey fleet charging at work. A 1-year lag[3] has also been applied to incorporate a delay in uptake due to impacts of Covid-19.

- *Fees for use*: Staff will be charged on a cost recovery basis and fleet vehicle use will be recharged to the relevant budgets. The price will be set based upon the minimum p/kWh required to cover costs and will be reviewed annually. The year 1 fee of 22.7p/kWh. This appears to be on par with 7kWh public chargepoints which have pricings ranging from18p/kWh – 30p/kWh.
- *Capital Cost*: Costs have been established via a competitive tender process. These assume there will be no unanticipated requirements for electricity supply upgrades or additional trenching. A 10% contingency has been included in the business case for small cost uplifts.
- *Savings:* Notional fuel and carbon savings (based on the "average car" per mile emissions used in the Green House Gas Protocol) have been priced for information purposes. These have not been incorporated into the financial case presented but illustrate the additional savings that could be realised as a result of this project. Any electrification of the fleets will also support this business case by creating a guaranteed base-demand for the chargepoints.

2.13 Electricity Capacity: To install chargepoints, some sites may require upgrades to their electricity supply, however this is being avoided wherever possible. Many of these sites will also be in the renewable heating project that also falls within the remit of the Climate fund – these may also necessitate electricity upgrades. Where possible these will be combined to prevent repeat upgrades. Note additional costs for electricity upgrades are not included in the business case – these are highly variable depending on a site's existing electrical infrastructure. It is anticipated that in most instances installation of a 7kW dual head chargepoint will not require significant upgrades and sites with no upgrade requirements have been prioritised. The suppliers have indicated in their tender returns which sites may require an upgrade, which have been considered in producing the proposed business case.

2.14 Risk: Key project risks and their mitigations are described in appendix 6.3

3 Alignment with corporate priorities

3.1 A good quality of life for everyone
There are no significant implications for this priority. However, improvements in air quality has benefits to the quality of life of our staff and residents.

3.2 Thriving places for people to live
There will be a benefit to workers involved in the projects. The sites having EVCs will benefit staff, services and visitors who have or are considering switching to electric vehicles by delivering easy secure access to charging facilitates.

3.3 The best start for Cambridgeshire's children
Some of the sites on the list are used by services educational and recreational services for children with severe disabilities. These services are exploring upgrading their wheelchair-accessible mini-buses to electric, providing a better sensory experience for service users. These can only be delivered with provision of the Chargepoint infrastructure.

[3] There is little conclusive data available on the effect of Covid on vehicle purchases, however a "best guess" is that it will initially slow then rapidly pick-up again. This is the approach being taken by UK Power Networks, Cambridgeshire's electricity network operator, in their modelling for EV uptake in their Future Energy Scenarios.

3.4 Net zero carbon emissions for Cambridgeshire by 2050
These projects will help the Council to meet its ambitions in relation to this priority, as set out in paragraphs 1.1, 1.2 and 2.3.

4 Significant Implications

4.1 Resource Implications
Ongoing maintenance and management of the chargepoints will move to the property team after the first 3 years, as described in 2.11. These services can be procured, and it is anticipated use of the chargepoint will cover these costs in the long term.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications
None. A further competition under the ESPO Framework 636 – Electric Vehicle Infrastructure was undertaken.

4.3 Statutory, Legal and Risk Implications
Key risks include COVID-19-related delays to materials supplies or contractor staff shortages, and electricity supply upgrades. These will all be monitored and managed by the project team.

4.4 Equality and Diversity Implications
None. A full Equality Impact Assessment has been completed and mitigations have been incorporated into the project - Chargepoints are being located within carparks such that there is no impact on provision of disabled parking spaces and the bays served by the chargepoints will, where possible, be increased in size to accommodate those who might normally use a blue-badge bay. Additionally, the project facilitates improvements to fleet vehicles that can significantly improve service delivery eg. EVs are quiet which significantly benefits those service users with disabilities.

4.5 Engagement and Communications Implications
None, however internal staff communications will be required.

4.6 Localism and Local Member Involvement
This project is an action in the Climate Change and Environment Strategy, developed with a cross-party member working group.

4.7 Public Health Implications
The following bullet points set out details of significant implications identified by officers:

- The works will need to be undertaken whilst minimising disruption and still adhering to social distancing requirements that may still be in place at the time, due to the COVID-19 situation.
- Enabling and promoting minimisation of the Council's contribution to air quality challenges will have public health benefits in the long term.

Have the resource implications been cleared by Finance?
Yes
Name of Financial Officer: Sarah Heywood

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?
Yes
Name of Officer: Gus de Silva

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law?
Yes
Name of Legal Officer: Fiona McMillan

Have the equality and diversity implications been cleared by your Service Contact?
Yes
Name of Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications?
Yes
Name of Officer: Bethan Griffiths

Have any localism and Local Member involvement issues been cleared by your Service Contact?
Yes
Name of Officer: Emma Fitch

Have any Public Health implications been cleared by Public Health
Yes
Name of Officer: Iain Green

5 Source documents

5.1 Documents

1. Full Council meeting minutes – February 2020
2. Cambridgeshire County Council Climate Change and Environment Strategy and Cambridgeshire County Council Annual Carbon Footprint Report 2018-19
3. Department for Transport, VEH0132: Licensed ultra low emission vehicles by local authority: United Kingdom
4. Full Financial Business case including EV uptake modelling

5.2 Location

1. https://cambridgeshire.cmis.uk.com/ccc_live/Meetings/tabid/70/ctl/ViewMeetingPublic/mid/397/Meeting/1102/Committee/20/Default.aspx
2. https://www.mlei.co.uk/climateenvironment/climate-change-and-environment-strategy
3. https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01
4. Available on request

6 Appendix

6.1 Site List

	Site	Town	Capital Cost	Notes
1	St Ives Youth Centre	St Ives	£5,893	
2	Huntingdon Community Centre	Huntingdon	£4,246	
3	March Community Centre	March	£5,894	
4	Sawtry Community Centre	Sawtry	£3,251	
5	Amundsen House	St Ives	£6,894	
6	Awdry House	Wisbech	£5,894	
7	Bernard Sunley Centre	Papworth Everard	£6,483	
8	Buttsgrove Day Centre / Hillrise	Huntingdon	£5,886	
9	Cambridge Professional Development Centre	Cambridge	£6,918	Site will require a potentially costly electricity upgrade, therefore chargepoint will only go ahead if a planning condition of Cambs2020 projects. If so, Cambs2020 will pick up the trenching costs (£4,234) plus any electricity upgrades required.
10	Hereward Hall	March	£5,894	
11	Sackville House	Great Cambourne	£4,666	Assuming capacity at roof distribution board and reconfiguration of car park
12	Scott House	Huntingdon	£3,034	
13	Signet Court	Cambridge	£5,894	
14	Speke House	St. Ives	£6,040	
15	Vantage House	Huntingdon	£6,457	
16	Larkfield Day Centre	Ely	£6,742	
17	Stanton House	Huntingdon	£5,894	
18	Horizon Resource Centre	Cambridge	£5,894	
		Grant	£12,600	36 sockets at £350 grant each
		Contingency	£10,187	10%
		Total	**£99,460**	

6.2 Business Case Summary - See spreadsheet attached

6.3 Summary risk register – Key risks only

Risk	Impact	Likelihood	Severity	Rating	Mitigation
Assumptions in the business case (2.12) are not realised.	Revenue generated through chargepoint use is not sufficient to cover revenue costs and payback within the loan period	medium	high	high	• Model for EV uptake and staff utilisation of chargepoints developed using best available data • Model developed to be conservative and build in delays in EV uptake amongst staff • Closely monitor chargepoint use and fee to charge to enable changes the charging fee to be implemented
Significant uplift in costs	Additional costs put pressure on the business case, reducing project viability	low	medium	medium	• Contingency funds have been incorporated into CAPEX (10%) • Procurement allows individual sites to be removed from the project should circumstances, including prohibitive capital costs, be identified
Workplace Chargepoint Scheme Grant funding not received	Additional project costs of £12,500 make project un-viable	low	high	medium	• Eligibility criteria of the grant have been followed when selecting sites • Chargepoints have been specified to meet WCS funding eligibility criteria • Confirmed that the Council has not already used any of the 40-socket allocation specified in the grant *Note: should the grant not be received the project would be postponed until fleet improvements are underway*
External events, eg CV-19 lockdown, impact project delivery	Project delivery is delayed. Potential uplift in costs.	low	medium	medium	• Close project management with contractors to ensure safe modes of working and contingencies developed • Monitoring of government guidelines

Workplace EV Chargepoints Project
Financial Business Case Summary - 20 year loan period

Project Summary

Capital Cost	£99,460
Year 1 Cost Savings & Revenues	£2,091
Payback period (years)	17.63
Cost to charge (p/kWh) - from 2021	22.70
IRR	3.80%
NPV	£8,092

Capital Costs

Chargepoint Unit	£31,873
Trenching & Cabling (inc labour)	£57,524
Bay marking & signage	£12,475
Total	£101,872
Contingency	£10,187.25
WCS Grant	£12,600
Grand Total	£99,460

