

# Climate and Ecological Emergencies Advisory Committee Report

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## Review of the 2025 Operational Net Zero Target

### Recommendation(s)

- (a) That CEEAC recognises the significant progress made in reducing our operational carbon emissions by 50 per cent since 2009/10.
- (b) CEEAC recommends that Cabinet adopts a revised operational net zero target of 2030.

### Purpose of report

1. This report reviews the council's progress towards the 2025 target for achieving net zero carbon in its own operations. It is intended to guide the decision as to whether the operational net zero target should be changed in the next Corporate Plan and Climate and Nature Recovery Action Plan.
2. This paper presents four scenarios designed to test the earliest possible date that the council could reach net zero in its own operations. The scenarios presented are for illustrative purposes only, they do not represent the agreed policy or position of the council at the current time, and they are not reflected in current capital or revenue budgets.

## Corporate objectives

### 3. Corporate Plan Objective 3 – Action on the Climate Emergency

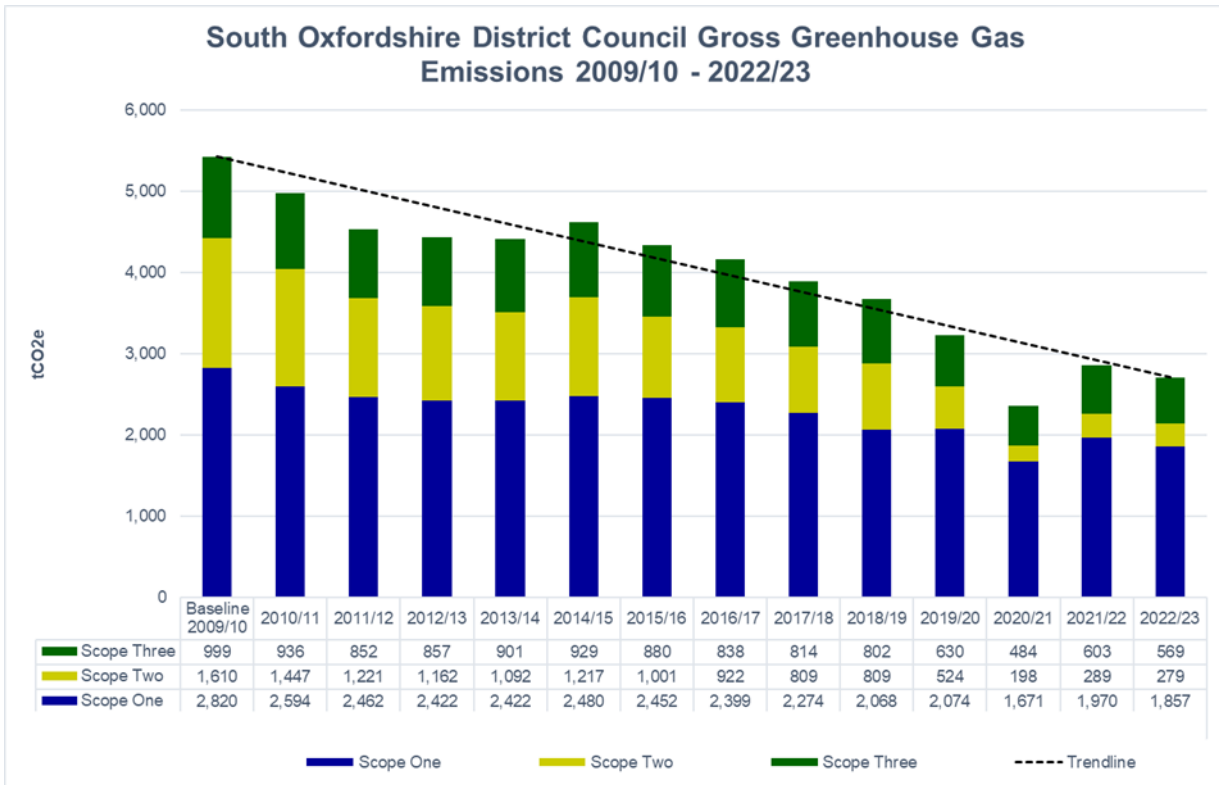
## Background

4. In 2019, South Oxfordshire declared a Climate Emergency. Whilst recognising it was an ambitious target, the Climate Emergency Advisory Committee recommended that South Oxfordshire District Council should become a carbon neutral council by 2025. This target was endorsed by Full Council on 10 October 2019. The baseline year used in this report is 2019/20.
5. In February 2022 the council adopted its Climate Action Plan 2022-2024, which for the first time set out clearly the actions that we would take to reduce our carbon emissions to reach our net zero target.
6. Nearly 400 UK local authorities have declared climate emergencies and have set carbon emission reduction targets. Most of these seek to reach net zero before the UK target of 2050 but 2025 remains one of the most ambitious targets for operating at net zero. All other Oxfordshire councils have a net zero target of 2030 for their own operations.

## What progress have we made so far?

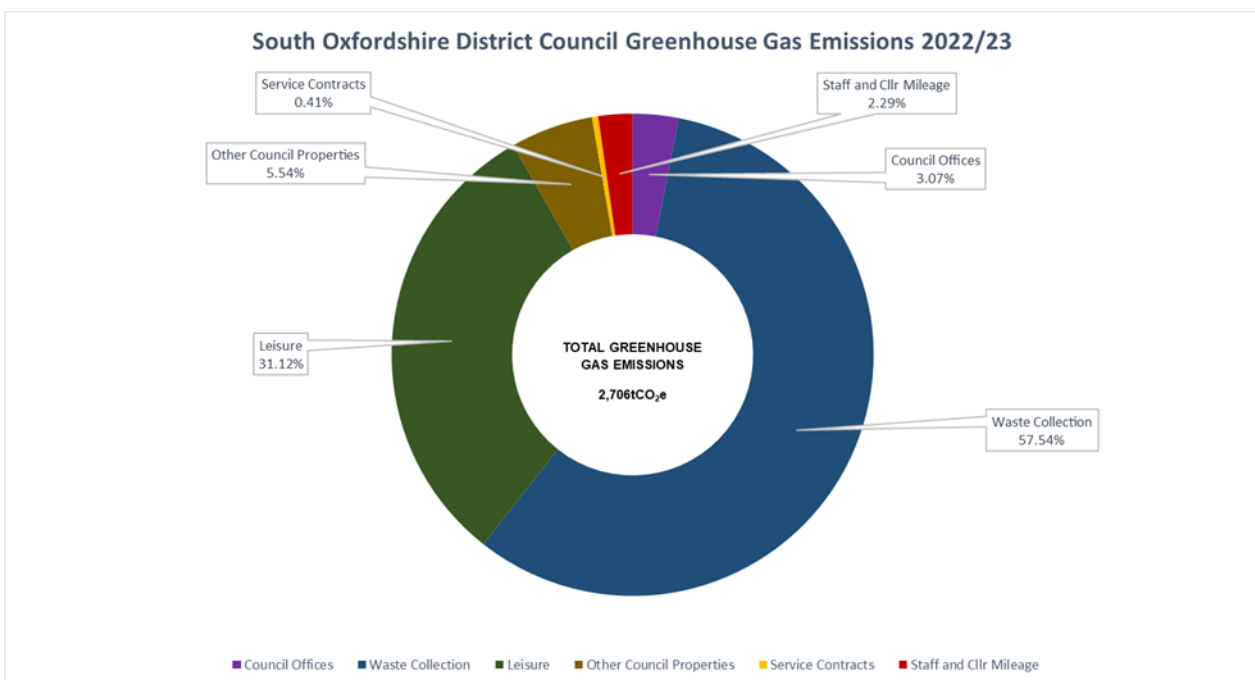
7. The council's net zero target adopted in 2019 is part of a long-term trajectory to reduce the council's carbon emissions. We have reported our emissions annually since 2009/10 through the council's Greenhouse Gas Emissions report. As at March 2023, overall council emissions had reduced from 5429 tonnes carbon dioxide equivalent (CO<sub>2</sub>e) in 2009/10 to 2704 tonnes CO<sub>2</sub>e. This reduction of 50 per cent since 2009/10 is in part due to the delivery of an ongoing programme of energy and carbon saving projects. Part of this reduction has also come about as a result of reductions in the carbon content of grid electricity (the carbon factor), which reduced by 57 per cent over the same period. This is derived from the increasing proportion of renewable electricity fed into the national supply and is reflected in the reduction in scope 2 emissions in figure 1 below.
8. Figure 1 shows greenhouse gas emissions from council operations between 2009/10 and 2022/23. Scope one emissions are from gas and oil use in buildings and fuel use in fleet vehicles. Scope two emissions are from purchased electricity and Scope three emissions are indirect emissions as a consequence of the council's actions.