Operating Costs & Loan Balance for all EVCs

	Operations & Maintenance Costs	**Back Office**	**Insurance**	**Electricity**		**Replacement EVC unit**	**Borrowing Costs**			Loan Balance
							Interest	Repayment of principal	**TOTAL**	
Year	£	£	£	kWh	£		£	£	£	£99,460
2021-22	£13,500	£12,258	£3,000	8,963	£1,573		£2,148	£0	£32,479	£99,460
2022-23	£0	£0	£3,000	15,357	£2,769		£2,041	£4,973	£12,783	£94,487
2023-24	£0	£0	£3,000	26,096	£4,835		£1,933	£4,973	£14,741	£89,514
2024-25	£4,624	£4,198	£3,000	43,745	£8,327		£1,826	£4,973	£26,948	£84,541
2025-26	£4,751	£4,314	£3,000	71,738	£14,031		£1,719	£4,973	£32,788	£79,568
2026-27	£4,882	£4,432	£3,000	113,724	£22,855		£1,611	£4,973	£41,754	£74,595
2027-28	£5,016	£4,554	£3,000	171,704	£35,457		£1,504	£4,973	£54,504	£69,622
2028-29	£5,154	£4,680	£3,000	243,257	£51,614		£1,396	£4,973	£70,816	£64,649
2029-30	£5,295	£4,808	£3,000	320,255	£69,820		£1,289	£4,973	£89,185	£59,676
2030-31	£5,441	£4,941	£3,000	391,808	£87,768		£1,182	£4,973	£107,304	£54,703
2031-32	£5,591	£5,076	£3,000	449,788	£103,527		£1,074	£4,973	£123,241	£49,730
2032-33	£5,744	£5,216	£3,000	491,774	£116,303	£ 41,807	£967	£4,973	£178,010	£44,757
2033-34	£5,902	£5,359	£3,000	519,767	£126,304		£859	£4,973	£146,398	£39,784
2034-35	£6,065	£5,507	£3,000	537,416	£134,184		£752	£4,973	£154,481	£34,811
3035-36	£6,232	£5,658	£3,000	548,155	£140,629		£644	£4,973	£161,137	£29,838
2036-37	£6,403	£5,814	£3,000	554,549	£146,182		£537	£4,973	£166,909	£24,865
37-38	£6,579	£5,974	£3,000	558,306	£151,220		£430	£4,973	£172,175	£19,892
38-39	£6,760	£6,138	£3,000	560,496	£155,988		£322	£4,973	£177,181	£14,919
39-40	£6,946	£6,307	£3,000	561,768	£160,641		£215	£4,973	£182,082	£9,946
40-41	£7,137	£6,480	£3,000	562,505	£165,275		£107	£4,973	£186,973	£4,973
41-42	£7,333	£6,658	£3,000	562,505	£169,820		£0	£4,973	£191,785	£0

Savings & Revenue for all EVCs

	Revenues - Fees to charge	Potential further Savings (notional savings this project could unlock)			TOTAL potential additional savings
	Fee to use Charegpoints	Fuel Use by pool Cars	Pool car carbon savings	Grey Fleet carbon savings	
Year	£	£	£	£	**£**
2021-22	£2,091	£0	£0	£65	£65
2022-23	£3,680	£5,972	£1,196	£112	£7,281
2023-24	£6,426	£6,136	£1,216	£194	£7,546
2024-25	£11,068	£6,305	£1,235	£330	£7,871
2025-26	£18,650	£6,479	£1,254	£550	£8,283
2026-27	£30,379	£6,657	£1,274	£886	£8,816
2027-28	£47,128	£6,840	£1,293	£1,358	£9,491
2028-29	£68,603	£7,028	£1,312	£1,953	£10,293
2029-30	£92,802	£7,221	£1,332	£2,608	£11,161
2030-31	£116,659	£7,420	£1,351	£3,237	£12,008
2031-32	£137,605	£7,624	£1,476	£4,062	£13,162
2032-33	£154,587	£7,833	£1,602	£4,818	£14,253
2033-34	£167,880	£8,049	£1,727	£5,491	£15,267
2034-35	£178,354	£8,270	£1,853	£6,090	£16,213
3035-36	£186,921	£8,498	£1,978	£6,632	£17,108
2036-37	£194,301	£8,731	£2,103	£7,135	£17,970
37-38	£200,997	£8,971	£2,229	£7,612	£18,812
38-39	£207,335	£9,218	£2,354	£8,072	£19,644
39-40	£213,520	£9,472	£2,480	£8,521	£20,472
40-41	£219,679	£9,732	£2,605	£8,964	£21,301
41-42	£225,720	£10,000	£2,605	£8,971	£21,576

siz

Year	Net Revenue £	Project Balance £	Payback period
2021	-£99,460		17.63
2022	-£30,389	-£ 129,848	
2023	-£4,129	-£ 133,978	
2024	-£3,342	-£ 137,320	
2025	-£10,907	-£ 148,227	
2026	-£9,165	-£ 157,392	
2027	-£6,402	-£ 163,793	
2028	-£2,403	-£ 166,196	
2029	£2,760	-£ 163,436	
2030	£8,590	-£ 154,846	
2031	£14,328	-£ 140,519	
2032	£19,337	-£ 121,182	
2033	-£18,450	-£ 139,632	
2034	£26,455	-£ 113,177	
2035	£28,846	-£ 84,331	
2036	£30,757	-£ 53,574	
2037	£32,365	-£ 21,209	
2038	£33,795	£ 12,586	
2039	£35,127	£ 47,713	
2040	£36,411	£ 84,124	
2041	£37,679	£ 121,803	
IRR	3.80%		
NPV	£8,092		

Agenda Item No: 9

Finance Monitoring Report – November 2020

To:	Environment and Sustainability Committee
Meeting Date:	14th January 2021
From:	Steve Cox – Executive Director, Place & Economy Chris Malyon – Chief Finance Officer
Electoral division(s):	All
Forward Plan ref:	N/A
Key decision:	No
Outcome:	The report is presented to provide Committee with an opportunity to note and comment on the financial position as at the end of November.
Recommendation:	The Committee is asked to review, note and comment upon the report

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Officer contact:
Name: Sarah Heywood
Post: Strategic Finance Manager
Email: sarah.heywood@cambridgeshire.gov.uk
Tel: 01223 699 714

Member contacts:
Names: Cllr Joshua Schumann
Post: Chairman of the Environment and Sustainability Committee
Email: joshua.schumann@cambridgeshire.gov.uk
Tel: 01223 706398

1. Background

1.1 The appendix attached provides the financial position for the whole of Place & Economy Services, and as such, not all of the budgets contained within it are the responsibility of this Committee. To aid Member reading of the report, budget lines that relate to the Highways and Transport Committee are unshaded and those that relate to the Environment and Sustainability Committee are shaded in Appendix 1. Members are requested to restrict their questions to the lines for which this Committee is responsible.

2. Main Issues

2.1 Revenue: The report attached as Appendix A is the Place & Economy Finance Monitoring Report for 2020/21 as at the end of November 2020. Place and Economy as a whole is forecasting a bottom-line revenue overspend of £2.8m, which is a reduction of £0.5m since last month. This reduction is mainly due to the loss of parking enforcement income being less than originally assumed (reduction of £228K) and forecast waste tonnage has reduced (£123K).

2.2 £4.6m of the forecast pressure is attributable to the impacts of Covid-19. The majority of these pressures are for the loss of income which is used to fund existing services. These pressures and the assumptions on the recovery profile of income are being closely monitored and regularly reviewed. The next Finance Monitoring Report will reflect the government's contribution to the loss of income due to the impact Covid, and so the forecast overspend will reduce.

2.3 Capital: There are no issues to report.

3. Alignment with corporate priorities

3.1 A good quality of life for everyone

There are no significant implications for this priority.

3.2 Thriving places for people to live

There are no significant implications for this priority.

3.3 The best start for Cambridgeshire's children

There are no significant implications for this priority.

3.4 Net zero carbon emissions for Cambridgeshire by 2050

There are no significant implications for this priority.

4. Significant Implications

4.1 Resource Implications
The report addresses the resources position for this Committee as at the end of November 2020.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications
There are no significant implications within this category

4.3 Statutory, Legal and Risk Implications
There are no significant implications within this category

4.4 Equality and Diversity Implications
There are no significant implications within this category

4.5 Engagement and Communications Implications
There are no significant implications within this category

4.6 Localism and Local Member Involvement
There are no significant implications within this category

4.7 Public Health Implications
There are no significant implications within this category

Finance Monitoring Report – November 2020

1. Summary

1.1 Finance

Previous Status	Category	Target	Current Status	Section Ref.
Red	Income and Expenditure	Balanced year end position	**Red**	2
Green	Capital Programme	Remain within overall resources	**Green**	3

2. Income and Expenditure

2.1 Overall Position

Forecast Variance – Outturn (Previous Month) £000	Directorate	Budget 2020/21 £000	Actual £000	Forecast Variance - Outturn (November) £000	Forecast Variance - Outturn (November) %
0	Executive Director	677	455	-80	-12
+2,203	Highways	22,996	13,365	+1,896	+8
-52	Passenger Transport	7,308	3,774	-51	-1
+1,128	Environmental & Commercial Services	38,941	16,625	+1,005	+3
0	Infrastructure & Growth	3,751	2,277	0	0
0	External Grants	-17,230	-4,992	0	0
3,278	**Total**	**56,443**	**31,504**	**2,770**	**5**

The service level budgetary control report for November 2020 can be found in appendix 1.

Further analysis of the results can be found in appendix 2.

2.1.2 Covid Pressures

Previous forecast £000	Pressure	Revised forecast £000
710	Waste additional costs	710
3,232	Parking Operations loss of income	3,004
92	Park & Ride loss of Income	92
464	Traffic Management loss of income	464
211	Planning Fee loss of Income including archaeological income	211
108	Highways Asset Management loss of income	108
4,817	**Total Expenditure**	**4,589**

2.2 Significant Issues

Covid-19

As detailed in the table 2.1.2, there are significant pressures within the service relating to the Covid-19 virus. The majority of these are for the loss of income which is used to fund existing services. These pressures are being regularly monitored and assumptions have been made on the level of income which will be received this financial year.

Waste Private Finance Initiative (PFI) Contract

The tonnage of waste collected at the kerbside up to the end of November has increased due to the impact of COVID 19 which will result in increased treatment costs. The quantity of mixed dry recycling collected at the kerbside in quarters 1 and 2 was higher than originally forecast and will increase recycling credit payments to the city and district councils by £310,000 should this trend continue. Income from district and city councils trade waste collections is £400,000 lower than forecast due to reduced demand for trade waste services. The temporary closure of the Household Recycling Centres (HRCs) and restricted throughput due to social distancing measures since reopening, has resulted in less waste being collected than originally forecast which offsets some of the increase in kerbside collections, however this position may change over the coming months. The additional measures required to implement social distancing at the re-opened HRCs have created an additional burden on the waste budget. Although COVID related impacts have created an additional pressure on the service budget of approximately £710,000 (largely for HRC operations) so far, this pressure will be partly offset by reduced contract costs and an overall reduction in total waste collected (if this trend continues) resulting in a forecast overspend of £849,000.

Street Lighting

A one off adjustment of £998k income is expected this year for prior year contract adjustments.

3. Balance Sheet

3.1 Reserves

A schedule of the Service's reserves can be found in appendix 5.

3.2 Capital Expenditure and Funding

Expenditure

Abbey Chesterton Bridge

Due to additional costs incurred for this scheme, Highways & Transport Committee, on 1st December 2020, agreed to seek additional s106 funding of £2.063m for the Abbey Chesterton Bridge through the Greater Cambridge Partnership Executive Board. The Greater Cambridge Partnership Executive Board approved the funding on December 10th and the budget has been updated accordingly, and this change will be reported into the next Integrated Finance Monitoring Report going to General Purposes Committee.

Funding

Grant has been awarded for Emergency Active Travel Funding, mainly to fund pop-up cycle lanes. The first tranche of £467,742 is now factored into this report, this grant is to fund revenue as well as capital expenditure. The Government recently announced the Tranche 2 allocation which is £1.724m for Cambridgeshire and Peterborough. The Council is currently working with the Combined Authority to shape how this is allocated and spent and this will take account of the government's guidance on the process to follow. We are still awaiting details of the funding split but for this report have assumed the split is the same as the first tranche.

All other schemes are funded as presented in the 2020/21 Business Plan.

A detailed explanation of the position can be found in appendix 6.

Appendix 1 – Service Level Budgetary Control Report

Previous Forecast Outturn Variance £000's	Service	Budget 2020/21 £000's	Actual November 2020 £000's	Forecast Outturn £000's	Forecast Outturn Variance %
	Executive Director				
0	Executive Director	677	455	-80	-12%
0	**Executive Director Total**	**677**	**455**	**-80**	**-12%**
	Highways				
0	Asst Dir - Highways	160	106	0	0%
57	Local Infrastructure Maintenance and	9,119	2,679	57	1%
-37	Traffic Management	-185	375	-38	-20%
-2	Road Safety	476	299	-2	0%
-1,078	Street Lighting	10,302	5,501	-1,141	-11%
-77	Highways Asset Management	453	302	-92	-20%
3,232	Parking Enforcement	0	2,760	3,004	0%
-0	Winter Maintenance	2,664	1,060	-0	0%
107	Bus Operations including Park & Ride	7	283	107	1513%
2,203	**Highways Total**	**22,996**	**13,365**	**1,896**	**8%**
	Passenger Transport				
-121	Community Transport	2,645	1,813	-120	-5%
70	Concessionary Fares	4,663	1,960	70	1%
-52	**Passenger Transport Total**	**7,308**	**3,774**	**-51**	**-1%**
	Environmental & Commercial Services				
119	County Planning, Minerals & Waste	382	214	119	31%
63	Historic Environment	70	164	63	90%
0	Flood Risk Management	397	99	0	0%
-0	Energy Projects Director	32	-301	-0	-1%
-27	Energy Programme Manager	115	100	-27	-23%
972	Waste Management	37,943	16,350	849	2%
1,128	**Environmental & Commercial Services Total**	**38,941**	**16,625**	**1,005**	**3%**
	Infrastructure & Growth				
-0	Asst Dir - Infrastrucuture & Growth	162	107	-0	0%
0	Major Infrastructure Delivery	3,014	1,553	0	0%
-0	Transport Strategy and Policy	34	87	-0	-1%
-0	Growth & Development	541	402	-0	0%
0	Highways Development Management	0	129	0	0%
-0	**Infrastructure & Growth Total**	**3,751**	**2,277**	**-0**	**0%**
3,278	**Total**	**73,673**	**36,496**	**2,770**	**4%**

Appendix 2 – Commentary on Forecast Outturn Position

Number of budgets measured at service level that have an adverse/positive variance greater than 2% of annual budget or £100,000 whichever is greater.

Executive Director

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
677	455	-80	-12

Savings from staff redeployed to Covid-19 virus functions, mitigating pressures elsewhere within the service.

Street Lighting

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
10,302	5,501	-1,141	-11

A one off adjustment of £998k income is expected this year for a prior year contract adjustment.

Parking Enforcement

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
0	2,760	+3,004	0

With restrictions around the Covid-19 virus, there is expected to be a significant shortfall in income especially for on street parking and bus lane enforcement. The assumptions behind this shortfall are continually being monitored.

Bus Operations including Park & Ride

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
7	283	+107	+1,513

With restrictions around the Covid-19 virus, there is expected to be a significant shortfall in income for this service. The assumptions behind this shortfall are continually being monitored.

County Planning, Minerals & Waste

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
382	214	+119	+31

With restrictions around the Covid-19 virus, there is expected to be a shortfall in income for this service. The assumptions behind this shortfall are continually being monitored.

Historic Environment

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
70	164	+63	+90

The Historic Environment team (HET) generates the majority of its operating costs from a variety of income sources. Some posts in the team are more focused to income generation than others, and some of these were redeployed due to the Covid-19 virus. HET's ability to generate income has been severely impacted by COVID.

Waste Management

Current Budget for 2020/21 £'000	Actual £'000	Outturn Forecast £'000	Outturn Forecast %
37,943	16,350	+849	+2

The tonnage of waste collected at the kerbside up to the end of November has increased due to the impact of COVID 19 which will result in increased treatment costs. The quantity of mixed dry recycling collected at the kerbside in quarters 1 and 2 was higher than originally forecast and will increase recycling credit payments to the city and district councils by £310,000 should this trend continue. Income from district and city councils trade waste collections is £400,000 lower than forecast due to reduced demand for trade waste services. The temporary closure of the Household Recycling Centres (HRCs) and restricted throughput due to social distancing measures since reopening, has resulted in less waste being collected than originally forecast which offsets some of the increase in kerbside collections, however this position may change over the coming months. The additional measures required to implement social distancing at the re-opened HRCs have created an additional burden on the waste budget. Although COVID related impacts have created an additional pressure on the service budget of approximately £710,000 (largely for HRC operations) so far, this pressure will be partly offset by reduced contract costs and an overall reduction in total waste collected (if this trend continues) resulting in a forecast overspend of £849,000.

Appendix 3 – Grant Income Analysis

The table below outlines the additional grant income, which is not built into base budgets.

Grant	Awarding Body	Expected Amount £'000
Grants as per Business Plan	Various	15,516
Emergency Active Travel – 1st Tranche	Department for Transport (DfT)	374
Emergency Active Travel – 2nd Tranche (estimate)	Department for Transport (DfT)	1,340
Non-material grants (+/- £30k)	N/A	0
Total Grants 2020/21		**17,230**

Appendix 4 – Virements and Budget Reconciliation

Budgets and movements	£'000	Notes
Budget as per Business Plan	56,470	
Centralisation of postage budgets	-40	
Non-material virements (+/- £30k)	+13	
Current Budget 2020/21	**56,443**	

Appendix 5 – Reserve Schedule

Fund Description	Balance at 31st March 2020 £'000	Movement within Year £'000	Balance at 30th November 2020 £'000	Yearend Forecast Balance £'000	Notes
Other Earmarked Funds					
Deflectograph Consortium	32	0	32	30	Partnership accounts, not solely CCC
Highways Searches	27	0	27	0	
On Street Parking	1,944	0	1,944	1,300	
Streetworks Permit scheme	131	0	131	0	
Highways Commutted Sums	860	137	997	900	
Streetlighting - LED replacement	39	(0)	39	0	
Flood Risk funding	20	0	20	0	
Real Time Passenger Information (RTPI)	216	0	216	150	
Waste - Recycle for Cambridge & Peterborough (RECAP)	14	0	14	0	Partnership accounts, not solely CCC
Travel to Work	197	0	197	180	Partnership accounts, not solely CCC
Steer- Travel Plan+	66	0	66	52	
Waste reserve	984	0	984	984	
Other earmarked reserves under £30k	138	(15)	123	0	
Sub total	**4,669**	**122**	**4,791**	**3,596**	
Capital Reserves					
Government Grants - Local Transport Plan	0	0	0	0	Account used for all of P&E
Other Government Grants	370	0	370	0	
Other Capital Funding	4,654	7	4,661	0	
Sub total	**5,024**	**7**	**5,031**	**0**	
TOTAL	**9,693**	**129**	**9,822**	**3,596**	

Appendix 6 – Capital Expenditure and Funding

Capital Expenditure 2020/21

Total Scheme Revised Budget £'000	Original 2020/21 Budget as per BP £'000	Scheme	Revised Budget for 2020/21 £'000	Actual Spend (November) £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance - Outturn (November) £'000
		Integrated Transport				
421	200	- Major Scheme Development & Delivery	421	42	230	-191
1,158	882	- Local Infrastructure Improvements	1,158	574	1,161	3
0	0	Safety Schemes	0	0	0	0
500	500	- A1303 Swaffham Heath Road Crossroads	500	11	500	0
422	94	-Safety schemes under £500K	422	90	422	0
449	345	- Strategy and Scheme Development work	449	308	442	-7
		Delivering the Transport Strategy Aims				
2,501	1,243	- Highway schemes	2,501	345	2,501	0
		- Cycling schemes				
200	0	- Fenstanton to Busway	200	38	183	-17
180	0	- Dry Drayton to NMU	152	11	152	0
400	58	- Hardwick Path Widening	196	31	115	-81
930	0	- Bar Hill to Longstanton	60	9	60	0
450	0	- Girton to Oakington	200	3	200	0
16	0	- Arbury Road	12	0	12	0
974	0	- Papworth to Cambourne	891	96	891	0
678	0	- Wood Green to Godmanchester	678	15	678	0
150	0	- Busway to Science Park	15	1	0	-15
79	45	- Other Cycling schemes	79	8	79	0
23	23	- Air Quality Monitoring	23	18	23	0
25,000	1,000	- A14	1,000	0	1,000	0
		Operating the Network				
0	0	Carriageway & Footway Maintenance incl Cycle Paths	0	0	0	0
740	740	- Countywide Safety Fencing renewals	740	4	740	0
1,590	1,590	- Countywide Retread programme	1,590	716	1,590	0
500	500	- Countywide F'Way Slurry Seal programme	500	391	500	0
3,696	3,696	- Countywide Surface Dressing programme	3,696	2,701	3,696	0
992	992	- Countywide Prep patching for Surface - Dressing programme	992	127	992	0
500	500	- B1093 Manea, Fifty Road Wisbech Road - Tipps End	500	0	500	0
695	695	- Whittlesey, Ramsey Road Nr Pondersbridge Carriageway	695	0	695	0
3,371	1,959	- Carriageway & Footway Maintenance schemes under £500k	3,382	1,498	3,415	33
140	140	Rights of Way	140	83	140	0
		Bridge Strengthening				
437	437	- St Ives Flood Arches	437	1	437	0
2,769	2,127	- Other	2,769	1,320	2,769	0
1,736	850	Traffic Signal Replacement	1,736	416	1,731	-5
200	200	Smarter Travel Management - Int Highways Man Centre	200	84	200	0
165	165	Smarter Travel Management - Real Time Bus Information	165	92	165	0
		Highway Services				
0	0	£90m Highways Maintenance schemes	0	0	0	0
839	839	- B1050 Willingham, Shelford Rd Prov.	839	0	839	0
500	500	- B660 Holme, Long Drove C/way resurface/strengthen	500	1	500	0
900	900	- B1382 Prickwillow Pudney Hill Road Carriageway	900	0	900	0