Figure 1:



9. South Oxfordshire’s greenhouse gas emissions by source from 2022/2023 are shown in figure 2 below. This shows that the biggest contributors to our carbon emissions are waste collection (57.5 per cent) and leisure (31.1 per cent). Reducing the carbon emissions from these two sources will have the biggest impact on our carbon emissions.

Figure 2



10. The Climate Action Plan outlines all the areas where we are taking action to reach our net zero target. Progress against these actions is reported quarterly however, until now, we have not been able to track the progress of individual actions in carbon reduction terms and the contributions they make in delivering the net zero target.
11. To allow us to both record progress against targets to date and to predict our future trajectory a 'Glidepath' tool has been commissioned. This is a spreadsheet-based tool which shows actual emissions to date and future projections to 2030 which can be entered using a range of scenarios (projects the council could invest in) to further reduce our carbon emissions.
12. Potential projects can be entered into the tool by adding expected energy savings and delivery dates. These are converted into carbon emissions using estimated carbon factors for future years. To use the tool we have to include the dates by which certain actions will be completed, it should be noted that these dates are illustrative and set to test the fastest that we could decarbonise if the money and capacity were available. The dates are however not all reflected in current service plans, and budgets for many have not been agreed. The list of assumed dates are included in Appendix 1. Actual emissions are likely to be slightly lower than the Glidepath trajectory indicates as they will also include the cumulative effect of many minor changes that are not possible to include in the model.
13. We are currently using a prototype Glidepath tool which has limited functionality. If the tool is found to be effective, then we would seek improvements to the tool based on the findings of this initial trial to develop an updated version.

## Our trajectory to net zero

14. Four scenarios have been used in the Glidepath tool to inform this paper. Each of the scenarios builds on the last, and the cumulative results are presented visually in a series of graphs. A summary description of the four scenarios and what they involve is shown in table 1 with further detail included in the individual sections below.

**Table 1**

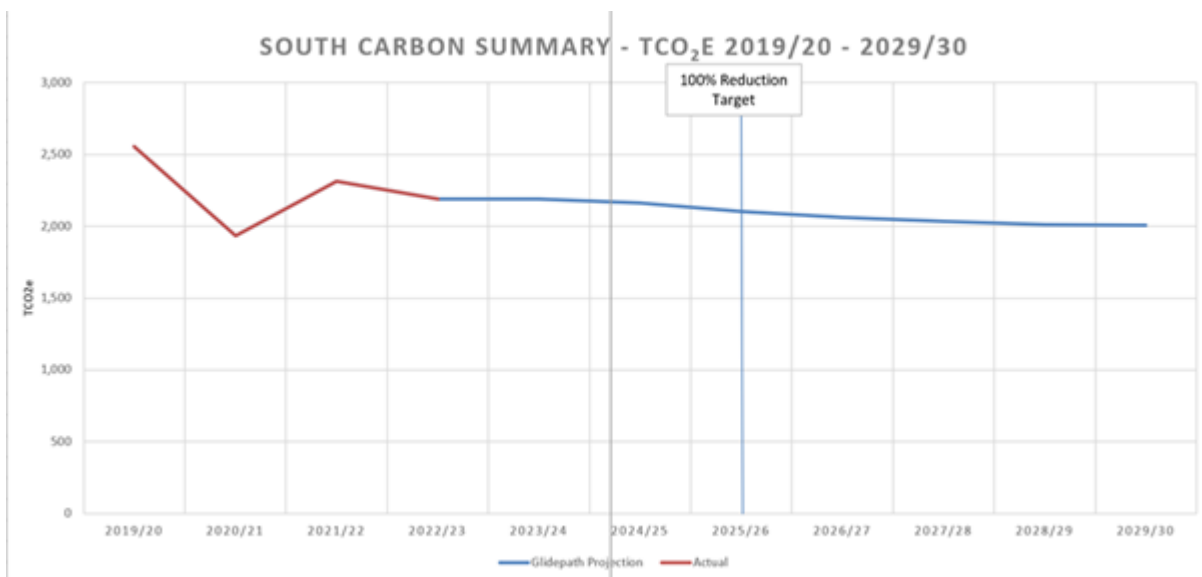
<b>Scenario 1</b>	Committed projects	Cornerstone Arts Centre decarbonisation Office moves to Didcot Gateway Some Council vehicles transition to EV
<b>Scenario 2</b>	Potential projects	Leisure centre decarbonisation
<b>Scenario 3</b>	Solar farm	Local offsetting
<b>Scenario 4</b>	Low carbon fleet	Waste collection vehicles Sweepers and tippers Grounds maintenance vehicles transition to EV

15. All of the scenarios presented are included in current work programmes across the council. The projects are at various stages in their development and approval process. Further information on each scenario and the results of the modelling are presented below.