Total Scheme Revised Budget £'000	Original 2020/21 Budget as per BP £'000	Scheme	Revised Budget for 2020/21 £'000	Actual Spend (November) £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance - Outturn (November) £'000
550	550	- B198 Wisbech, Cromwell Road Carriageway	550	2	550	0
80,627	1,511	- Highways Maintenance (£90m) schemes under £500K	2,392	1,127	2,392	0
		Pothole grant funding				
500	500	- C198 Girton, Cambridge Road Carriageway	500	341	500	0
890	890	- A1198 Caxton / Papworth Everard / Papworth St Agnes / Hilton	890	489	890	0
800	800	- A605 Elton (from Pboro Services to Elton) Carriageway	800	0	800	0
3,000	3,000	- Additional Surface Treatments 2020/21	3,000	443	3,000	0
810	810	- Pothole funding schemes under £500K	810	-14	810	0
4,199	0	- Additional DfT Allocation (surface treatments)	4,199	0	4,199	0
146	0	Safer Roads Fund	10	56	56	46
		Environment & Commercial Services				
11,064	2,763	- Waste Infrastructure	150	48	150	0
680	0	- Northstowe Heritage Centre	596	77	596	0
1,000	146	- Energy Efficiency Fund	422	0	422	0
		Infrastructure & Growth Services				
9,116	0	- Huntingdon - West of Town Centre Link Road	4	10	10	6
49,000	0	- Ely Crossing	147	-1,498	147	0
149,791	0	- Guided Busway	6	56	56	50
0	0	- Cambridge Cycling Infrastructure	37	24	24	-13
1,975	0	- Fendon Road Roundabout	996	670	995	-1
350	0	- Ring Fort Path	265	23	265	0
1,200	0	- St Neots Northern Footway and Cycle Bridge	30	3	8	-22
6,950	0	- Chesterton - Abbey Bridge	4,613	442	4,613	0
33,500	3,020	- King's Dyke	10,400	5,160	10,303	-97
94	0	- Emergency Active Fund	427	167	425	-2
2,529	0	- Lancaster Way	2,307	1,108	2,328	21
1,000	0	- Scheme Development for Highways Initiatives	437	52	56	-381
150	0	- A14	0	222	0	0
22	0	- Other schemes	37	28	44	7
1,395	0	- Combined Authority Schemes	1,436	905	1,334	-102
11,682	0	- Wisbech Town Centre Access Study	3,641	566	3,641	0
280	0	- A505	280	191	104	-176
2,818	0	- Coldham's Lane Roundabout	406	138	406	0
	243	Capitalisation of Interest	243	0	243	0
430,419	**35,453**		**68,769**	**19,870**	**67,825**	**-944**
	-12,043	Capital Programme variations	-12,043	0	-11,099	944
	23,410	**Total including Capital Programme variations**	**56,726**	**19,870**	**56,726**	**0**

The increase between the original and revised budget is partly due to the carry forward of funding from 2019/20, this is due to the re-phasing of schemes, which were reported as underspending at the end of the 2019/20 financial year. The phasing of a number of schemes have been reviewed since the published business plan. This still needs to be agreed by the Service Committees and by General Purposes Committee. (GPC).

The Capital Programme Board have recommended that services include a variation budget to account for likely slippage in the capital programme, as it is sometimes difficult to allocate this to individual schemes in advance. As forecast underspends start to be reported, these are offset with a forecast outturn for the variation budget, leading to a balanced outturn overall up to the point

when slippage exceeds this budget. The allocations for these negative budget adjustments have been calculated and shown against the slippage forecast to date.

Appendix 7 – Commentary on Capital expenditure

- Major Scheme Development & Delivery

Revised Budget for 2020/21 £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance (November) £'000	Variance Last Month (October) £'000	Movement £'000	Breakdown of Variance: Underspend/ pressure £'000	Breakdown of Variance : Rephasing £'000
421	230	-191	0	0	0	-191

This covers 2 projects, Stuntney Cycleway and Northstowe bus link. A business case for the bus link is still being worked on and it is limited how much expenditure will take place this financial year.

- Fendon Road Roundabout

Revised Budget for 2020/21 £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance (November) £'000	Variance Last Month (October) £'000	Movement £'000	Breakdown of Variance: Underspend/ pressure £'000	Breakdown of Variance : Rephasing £'000
996	995	-1	-1	0	-1	0

The project has experienced some significant challenges with underground utility equipment and also been impacted by the Covid-19 pandemic. A specific report detailing how these issues and the budget now required to complete the project was presented to the Highways & Transport Committee on 7th July.
On 16th June 2020, Highways & Transport Committee approved the transfer of £304k from Cherry Hinton Road (in South Cambs S106 budget) to Fendon Road roundabout.

- Abbey Chesterton Bridge

Revised Budget for 2020/21 £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance (November) £'000	Variance Last Month (October) £'000	Movement £'000	Breakdown of Variance: Underspend/ pressure £'000	Breakdown of Variance : Rephasing £'000
4,613	4,613	0	0	0	0	0

The construction contract covers Chisholm Trail Phase One and Abbey-Chesterton Bridge under one contract and the majority of costs have been charged to Chisholm Trail budget. The 2019/20 CCC budget contribution has therefore been carried forward to the current financial year.

The Chisholm Trail and Abbey Chesterton Bridge project has experienced a significant number of issues that are forecast to lead to time and cost increases. These include unanticipated delays and costs related to:

- Access to land required to deliver the scheme
- Design and fabrication issues
- Ecology
- Third party agreements and approvals
- Protracted approval process with Network Rail to work in proximity of the railway
- Impact of the Coronavirus pandemic

Due to additional costs incurred for this scheme, Highways & Transport Committee, 1st December 2020 agreed to seek additional s106 funding of £2.063m for the Abbey Chesterton Bridge through the Greater Cambridge Partnership Executive Board. The Greater Cambridge Partnership Executive Board approved the funding on December 10th and the budget has been updated accordingly, and this change will be reported into the next Integrated Finance Monitoring Report going to General Purposes Committee.

- King's Dyke

Revised Budget for 2020/21 £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance (November) £'000	Variance Last Month (October) £'000	Movement £'000	Breakdown of Variance: Underspend/ pressure £'000	Breakdown of Variance : Rephasing £'000
10,400	10,303	-97	-1,337	+1,240	0	-97

King's Dyke signed a contract with Jones Bros and mobilised construction July 2020. Progress onsite has been rapid Aug/Sept in the ground improvement works at the western end of the scheme with surcharge now being placed. This rapid progress has required budget planning adjustments to bring forward the profile to this financial year, over the original forecasting.

Jones Bros are continuing construction work on site alongside the design work which will continue over the coming months. Earthworks is ongoing at the western end of the scheme with surcharge now being placed. The contractor has also started work on the underpass and the main compound is now complete. The construction is due to complete by December 2022. Small underspend forecast this year due to a revised forecast expenditure profile received from the contractor.

- Scheme Development for Highways Initiatives

Revised Budget for 2020/21 £'000	Forecast Spend - Outturn (November) £'000	Forecast Variance (November) £'000	Variance Last Month (October) £'000	Movement £'000	Breakdown of Variance: Underspend/ pressure £'000	Breakdown of Variance : Rephasing £'000
437	56	-381	-312	-69	0	-381

An in-year underspend of -£0.381m is forecast. At the December Highways and Transport Committee, Members were asked to prioritise and approve the next set of schemes to deliver, and whether to allocate more resource to the budget line.

Capital Funding

Original 2020/21 Funding Allocation as per BP £'000	Source of Funding	Revised Funding for 2020/21 £'000	Forecast Spend - Outturn (November) £'000	Forecast Funding Variance - Outturn (November) £'000
18,781	Local Transport Plan	17,781	17,781	0
0	Other DfT Grant funding	10,626	10,624	-2
199	Other Grants	7,128	7,149	21
411	Developer Contributions	8,242	8,201	-41
12,798	Prudential Borrowing	11,221	10,632	-589
3,021	Other Contributions	13,528	13,195	-333
35,210		**68,526**	**67,582**	**-944**
-6,159	Capital Programme variations	-11,800	-10,856	944
29,051	**Total including Capital Programme variations**	**56,726**	**56,726**	**0**

The increase between the original and revised budget is partly due to the carry forward of funding from 2019/20, this is due to the re-phasing of schemes, which were reported as underspending at the end of the 2019/20 financial year. The phasing of a number of schemes have been reviewed since the published business plan.

Funding	Amount (£m)	Reason for Change
New funding (Specific Grant)	10.65	Funding not previously shown in the business plan – Wisbech access strategy – Combined Authority (£3.641m), A14 Cycling schemes – Highways England (£1.472m), Lancaster Way (£1.391m). Additional pothole funding (£4.1m)
Additional Funding / Revised Phasing (Section 106 & CIL)	6.95	Developer contributions to be used for a number of schemes. Chesterton Abbey Bridge (£4.088m), Fendon Road Roundabout (£0.740m), Ring Fort Path (£0.265m), Traffic Signal replacement (£0.575m), Lancaster Way (£1.138m)
Additional funding / Revised Phasing (Other Contributions)	11.00	Coldham's lane roundabout, reimbursement from the combined authority (£1.1m). Other combined authority funded schemes (£1.833m). Chesterton – Abbey Bridge (£0.414m). King's Dyke, revised phasing (£7.38m).
Additional Funding / Revised Phasing (Prudential borrowing)	3.36	Additional funding required for A14 contribution (£1.0m) Rephasing of Highways Maintenance funding.

Key to RAG ratings

RAG status	Description
RED	Not delivered within the target completion date (financial year)
AMBER	Highlighted concerns regarding delivery by completion date
GREEN	On target to be delivered by completion date

Update as at 01.12.2020

Cambridge City Works Programme

Carried Forward from 2018/19

Total Local Highway Improvement (LHI)_Schemes 27
Total Completed 26
Total Outstanding 1

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/19 completion date)	Project Update and any Issues or Variance Explanation
Cllr Linda Jones 30CPX02296	Petersfield	Great Northern Road	**Civils** - Zebra crossing	RED	Delayed until road adopted and becomes public highway. Covid-19 has delayed this process further as utility companies have currently stopped all adoptions.