## Scenario 1 – Committed Projects

16. Scenario 1 includes work that the council has committed to and is currently in progress. This work has yet to be completed and therefore the carbon savings are not captured in Figure 1. Scenario 1 includes decarbonisation works at Cornerstone Arts Centre, the proposed council office move to Didcot Gateway and further expected reductions in the national grid carbon factors. These projects are modelled to be completed by 2025.
17. In addition, up to six council vehicles are expected to transition to electric vehicles in 2024. These include the Parks Supervisor, Toilet Cleaning Supervisor and Facilities vans and are also included in Scenario 1.
18. There are some other projects which may happen in this period however, due to uncertainties or insufficient data on the carbon savings achieved, it has not been possible to include these in Scenario 1. Examples include the expected purchase of an electric food waste truck and the impacts of some CIL funded capital projects.
19. Modelling the Scenario 1 changes above, together with reductions already achieved by March 2023, gives an estimated emissions reduction of 19 per cent from the Climate Action Plan baseline of 2019/20 by 2025.

Figure 3<sup>1</sup> – Carbon emissions trajectory, Scenario 1.



## Scenario 2 – Potential Projects

20. Scenario 2 includes potential leisure projects where initial preparatory work has been completed but funding and resources to deliver the projects have yet to be confirmed. Where external funding sources that are likely to help cover the costs of the projects

<sup>1</sup> The emissions in the Glidepath trajectories do not exactly match the published emissions in the council's Greenhouse Gas reports due to the limitations of the prototype tool. The Glidepath tool does not include some indirect Scope 3 emissions from minor sources such as electricity grid transmission losses and therefore has a lower total figure. These inconsistencies can be addressed in future iterations of the Glidepath tool.

such as the Public Sector Decarbonisation Scheme (PSDS) have been identified, these have been specified. The projects are listed in table 2 below:

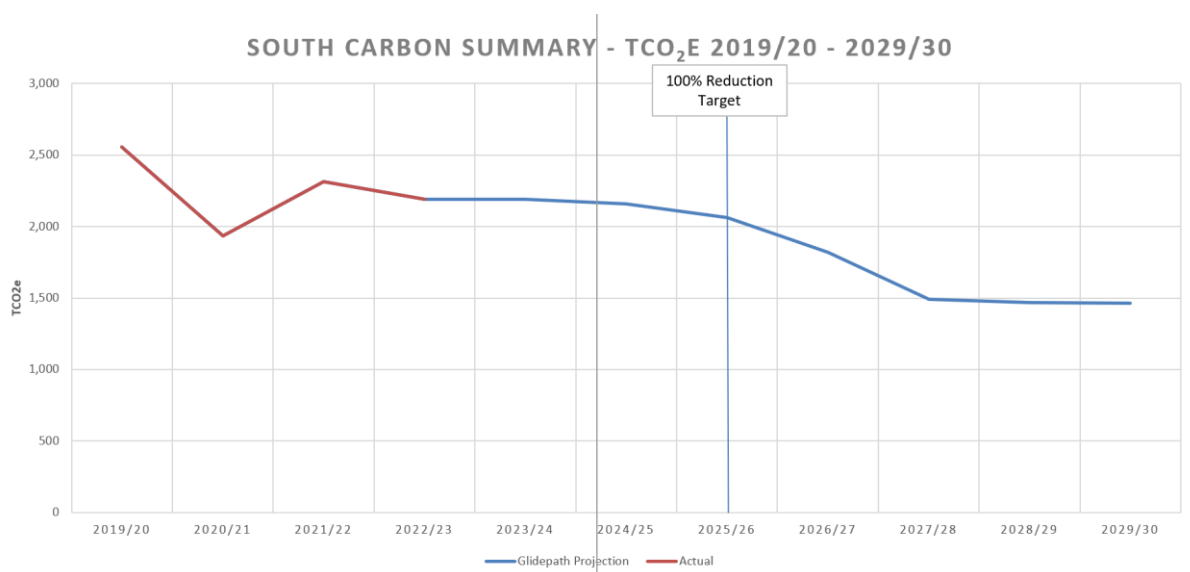
**Table 2**

Project	Potential for part funding from external funding sources	Estimated capital cost £m	Carbon savings TCO <sub>2</sub> e
Decarbonisation of: Didcot Wave Park Sports Centre	PSDS3c bid funding approved Spring 2024	£1.28 £1.80	170.6 51.9
Decarbonisation of: Abbey Sports Centre Henley Leisure Centre	Likely PSDS bid in 2024.	£1.55 £1.89	79.7 165.9
Decarbonisation of: Thame Leisure Centre Didcot Leisure Centre Riverside Pool	To be confirmed. Swimming pool support fund (Thame only).	£0.88 £1.28 £0.29	239 21 14.5

21. Successful applications to the Public Sector Decarbonisation Scheme (PSDS) and other funding sources would allow us to install low energy heat pumps, solar power and energy saving technologies at further sites as set out in the table above. This report was written prior to recent announcements about PSDS3c so some of this funding has now been secured. Future PSDS funding remains uncertain due to likely changes in funding criteria.

22. These changes show a cumulative estimated emissions reduction by 2027 of 42 per cent from the Climate Action Plan baseline of 2019/20.

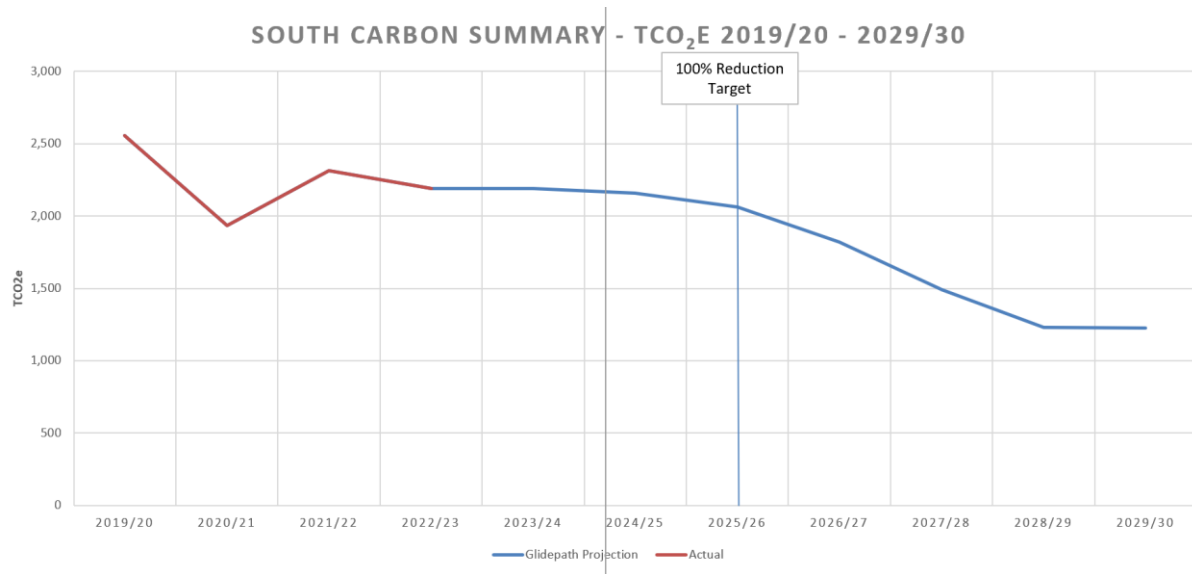
**Figure 4 – Carbon emissions trajectory Scenario 2**