Current Schemes for 2020/21

Total LHI Schemes 24
Total Completed 7
Total Outstanding 17

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Jones	Petersfield	Perowne St	**Parking Restrictions** - Install a no loading at any time ban up to the parking bays both sides of Perowne street.	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Crawford	Cherry Hinton	Fulbourn Old Drift	**Parking Restrictions** - School keep clear at gate and single yellow restriction.	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Jones	Petersfield	Various around ward	**Street lights** - Install 4 no new streetlights to provide additional lighting on footpaths.	GREEN	Work installed on site, some minor discussion with Cllr Jones before completion.
Cllr Ashwood	Trumpington	Long Road	**MVAS** unit and warning signs near the school.	GREEN	Work Complete
Cllr Jones	Petersfield	Brooklands Avenue	**Signs / Lines** - Clearer signage along the route and lining to identify that it is a dual use footway.	GREEN	Work Complete
Cllr Scutt	Arbury	Cunningham Close	**Civils** - Birdsmouth / knee-rail fencing positioned behind existing concrete bollards, extending fully to the boundary of existing footways.	GREEN	Work Complete
Cllr Whitehead	Abbey	New Street	**Raised Feature** - Build out the kerbline to narrow the carriageway and afford better visibility for pedestrians. This will require the removal of two on road parking spaces. Construct a new flat top hump which will provide a flush surface, and remove the existing round-top hump.	GREEN	Scheme Consultation commenced start of November 2020.
Cllr Scutt	Arbury	French's Road	**Civils** - New dropped kerbs to access path. Change path to Shared use (as currently footpath only). Widen path at Harvey Goodwin Ave exit to allow more usable width and look to relocate bins at Frenchs Rd end.	GREEN	Order raised. Waiting on start date for work from contractor.

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Whitehead	Abbey	Abbey Gardens	**Parking restriction** - Double yellows lines	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Jones	Petersfield	Tenison Road	**Civils** - Installation of 5 wooden bollards along the stretch of Tenison Road.	GREEN	Work Complete
Cllr Scutt	Arbury	Thirleby Close	**Parking restrictions** - Double yellow lines through the cul-de-sac and junction with Harding Way (except for disabled bay in turning head)	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Whitehead	Abbey	Whitehill Road	**MVAS** unit and reinstate junction markings	GREEN	Work Complete
Cllr Manning	Chesterton	High Street	**Civils** - Raise the mini roundabout possibly using bolt down solution. Probably requires a patch under and resurfacing to tie into roundabout edge. Renew surrounding road markings.	GREEN	Site visit complete, design complete, applicant approved to review target cost received 25/11/2020.
Cllr Kavanagh	Romsey	Rustat Road	**Civils** - Widen existing gates by 1m and repaint them to remove the graffiti. Reinstate block paving in new location. Look to improve footpaths for pedestrians on either side with resurfacing and new bollards as required.	GREEN	Design complete, applicant approved, To review revised target cost received 30/11/2020.
Cllr Meschini	Kings Hedges	Cam Causeway	**Parking restrictions** - Install a verge parking ban between Nuffield Road and Laxton Way and double yellow lines on the western side of Cam Causeway at this location. This will not displace the parking but force the parking onto the carriageway only.	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Taylor	Queen Edith	Wulfstan Way	**Parking Restrictions** - Double yellow lines for short section outside numbers 19 and 21 Wulfstan Way	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Scutt	Arbury	Belmore Close	**Parking restrictions** - Double yellow lines through turning head	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Meschini	Kings Hedges	Northfield Avenue	**Civils** - Install a new informal crossing point north of mini roundabout, with new connecting footway either side and wooden bollards with reflective banding to highlight the location to drivers.	GREEN	Submitted for target costing 23/10/2020.
Cllr Meschini	Kings Hedges	Cam Causeway	**Civils / Signs** - Install dropped crossing and tactiles, with bollards either side to highlight new crossing point. Install playground warning signs on all approaches.	GREEN	Work Complete
Cllr Taylor	Queen Edith	Cavendish Avenue	**Raised Features** - Installation of speed cushions along Cavendish Avenue to reduce vehicle speeds.	AMBER	Site Visits / Initial Designs shared with applicant. Waiting on responses from City and County Cllr regarding scheme.
Cllr Crawford	Cherry Hinton	Church End	**Parking restrictions** - Double Yellow Lines.	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Nethsinga	Newnham	Hedgerley Close and Conduit Road	**Parking restrictions** - Double Yellow Lines	GREEN	Order raised. Waiting on start date for work from contractor.
Cllr Richards	Castle	Mount Pleasant	**MVAS** unit.	GREEN	Work Complete
Cllr Jones	Petersfield	Bateman Street	**Raised Features** - Replace the existing block paved speed cushions with rubberised bolt-down cushions, provide new lining, bollards, and cycle symbols along extent of scheme.	GREEN	Site Visits / Designs approved by applicant. Traffic Regulation Order consultation commenced start of November. Trying to tie in with Greater Cambridge Partnership closures in Newtown area.

Huntingdonshire Works Programme

Carried Forward from 2019/20

Total Local Highway Improvement (LHI) Schemes 21
Total Completed 16
Total Outstanding 5

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/19 completion date)	Project Update and any Issues or Variance Explanation
Cllr Criswell	Pidley	B1040 High Street/ Oldhurst Road	Give Way feature	RED	Delegated decision made. Works expected delivery in January/February 2021 (pending supply chain delivery for speed cushions).
Cllr McGuire	Yaxley	Broadway	Zebra Crossing	RED	Civil works and lining completed. Awaiting electrical connection which has been delayed by COVID but should be undertaken in December.
Cllr Bywater	Folkesworth & Washingley	Village Area	7.5t Weight Limit	RED	Delayed due to Parish Council discussions with housing association, agreement reached to reduce scope of scheme to facilitate delivery. Awaiting local residents and Parish Council to undertake works to their land boundaries prior to CCC implementing the scheme. Lead Engineer to arrange meeting on site to progress the scheme further.
Cllr Gardener	Winwick	B660	30mph speed limit	RED	Delayed due to discussions with Parish. Plans agreed. Formal consultation finished on the 02/09/2020. Target cost to be requested by beginning of December.
Cllr Rogers	Upwood & The Raveleys	Raveley Road	Give Way Feature Great Raveley	RED	Target Cost received but Parish Council unable to cover the increased cost. Further communication on way forward commenced. Awaiting revised cost from Contractor following reduced scope of works.

Current Schemes for 2020/21

Total LHI Schemes 25
Total Completed 2
Total Outstanding 23

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Wilson	Huntingdon	Hinchingbrooke	Footway widening	AMBER	Delayed due to staff redeployment. Detailed design completed, target cost requested. Site clearance/ landscaping works programmed for 22/01/21, to allow for lighting column to be repositioned with civil works to follow.
Cllr Criswell	Woodhurst	Wheatsheaf Rd & Church Street	Provision of 40mph buffer zones	AMBER	Delayed due to staff redeployment. Plans approved by Parish Council. Police approval received.Traffic Regulation Order to be advertised February 2021. Target cost has been requested.
Cllr Wilson	Huntingdon	Buttsgrove Way near Thongsley School and Coneygear Park	Installation of pedestrian crossing	GREEN	Work complete
Cllr Bywater	Sawtry	Gidding Road	Installation of pedestrian crossing	AMBER	Site visit and prelim design undertaken. Parish Council agreed on draft plan. Speed survey data received. Awaiting amended Street lighting design, for the scheme to be submited for Road Safety Audit.
Cllr West	Great Paxton	High Street	Priority narrowing's	GREEN	Officer in charge to meet with Parish Council on 09/12/2020. Previous meeting postponed due to lockdown.
Cllr Wilson	Hemingford Abbots	Common Lane, High Street and Ride away	Proposed 20 mph and 30mph speed limits	AMBER	Delayed due to staff redeployment. Police approved buffer zones, 20mph speed limit approval is pending speed survey. Target cost has been requested.

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Gardener	Catworth	Church Road	New footway leading up to the bus stop	AMBER	Delayed due to staff redeployment. Target cost has been requested. Parish Council have requested to meet on site once the total cost has been confirmed.
Cllr Gray	Stow Longa	Stow Road/ Spaldwick Road	Provision of 40mph buffer zones, gateway features and provision of MVAS	GREEN	Draft plans agreed by Parish Council. Traffic Regulation Order advertised on 12/08/2020. Objection received and resolved so now preparing for target cost.
Cllr Bywater	Elton	Overend	Proposed road narrowing and provision of a speed hump	GREEN	Design complete and preparing submission for target cost early December 2020.
Cllr Tuplin	Kings Ripton	Ramsey Rd	Provision of a Mobile Vehicle Activated Sign (MVAS)	GREEN	Memorandum of understanding and funding approval request sent to Parish Council, now agreed. Final plans to be approved by Parish Council prior to requesting target cost.
Cllr Gardener	Ellington	Grafham Road & Thrapston Road	Provision of a Mobile Vehicle Activated Sign (MVAS) and mounting posts	GREEN	Memorandum of understanding and funding approval received from Parish Council. Equipment received. Site meeting with Parish Council took place. Parish Council seek permission form Balfour Beatty to install units on existing lighting columns.
Cllr Tuplin	Abbots Ripton	The main roads through and into the village	Heavy Commercial Vehicles (HCV) survey	RED	Survey companies identified and brief being prepared. Delay as Station Road is closed until February 2021, survey can only be undertaken once it reopens. Unlikely to be carried out this financial year as traffic needs to return to "normal" level.
Cllr McGuire	Yaxley	New Road, Norman Cross	Waiting restrictions and parking restrictions	GREEN	Proposal agreed by the Parish Council. The majority of the works already completed. Contractor unable to finish off the works due to parked cars causing obstruction/inconvenience.
Cllr Downs	Buckden	Mill Road	Provision of a Mobile Vehicle Activated Sign (MVAS). Improved lining and priority signage	GREEN	Mobile Vehicle Activated unit received. Final plans approved by Parish Council. Target cost to be requested by beginning of December 2020.
Cllr Gardener	Winwick	B660, Old Weston Road	Provision of a Mobile Vehicle Activated Sign (MVAS)	GREEN	Memorandum of understanding and funding approval request sent to Parish Council. Signed agreement has not been returned yet. Equipment received.
Cllr Gardener	Great Staughton	The Causeway	Speed limit reduction to 30 mph and provision of a Mobile Vehicle Activated Sign (MVAS)	GREEN	Design completed. Parish Council met and approved the plans on 17/09/2020. Policy & Regulation to advertise Public Notice in December 2020 prior to us requesting Target Cost. Awaiting signed agreement from the Parish Council.
Cllr Criswell	Colne	B1050 Somersham Road	Footway improvement	GREEN	Met with Parish Council and agreed on feasible scope. Works to be completed by beginning of December 2020.
Cllr Bywater	Stilton	North Street, High Street and Church Street	Provision of a Mobile Vehicle Activated Sign (MVAS)	GREEN	Equipment now received. Awaiting Parish Council agreement before the equipment gets supplied.
Cllr Downes	Brampton	The Green, Brampton	Installation of pedestrian crossing	RED	Delay due to work on Active Travel schemes. Site visit has taken place. Preliminary plans to be undertaken. Unlikely to be completed by end March 2021.
Cllr Bates	Hilton	B1040 / Potton Road	Conduct a feasibility study	GREEN	Feasibility completed. Meeting with Parish Council 2/12/2020 to discuss their queries.
Cllr Rogers	Warboys	Ramsey Road	Provision of a Mobile Vehicle Activated Sign (MVAS) and 40 mph buffer zone	GREEN	Scope agreed with Parish Council. Traffic Regulation Order advertised on 12/08/2020. Preparing information for target cost request early December 2020.
Cllr Fuller	St Ives	Footpath crossing Erica Road	Provision of crossing point and installation of knee-rail fence	GREEN	Site visits carried out and detailed designs being undertaken.
Cllr Taylor	St Neots	Hawkesden Road, Priory Hill Road	Waiting restrictions	GREEN	Traffic Regulation order advertised beginning of November. Target cost requested on 12/11/2020..
Cllr Bywater	Holme	B660 Station Rd and B660 Glatton Lane	Provision of 30 mph speed roundel on a red high friction surface (HFS)	GREEN	Work complete
Cllr Gardener	Great and Little Gidding	B660 egress from and ingress to the village	Provision of new warning signs and markings, installation of 40 mph buffer zones and village gateway features	GREEN	Design approved by Parish Council. Traffic Regulation Order advertised on 12/08/2020. Preparing information to request target cost early December 2020.

Fenland Works Programme

Carried Forward from 2019/20

Total Local Highway Improvement (LHI) Schemes 14
Total Completed 13
Total Outstanding 1

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/20 completion date)	Project Update and any Issues or Variance Explanation
Cllr Connor / Cllr Costello	Pondersbridge	B1040 (Ramsey Road, Herne Road) & Oilmills Road	Traffic calming	RED	Works completed on site, but road safety audit has highlighted some required remedial action, meetings held with Councillor and residents. Further scheme amendments are required, additional design work to be undertaken.

Current Schemes for 2020/21

Total LHI Schemes 10
Total Completed 3
Total Outstanding 7

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/20 completion date)	Project Update and any Issues or Variance Explanation
Cllr Gowing	Fenland Road Safety Campaign	Honey Farm Bends - Sixteen Foot	Installation of safety barriers	GREEN	Vehicle restraint assessment completed, detailed design completed, road safety audit 1/2 completed, applying for consents with drainage board.
Cllr King	Tydd St Giles	Black Dike	Bridleway bridge repairs	GREEN	Works complete
Cllr Tierney	Wisbech	South Brink	Traffic Calming	AMBER	Delayed due to engineer being re-deployed as part of Covid-19 response. Initial design undertaken, sent to applicant for comments before progressing further, applicant has responded to initial correspondence but nothing further.
Cllr Hay	Chatteris	Wenny Road	Speed reduction measures	GREEN	Works complete
Cllr King	Parson Drove	Sealeys Lane	New Footway	GREEN	Design completed and now agreed with applicant, order raised and awaiting programme date.
Cllr Connor	Benwick	Doddington Road	Mobile Vehicle Activated Sign	AMBER	Delayed due to works on active travel schemes. In detailed design, site visit with parish undertaken. Unit ordered and received at depot, additional design works being undertaken.
Cllr King	Gorefield	High Road	Footway resurfacing	GREEN	Works complete
Cllr King	Leverington	Sutton Road/Leverington Common	Speed limit reduction	AMBER	Delayed due to engineer being re-deployed as part of Covid-19 response. In preliminary design, initial site visit undertaken and discussions had with applicant. Speed / traffic data being captured to assist design process.
Cllr Connor	Doddington	High Street	Footway improvements	GREEN	Works order raised with Skanska (Oct 2020), programme date being reconsidered due to available road space and proximity to school.
Cllr King	Wisbech	North Brink	New one way	AMBER	Delayed due to work on active travel schemes. In detailed design, site visit undertaken and measures taken, request for target cost for topographical survey (due early Dec).

East Works Programme

Current Schemes for 2020/21

Total LHI Schemes 13
Total Completed 1
Total Outstanding 12

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Schumann	Reach	Fair Green	Vehicle length restriction	GREEN	In detailed design, proposal agreed with policy & regulation team, and police. Proposal sent to parish (09/11/2020) for agreement.
Cllr Goldsack	Viva Arts & Community Group	Spencer Drove	Carriageway widening / reconstruction	GREEN	Skanska to design and deliver, due to previous engagement with applicant.
Cllr Dupre	Sutton	B1381	Mobile Vehicle Activated Sign	GREEN	Works complete
Cllr Hunt	Haddenham	Hill Row	Mobile Vehicle Activated Sign	AMBER	Delayed due to work on active travel schemes. In detailed design, met parish on site mid June 2020, further site visit 20/10/2020.
Cllr David Ambrose Smith	Littleport	Ten Mile Bank	Signing & Lining	GREEN	Applicant approved design, works ordered and programmed for 07/01/2021
Cllr Hunt	Wilburton	High Street	Reduce vehicle speeds	AMBER	Delayed due to work on active travel schemes. Design undertaken and with applicant for discussion, applicant has requested various additional options. Meeting on 26/11/2020 to define scope for progression.
Cllr Bailey	Ely	Beresford Road	Zebra Crossing	GREEN	Design agreed with applicant, lighting design complete, road safety audit requested 27/10/2020.
Cllr Shuter	Brinkley	Carlton Road	Buffer zone, speed cushions	AMBER	Delayed due to work on active travel schemes. In detailed design, additional information was required for design, this has now been gathered, scheme being shared with applicant and traffic regulation order required.
Cllr Schumann	Chippenham	High Street	Mobile Vehicle Activated Sign	AMBER	Delayed due to work on active travel schemes. Unit delivered to applicant, further works ongoing to disconnect the old static vehicle activated sign and install posts
Cllr Shuter	Westley Waterless	Brinkley Road	Traffic calming	AMBER	In detailed design, site visit undertaken and discussions ongoing with applicant. Applicants have requested a scope change away from the initial feasibility.
Cllr Dupre	Witchford	Main Street	Footway widening	RED	Delayed due to additional workload within the service. In preliminary design, site measures and visit undertaken.
Cllr Schumann	Snailwell	The Street	New Footway	AMBER	Design sent to applicant for approval on 14/09/2020, applicant has requested various amendments. Amendments made in consultation with CCC structures team to be approved by applicant.
Cllr Shuter	Lode	Lode Road	Mobile Vehicle Activated Sign	GREEN	Unit has arrived at the depot, still awaiting delivery to applicant due to missing battery / charger.

South Cambridgeshire Works Programme

Carried Forward from 2019/20

Total Local Highway Improvement (LHI) Schemes 17
Total Completed 16
Total Outstanding 1

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/19 completion date)	Project Update and any Issues or Variance Explanation
Cllr Howell	Cambourne Parish Council	Eastgate	Zebra Crossing	RED	Delayed until road adopted and becomes public highway. Covid-19 has delayed the adoption process further. Waiting on update from development management.

Current Schemes for 2020/21

Total LHI Schemes 18
Total Completed 12
Total Outstanding 6

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Batchelor	Bartlow	Three buffer zones on Linton Road, Camps Road and Ashdon Road Bartlow with gates to emphasise the speed limit.	**Speed Limit** - Three buffer zones on Linton Road, Camps Road and Ashton Road with gates to emphasise the speed limit.	GREEN	Work complete
Cllr Van Den Ven	Litlington	Bassingbourn Road	**Speed Limit / Civils** - New 50mph speed limit and footpath maintenance works.	GREEN	Speed limit works order installed, waiting on cost from contractor for footpath work. Parish Council aware.
Cllr Bradman	Fen Ditton	Village wide	**MVAS**	GREEN	Work complete
Cllr McDonald	Ickleton	Butchers Hill	**Lining** - Re-line existing edge line to help delineate between vehicular movements and pedestrian movements. Patch parts of the existing informal footway section to ensure pedestrians.	GREEN	Work complete
Cllr Harford	Girton	Various central locations within village	**Raised Features / Speed Limit** - Install 20mph zone on extents previously identified. Allow for additional 2 sets of speed cushions to be installed in the large gaps between existing calming features. Additionally Parish would like an MVAS with possible mounting locations to be determined later probably on existing street furniture.	GREEN	Traffic Regulation Order closed end of October 2020, preparing information for target cost.
Cllr Kindersley	Arrington	A1198 Arrington village within 40mph and 30mph speed limits	**MVAS** unit and mounting posts.	GREEN	Work complete
Cllr Jenkins	Histon & Impington	Village wide - Impington Lane, The Coppice, New Road, Milton Road, New School Road, rear of Manor Park	**Civils** - Various footway works - either utilising overlay or inlay technique depending on the state of the specific path.	GREEN	Works programmed for completion by end of December 2020.
Cllr Bradman	Horningsea	Village Wide	**Signs / lines** - new warning signs in village near bend of 40 mph buffer zones on both approaches plus relevant road markings.	GREEN	Work complete