### Scenario 3 – Offsetting – Renewable energy

23. The Climate Action Plan Action L3 called for the preparation of a business case for the development of a renewable energy project such as a solar farm. Investment in a 2MW solar farm would allow the council to offset its own electricity use. Initial work on this action is underway with potential options being considered.
24. The initial findings indicate that land owned by South Oxfordshire is unlikely to be cost effective for the development of a solar farm. Further work is ongoing to investigate alternative options to allow this project to proceed, such as a joint venture with a neighbouring council.
25. As a generator of electricity, the council would need to apply for Renewable Energy Guarantee of Origin (REGO) certificates to show the renewable content of the electricity we have supplied (one certificate is issued per MWh of eligible renewable output). As we intend to use the renewable energy generated to offset our own carbon emissions, the REGO certificates must be retired on the Renewables and CHP Register to prevent the associated zero emissions also being claimed by the national grid and therefore double counted.
26. The cost of a 2MW solar farm, including options with/without battery storage, is estimated at £1.4m/£2.6m, based on standard industry costs, this excludes any costs associated with the acquisition of a site.
27. The completion of Scenario 3 would result in a cumulative estimated emissions reduction of 52 per cent from the Climate Action Plan baseline of 2019/20.

Figure 5 – Carbon emissions trajectory Scenario 3

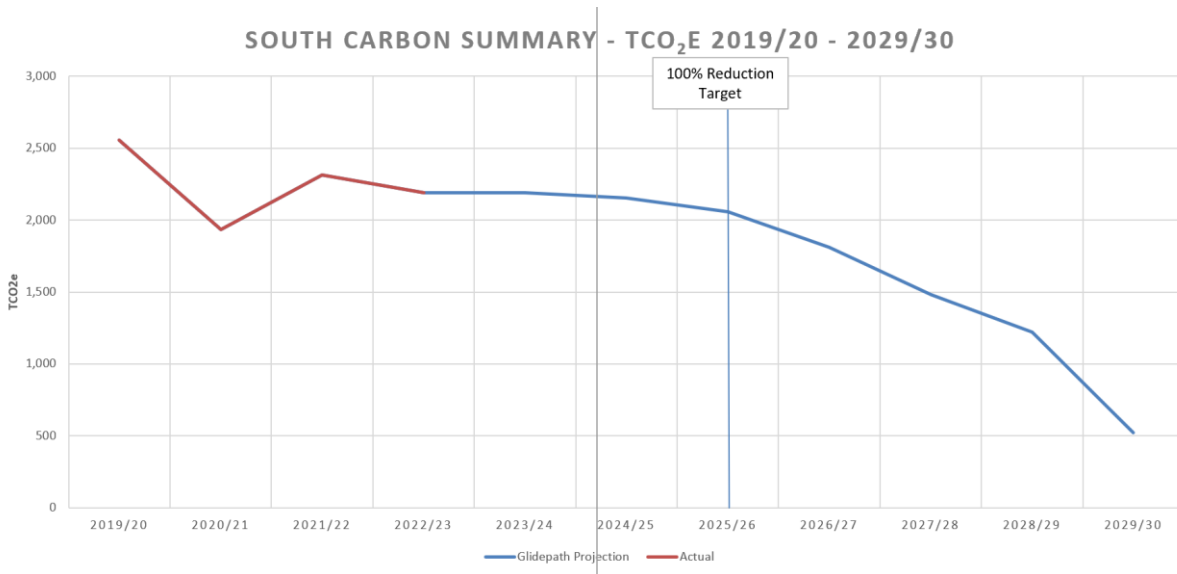


**Scenario 4 – Transition to a low/no carbon fleet**

- 28. The Waste Collection and Street Cleansing Vehicle Strategy sets out the options for how the waste vehicle fleet is replaced over the next period. The ultimate decision about which vehicles are procured and when will be taken by Cabinet, and a transition to a low carbon fleet has yet to be fully costed as the current capital programme is based upon like for like replacements. What is certain however, is that the type of vehicles that are procured and when will be a significant determining factor in how quickly the council can meet its net zero target.
- 29. For the purposes of presenting a scenario in this report it is assumed that there will be a staggered introduction of low carbon vehicles over the next six years with the aim that 80 per cent of vehicles will be replaced with low carbon alternatives by 2030. This scenario is subject to the successful completion of trials to demonstrate suitability of EVs for the council’s rural routes. Diesel vehicles purchased recently by the council to replace end of life stock are expected to still be in operation in 2030 making a full transition to a zero-carbon fleet unlikely.
- 30. There are 98 vehicles in the waste fleet of which 59 are 26 tonne refuse collection vehicles (RCVs) which are shared with Vale of White Horse. The remainder are a range of smaller vehicles, sweepers and tippers.
- 31. This scenario also includes the transition to a low carbon grounds maintenance fleet by 2030.
- 32. The completion of Scenario 4 would result in a cumulative estimated emissions reduction of 80 per cent from the Climate Action Plan baseline of 2019/20.



**Figure 6 - Carbon emissions trajectory Scenario 4**



### The impacts on the 2025 net zero target

33. The above four scenarios track the path of emissions reductions from our most significant carbon emitting services and the impacts of investing in a renewable energy project such as a solar farm. In addition to these reductions there are many minor reductions which will be achieved but which are less easy to quantify in the Glidepath tool.
34. It is clear from the above that it will not be possible to meet a 2025 net zero target given current progress on decarbonisation. The modelling used in the above scenarios has been relatively 'optimistic' about the potential progress of the projects and has necessarily had to make assumptions about expected carbon savings, project delivery timescales and costs. Where possible, and data is available, real data has been used. Inevitably this will need to be refined as the individual projects are developed.
35. Even if all these projects are completed in 2029/30 the council will still be a net emitter of carbon. These 'residual' emissions include for example staff and councillor mileage, where they are using their own vehicles. This is likely to be difficult to reduce further in the short term.
36. Residual emissions can be offset by purchasing carbon credits on the open market. The cost of carbon credits in 2025 is currently estimated as £45 per tonne of carbon. Carbon credits can be purchased in advance for a specific future year. The cost of carbon credits is expected to increase significantly over time. There are some complexities with the use of carbon credits which are explored further in paragraphs 41 to 42 below. The use of carbon credits now is not recommended but they could be considered in future years.
37. The current Glidepath projection included in scenario 4 would require the council to purchase between £23k - £30k (at current prices) of carbon credits each year from 2029/30 to offset its residual emissions. The range of values quoted is due to variability in the emissions year on year caused by external factors such as weather.

## Can we still meet the 2025 net zero target?

38. The scenarios presented above are for illustrative purposes to test the fastest rate that it is likely that the council could reach its net zero target. Whilst it may be possible to accelerate our progress in some areas, it is not possible to increase the pace of change for the most significant projects (leisure, waste and the solar farm) to meet a 2025 target, nor does the council have the financial resources to invest in accelerating progress.
39. It is possible to meet the 2025 target if the council were to offset its emissions from 2025 onwards by purchasing carbon credits. Whilst carbon credits would have to be purchased every year for the council to remain net zero, the number of credits purchased each year would reduce as the projects set out in the above scenarios are delivered. It must be noted that the council has made no budgetary provision for purchasing carbon credits.
40. According to the projections set out above, the cost of carbon credits to become net zero in 2025 is currently estimated at around £100,000 and would reduce each year until 2030, after which the council would only be offsetting its unavoidable residual emissions. The purchase of carbon credits at the current time is not recommended for the reasons set out below.
41. There are currently two options for buying carbon credits. The first is to go to the open market and purchase credits from overseas projects which are readily available. These projects rely on investments in various environmental projects which deliver carbon reductions, including afforestation, hydroelectric schemes, and wind power. Despite various international verification schemes there is a body of evidence suggesting that these schemes may exaggerate some of their climate benefits and underestimate potential harms. As a result of this difficulty in verification and ongoing negative press around poor traceability and greenwashing this option is not recommended at present.
42. The second option is to purchase verified carbon credits from UK sources, which focus on carbon removals through afforestation or peatland restoration. However, the size of the market here is currently limited due to the availability of suitable projects. The demand for offsetting is growing as individuals, businesses, and organisations such as the council strive to offset their carbon emissions. This growth in demand is driving an increase in supply and it is likely that as the market matures both the availability and price of carbon credits will stabilise.

## Alternatives to the existing carbon offset markets

43. Work is underway within Oxfordshire to develop new local carbon markets. Local markets have the benefit of delivering the carbon credits that organisations, such as the council, need to achieve net zero whilst also capturing the benefits of delivering the offsets within the county. The Local Nature Partnership is co-ordinating efforts to develop a nature-based carbon offset market that will help deliver new wildlife habitats within the county. This has the added benefit of delivering against our work to tackle both the climate and ecological emergencies.
44. In addition, work is underway to investigate the potential for carbon-insetting. The insetting model involves direct investment in retrofitting of homes locally, for example,

social housing or homes in priority neighbourhoods, and then marketing and selling the carbon savings realised as carbon credits.