Local Member & Project Number	Parish/Town	Street	Works	RAG STATUS (Progress measured against 31/03/21 completion date)	Project Update and any Issues or Variance Explanation
Cllr Batchelor	Carlton	Church Road	**Speed Limit** - Install 40mph through Carlton Green ONLY.	GREEN	Work complete
Cllr Harford	Dry Drayton	Various locations around village	**Flashing wig-wags** and **MVAS** unit.	GREEN	Work complete
Cllr Kindersley	Wimpole & Orwell	Junctions at Fishers Lane and Hurdleditch Road (Orwell) Junction at Old Wimpole Road (Wimpole)	**Signs / Lines** - New signs to warn of junctions, red anti-skid to further highlight this, and new road markings as required to improve driver safety.	GREEN	Work complete
Cllr Batchelor	Balsham	Dolls Close, West Wickham Road, West Wratting Road, High Street, Cambridge Road and Linton Road.	**MVAS** unit.	GREEN	Work complete
Cllr Howell	Bourn	Broadway	**Civils** - Priority give way feature.	GREEN	Road safety audit complete.Preparing information for target cost.
Cllr Nieto	Hardwick	Cambridge Road	**Civils** - Installation of priority give way build outs along Cambridge Rd.	GREEN	Site visit complete, now being designed for submission to Parish Council.
Cllr Smith	Swavesey	Boxworth End	**Civils** - Footpath maintenance	GREEN	Works programmed for the beginning of December 2020.
Cllr Batchelor	Horseheath	West Wickham Road	**Signs / lines** - Gateway treatment and highlighting existing 30mph limit further	GREEN	Work complete
Cllr Batchelor	West Wickham	Streetly End	**Signs / Lines** - New lining and signs at village entrances to highlight vehicles are entering 30mph limit.	GREEN	Work complete
Cllr Hickford	Harston	Cambridge Road	**Civils** - Island repair and maintenance	GREEN	Work complete

Trees

Countrywide Summary - Highway Service

Update as at 05.11.2020

Total to date Countywide (starting 1 January 2017)

Removed 189
Planted 2907

Trees	City	South	East	Fenland	Hunts	Total Countywide
Removed 1st January 2017 to 31st March 2019	10	30	8	4	35	87
Planted 1st January 2017 to 31st March 2019	3	1	2752	0	0	2756
Removed 2019/2020	1	14	62	1	16	94
Planted 2019/2020	0	63	32	8	31	134

This financial year summary:

Trees	City	South	East	Fenland	Hunts	Total Countywide
Removed 2020/2021	1	3	2	0	2	8
Planted 2020/2021	1	3	13	0	0	17

Comparison to previous month:

Oct-20	Removed	Planted
City	0	0
South	0	0
East	0	0
Fenland	0	0
Hunts	0	0
Total	**0**	**0**

Nov-20	Removed	Planted
City	0	0
South	2	0
East	2	4
Fenland	0	0
Hunts	0	0
Total	**4**	**4**

Please Note: This data comprises of only trees removed and replanted by Highways Maintenance and Highways Projects & Road Safety Teams (inc. LHIs) and Infrastructure and Growth. Whilst officers endeavour to replace trees in the same location they are removed, there are exceptions where alternative locations are selected, as per the county council policy. However trees are replanted in the same divisional area that they were removed.

2018 - 2678 new trees planted as Ely Bypass Scheme
Feb 2020 43 trees were removed in relation to the A1303 Road Safety Scheme in East
Feb 2020 25 trees countywide came down during the recent storms Ciara and Dennis (16 in East and 9 in Hunts)

Key

Background colour	Highlights
Green	Tree Replaced

Cambridge City Tree Works

Total Removed in Current Month NOV 0
Total Planted in Current Month NOV 0

Ward	Cllr name	Location	Number of trees Removed	Reason Removed	Cllr Informed	Number of trees Replaced in Area
Coleridge	Sandra Crawford	**Coldhams Lane**	6	Subsidence	Y	
Castle	Jocelynne Scutt	**Frenchs Road**	1	Obstruction	Y	
Castle	Claire Richards	**Mitchams Corner**	3	Obstruction	Y	
Newnham	Lucy Nethsingham	**Skaters Meadow**	1	Obstruction	Y	3
		Fendon Road	1	Major Scheme - Fendon Road Roundabout, replaces a tree removed previously in the year		1
-	-	**Total**	**12**	-	-	**4**

South Tree Works

Total Removed in Current Month NOV 2
Total Planted in Current Month NOV 0

Parish	Cllr name	Location	Number of trees Removed	Reason Removed	Cllr Informed	Parish informed	Number of trees Replaced in Area
Comberton	Lina Nieto	**Kentings**	1	Diseased / Dead	Y	Y	1
Cottenham	Tim Wotherspoon	**Twentypence Road**	2	Natural Disaster	2017-12-02	2017-12-02	2
Duxford	Peter Topping	**Ickleton Road**	1	Diseased / Dead	2017-02-02	2017-02-02	1
Sawston	Roger Hickford	**Mill Lane**	12	Diseased / Dead	2017-12-02	2017-12-02	12
Little Shelford	Roger Hickford	**Whittlesford Road**	1	Obstruction	2018-10-25	2018-10-25	1
Longstowe	Mark Howell	**High Street**	1	Diseased / Dead	2017-10-10	2017-10-10	1
Oakington	Peter Hudson	**Queensway**	3	Diseased / Dead	2018-10-25	2018-10-25	3
Sawston	Roger Hickford	**Resbury Close**	1	Diseased / Dead	2018-10-25	2018-10-25	1
Bassingbourn	Susan van de Ven	**North End**	2	Diseased / Dead	2018-10-29	2018-10-29	2
Bourn	Mark Howell	**Riddy Lane (behind 3 Baldwins Close)**	1	Diseased / Dead	2018-10-29	2018-10-29	1
Grantchester	Lina Nieto	**Barton Road**	1	Diseased / Dead	2018-10-29	2018-10-29	1
Histon	David Jenkins	**Parlour Close**	1	Damaged	2017-12-02	2017-12-02	1
Girton	Lynda Harford	**Thornton Close**	1	Diseased / Dead	2018-10-25	2018-10-25	1
Grantchester	Lina Nieto	**Mill Way**	1	Subsidence	2018-10-29	2018-10-29	1
Little Wilbraham	John Williams	**O/s 89 High Street**	1	Obstruction	2018-06-01	2018-06-01	1
Waterbeach	Anna Bradnam	**Clayhithe Road**	1	Diseased / Dead	2019-03-11	2019-03-11	1
Bourn	Mark Howell	**Riddy Lane (Church St) corner**	4	Diseased / Dead	2019-11-04	2019-11-04	4
Hardwick	Lina Nieto	**St Neots Rd**	8	Diseased / Dead	2019-11-04	2019-11-04	8
							21
Comberton	Lina Nieto	**Swaynes Lane**	1	Obstruction	2020-02-27	2020-02-27	
Girton	Lynda Harford	**Cambridge Road**	1	Diseased / Dead	2020-04-30	2020-04-20	1
Foxton					2020-09-25	2020-09-25	2
Gamlingay	Sebastian Kindersley	**Stocks Lane**	1	Diseased / Dead	2020-11-02	2020-11-02	
Gamlingay	Sebastian Kindersley	**Northfield Close**	1	Diseased / Dead	2020-11-02	2020-11-02	
-	-	**Total**		**47**	-	-	**67**

East Tree Works

Total Removed in Current Month NOV 2
Total Planted in Current Month NOV 4

Parish	Cllr name	Location	Number of trees Removed	Reason Removed	Cllr Informed	Parish informed	Number of trees Replaced in Area
Ely	Anna Bailey	**The Gallery**	1	Diseased / Dead	2017-09-01	2017-09-01	1
Littleport	David Ambrose Smith	**Queens Road no.5**	1	Diseased / Dead	2017-03-24	2017-03-24	1
Ely	Anna Bailey	**Angel Drove**	1	Diseased / Dead	2017-09-01	2017-09-01	1
Ely	Bill Hunt	**Main St, Lt Thetford No.16**	1	Diseased / Dead	2018-09-20	2018-08-02	1
Ely	Anna Bailey	**St Catherines**	1	Diseased / Dead	2018-07-11	2018-07-11	1
Ely	Anna Bailey & Lis Every	**Lynn Road 83a/85**	1	Natural Disaster	2018-07-11	2018-07-11	1
Ely	Anna Bailey	**The Gallery**	1	Diseased / Dead	2017-09-01	2017-06-22	1
Ely	Anna Bailey	**Witchford Road**	2	Diseased / Dead	2020-07-16	2020-07-16	2
Burwell	Josh Schumann	**Causeway**	1	Diseased / Dead	2018-11-19	2018-11-19	1
Snailwell	Josh Schumann	**The Street**	1	Natural Disaster	2019-05-11	2019-05-11	1
Sutton	Lorna Dupre	**Bury Lane**	1	Diseased / Dead	2019-09-25	2019-09-25	2
Lode	Mathew Shuter	**Northfields**	1	Removed in Error	2020-01-27	2020-01-27	1
Ely	Anna Bailey & Lis Every	**Lynn Road 83a/85**	1	Natural Disaster	2020-02-10	2020-02-10	1
Stow cum Quay / Lode / Swaffham Bulbeck	Mathew Shuter / John Williams	**A1303**	43	A1303 Safety Scheme	2019-11-19	2019-11-19	
Dullingham	Mathew Shuter	**Brinkley Road**	3	Natural Disaster	2020-20-10	2020-20-10	1
Dullingham	Mathew Shuter	**Station Road**	2	Natural Disaster	2020-20-10	2020-20-10	1
Cheveley	Mathew Shuter	**Broad Green**	5	Natural Disaster	2020-20-10	2020-20-10	1
Soham	Mark Goldsack	**Northfields**	1	Natural Disaster	2020-20-10	2020-20-10	1
Snailwell	Josh Schumann	**Newmarket Road**	1	Natural Disaster	2020-20-10	2020-20-10	1
Snailwell	Josh Schumann	**The Street**	1	Natural Disaster	2020-20-10	2020-20-10	1
Chippenham	Josh Schumann	**Chippenham Rd**	1	Natural Disaster	2020-20-10	2020-20-10	1
Cheveley	Mathew Shuter	**Ditton Green**	1	Natural Disaster	2020-20-10	2020-20-10	1
-	-	**Total**	**72**	-	-	-	**23**

Additional Trees

Parish	Cllr name	Location	Number of trees	Replaced Date	**Planted Narrative -** Which trees are being replaced (Location)
Witchford	Lorna Dupre	**plot of land**	70	Phased rollout - On-going	70 Trees agreed to be planted following initiative between the Parish Council and CCC to help reduce the deficit of trees that had been lost countywide.
Witchford	Lorna Dupre	**plot of land**	26	Phased rollout - On-going	26 further trees agreed to be planted following initiative between the Parish Council and CCC to help reduce the deficit of trees that had been lost countywide.
Ely		**Ely Bypass Project**	2678	Project completed in 2018	Number of trees planted as part of the Ely Bypass Scheme
-	-	**Total**	**2774**	-	-

Total planted per area = **2797**

Fenland Tree Works

Total Removed in Current Month NOV 0
Total Planted in Current Month NOV 0

Parish	Cllr name	Location	Number of trees Removed	Reason Removed	Cllr Informed	Parish informed	Number of trees Replaced in Area
Wisbech	Samantha Hoy	**Westmead Avenue**	1	Diseased / Dead	2018-02-20	2018-02-20	1
March	Janet French	**Elliott Road (Avenue Jct with)**	1	Diseased / Dead	2018-02-20	2018-02-20	1
Wisbech	Simon Tierney	**Southwell Rd**	1	Natural Disaster	2018-02-20	2018-02-20	1
March	Janet French	**Elwyndene Road**	1	Diseased / Dead	2018-05-21	2018-10-23	1
Wisbech	Samantha Hoy	**Rochford Walk**	1	Diseased / Dead	2019-08-01	2019-08-01	1
-	-	-	-	-	-	-	3
-	-	**Total**	**5**	-	-	-	**8**

Huntingdon Tree Works

Total Removed in Current Month NOV 0
Total Planted in Current Month NOV 0

Parish	Cllr name	Location	Number of trees Removed	Reason Removed	Cllr Informed	Parish informed	Number of trees Replaced in Area
Eaton Ford	Derek Giles	**Orchard Close**	2	Diseased / Dead	2018-03-27	2018-10-29	1
Elton	Simon Bywater	**Back Lane**	1	Subsidence	2018-03-27	2+C8:G329/10/2018	1
Fenstanton	Ian Bates	**Harrison Way**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Godmanchester	Graham Wilson	**Cambridge Villas**	3	Diseased / Dead	2018-03-27	2018-10-29	3
Hartford	Mike Shellens	**Longstaff Way**	1	Subsidence	2018-03-27	2018-10-29	1
Hemingford Grey	Ian Bates	**The Thorpe**	1	Natural Disaster	2018-03-27	2018-10-29	1
Huntingdon	Graham Wilson	**Coldhams North**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Huntingdon	Mike Shellens	**Norfolk Road**	2	Diseased / Dead	2018-03-27	2018-10-29	1
Huntingdon	Graham Wilson	**Queens Drive**	1	Diseased / Dead	2018-03-27	2018-10-29	1
St Ives	Ryan Fuller & Kevin Reynolds	**Ramsey Rd**	1	Natural Disaster	2018-03-27	2018-10-29	1
Wyton	Ian Bates	**Banks End**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Yaxley	Mac McGuire	**Windsor Rd**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Warboys	Terence Rogers	**Mill Green**	2	Subsidence	2018-03-27	2018-10-29	2
Fenstanton	Ian Bates	**Little Moor**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Hartford	Mike Shellens	**Arundel Rd**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Huntingdon	Tom Sanderson	**Horse Common Lane**	1	Diseased / Dead	2018-03-27	2018-10-29	1
St Ives	Ryan Fuller	**Chestnut Rd**	2	Diseased / Dead	2018-03-27	2018-10-29	2
St Neots	Simone Taylor	**Cromwell Rd**	2	Diseased / Dead	2018-03-27	2018-10-29	2
Yaxley	Mac McGuire	**London Rd/Broadway**	1	Natural Disaster	2018-03-27	2018-10-29	1
Yaxley	Mac McGuire	**Windsor Rd**	1	Subsidence	2018-03-27	2018-10-29	1
Hilton	Ian Bates	**Graveley Way**	1	Diseased / Dead	2018-03-27	2018-10-29	1
Brampton	Peter Downes	**Buckden Road O/S Golf Club**	1	Natural Disaster	2018-10-17	2018-10-17	1
Godmanchester	Graham Wilson	**O/S School**	1	Obstruction	2018-10-17	2018-10-17	1
Huntingdon	Graham Wilson	**Claytons Way O/S no 13**	1	Diseased / Dead	2018-10-17	2018-10-17	1
Ramsey	Adela Costello	**Biggin Lane O/S 29**	1	Natural Disaster	2018-10-17	2018-10-17	1
Ramsey Heights	Adela Costello	**Upwood Rd O/S Clad's Cottage**	1	Diseased / Dead	2018-10-17	2018-10-17	1

Parish	Cllr name	Location	Number of trees Removed	Reason Removed	Cllr Informed	Parish informed	Number of trees Replaced in Area
St Ives	Ryan Fuller & Kevin Reynolds	**Ramsey Rd**	1	Subsidence	2018-10-17	2018-10-17	
Hemingford Grey	Ian Bates	**High St O/S no 2**	1	Diseased / Dead	2018-10-17	2018-10-17	
St Ives	Ryan Fuller & Kevin Reynolds	**Michigan Road**	3	Dead	2019-06-18	2019-06-18	
St Ives	Ryan Fuller & Kevin Reynolds	**Acacia Road**	1	Subsidence	2019-06-18	2019-06-18	
Bluntisham	Steve Criswell	**High St O/S no 2**	1	Dead	2019-07-24	2019-07-24	
Bluntisham	Steve Criswell	**Sayers Court**	1	Diseased / Dead	2019-07-24	2019-07-24	
Hemingford Grey	Ian Bates	**Green Close**	1	Dead	2020-01-09	2020-01-09	
Brington	Ian Gardener	**High Street**	1	Natural Disaster	2020-02-10	2020-02-10	
Great Stukeley	Terence Rogers	**Ermine Street**	1	Natural Disaster	2020-02-10	2020-02-10	
Bury	Adela Costello	**Tunkers Lane**	1	Natural Disaster	2020-02-10	2020-02-10	
Warboys	Terence Rogers	**Ramsey Rd**	1	Natural Disaster	2020-02-10	2020-02-10	
St Ives	Ryan Fuller & Kevin Reynolds	**Harrison Way**	1	Natural Disaster	2020-02-10	2020-02-10	
Hemingford Grey	Ian Bates	**Marsh Lane**	1	Natural Disaster	2020-02-10	2020-02-10	
Ramsey	Adela Costello	**Wood Lane**	1	Natural Disaster	2020-02-10	2020-02-10	
Offord Cluny	Peter Downes	**New Road**	1	Natural Disaster	2020-02-10	2020-02-10	
Godmanchester	Graham Wilson	**West Street**	1	Natural Disaster	2020-02-10	2020-02-10	
Woodhurst	Steve Criswell	**West End**	1	Dead	2020-08-06	2020-08-06	
Pidley	Steve Criswell	**Warboys Road**	1	Dead	2020-09-01	2020-09-01	
-	-	**Total**	**53**	-	-	-	**31**

Environment and Sustainability Policy and Service Committee Agenda Plan

Published on 4th January 2021

Notes

The definition of a key decision is set out in the Council's Constitution in Part 2, Article 12.
* indicates items expected to be recommended for determination by full Council.
+ indicates items expected to be confidential, which would exclude the press and public.

The following are standing agenda items which are considered at every Committee meeting:

- Minutes of previous meeting and Action Log
- Finance Report – The Council's Virtual Meeting Protocol has been amended so monitoring reports (including the Finance report) can be included at the discretion of the Committee.
- Agenda Plan, Training Plan and Appointments to Outside Bodies and Internal Advisory Groups and Panels

Committee Date	Agenda item	Lead officer	Reference if key decision	Deadline for draft reports	Agenda despatch date
14/01/21	Finance Report		Not applicable	04/01/21	06/01/21
	EV Charge Points	Emily Bolton	Not applicable		
	Annual Carbon Footprint Report for 2019/2020	Sarah Wilkinson			
	CUSPE Policy Challenge #4: Business Investment in Carbon Emission Reduction	Sheryl French/ Dustin McWherter	Not applicable		
	Swaffham Prior Community Heat Project – Investment Case	Sheryl French	2020/048		

Committee Date	Agenda item	Lead officer	Reference if key decision	Deadline for draft reports	Agenda despatch date
	Risk Register Review	Steve Cox	Not applicable		
11/02/21 (r*eserve*)	Finance Report		Not applicable	29/01/21	02/02/21
11/03/21	Finance Report		Not applicable	26/02/21	02/03/21
	Performance Report	Business Intelligence – Jamie Leeman	Not applicable		
	Schools Low Carbon Heating Investments	Chris Parkin	2021/006		
	Adoption of the Cambridgeshire and Peterborough Minerals and Waste Local Plan following receipt of the Inspector's Report.	Emma Fitch	2021/016		
08/04/21 (*reserve*)				25/03/21	29/03/21
03/06/21	Finance Report			28/05/21	01/06/21
	Notification of the Appointment of the Chairman/Chairwoman and Vice Chairman/Chairwoman	Democratic Services			
24/06/21	Finance Report		Not aplicable	11/06/21	15/06/21
08/07/21	Finance Report		Not aplicable	25/06/21	29/06/21
12/08/21	Finance Report		Not aplicable	30/07/21	03/08/21

Committee Date	Agenda item	Lead officer	Reference if key decision	Deadline for draft reports	Agenda despatch date
16/09/21	Finance Report		Not aplicable	03/09/21	07/09/21
21/10/21	Finance Report		Not aplicable	08/10/21	21/10/21
18/11/21	Finance Report		Not aplicable	05/11/21	29/11/21
09/12/21	Finance Report		Not aplicable	26/11/21	30/11/21

To be scheduled: Trees & Woodland Strategy (Key Decision) - Emily Bolton/Phil Clark
Please contact Democratic Services democraticservices@cambridgeshire.gov.uk if you require this information in a more accessible format

ENVIRONMENT AND SUSTAINABILITY COMMITTEE TRAINING PLAN

Ref	Subject	Desired Learning Outcome/Success Measures	Date	Responsibility	Attendance by:
1.	Energy Schemes & Flood Incident Responses		02 November 2020 @12pm	Sheryl French, Julia Beeden/Hilary Ellis.	E&S Members
2.	Waste PFI and Policies		18 November 2020 @ 12pm	Adam Smith & Bryony Rothwell	E&S Members
3.	CUSPE Session		14 December @ 4pm	Dustin McWherter	All Members
4.	Climate Fund		15 Jan/19 Feb @2pm	Sheryl French	E&S Members
5.	Lead Local Flood Authority		15 Jan/19 Feb @2pm	Julia Beeden	E&S Members
6.	Future Parks Accelerator		15 Jan/19 Feb @2pm	TBC	E&S Members
7.	Natural Capital		15 Jan/19 Feb @2pm	TBC	E&S Members
8.	Historic Environment		15 Jan/19 Feb @2pm	Quinton Carroll	E&S Members