The council could also offset residual carbon emissions through creating its own woodland however, with limited options to use existing council estate for large scale tree planting, land would need to be purchased.

45. The above approaches have the obvious advantages of delivering benefits locally whilst delivering against several of our key targets however, all are at a very early stage of development and are unlikely to be part of a short-term solution to achieving net zero.

## **Options**

46. CEEAC could recommend that Cabinet chooses not to change the current target, which is to become a carbon neutral council by 2025.
47. CEEAC could recommend that Cabinet opts to amend the target for achieving net zero to 2030 in line with the recommendation of this report.
48. CEEAC could recommend that Cabinet chooses to set a target date later than 2030.

## **Financial Implications**

49. The projects included in the four scenarios presented in this report are a mixture of a small number where some, or all of the funding has been secured, and those (the majority) that are currently un-funded and are not included in the council's MTFP. The assumptions are designed to test the rate at which the council can de-carbonise its main emission sources if it were able to commit to these projects.
50. The council made successful applications to the Public Sector Decarbonisation Scheme (PSDS) in 2022 and 2023 that will provide a significant contribution to the costs of decarbonising some of the leisure centres and Cornerstone Arts Centre. The council currently relies heavily on external funding to reduce emissions from our buildings however, the future of the PSDS scheme is uncertain.
51. There are other sources of external funding or borrowing options that may be available to the council that could help to pay for decarbonisation works and reduce the reliance on the council's capital reserves. Initial investigations suggest that the council could consider loans from the Public Works Loan Board or UK Infrastructure bank which may be available for projects that meet the council's strategic objectives, subject to affordability.
52. Indicative funding requirements for key decarbonisation projects have been estimated as follows:

Leisure centre decarbonisation £8.9m (part of this has now been secured through PSDS3c)

Purchase 50 percent share of an electric waste fleet £19.5m

Develop solar farm (with or without battery storage) £1.4m - £2.6m

## **Legal Implications**

53. No legal implications are anticipated as result of this report.

## **Climate and ecological impact implications**

54. The climate implications of this work are contained within the body of the report.

## **Equalities implications**

55. An Equality Impact Screening Assessment has been completed and there are no implications identified.

## **Risks**

56. The following significant risks have been identified:

- The availability of council funding
- The future of the PSDS funding scheme beyond 2024 is uncertain. The criteria for allocating funding can be complex and subject to change.
- The solar farm project may only be able to proceed if it is possible to agree a form of joint venture with a neighbouring authority or land in the local area is identified for purchase or lease. In addition, a solar farm project would be subject to the successful grant of planning permission and securing a grid connection with the Distribution Network Operator.
- The council may not be able to recruit experienced staff with the necessary skills to deliver decarbonisation projects.
- Electric waste vehicles may not come on the market with the range suitable for the routes in our rural district, and the high purchase costs could remain a barrier.
- The council's baseline emissions are likely to increase over time as a result of; the purchase of new properties for housing refugees, investment in new leisure facilities, additional costs for waste collection due to new housing developments, the potential addition of working from home emissions into future baselines and a review of Scope three emissions reporting.
- The cost of carbon credits is expected to increase significantly over time which will increase the cost of offsetting residual emissions.

## **Conclusion**

57. The council has made significant progress in reducing carbon emissions by 50 per cent since 2009/10 and much of this is due to the way our staff have collectively met the challenge of tackling climate change, by embracing innovative and new technologies and making a myriad of small changes and adaptations which collectively add up. Despite this however, we must recognise that events like the covid pandemic had a significant impact on our ability to meet our targets, central government progress and

support stalled, staff from across the public sector were mobilised to fight the pandemic which significantly impacted our ability to deliver carbon savings and meant a complete cessation of funding streams that would have enabled us to deliver change faster.

58. It would be possible to meet the 2025 net zero carbon target only by purchasing carbon credits (in addition to completing current committed projects included in Scenario 1) at an estimated cost of £100,000 in 2025. Thereafter, the annual cost of carbon credits would reduce provided planned projects are delivered. There are significant financial and reputational risks associated with reliance on this approach and it is not recommended.
59. Accelerating projects within our influence could reduce emissions from the 2019/20 baseline by 80 per cent, and these are included in scenarios 2-4. Assumptions and estimates to arrive at these conclusions are listed in Appendix 1.
60. An accelerated programme could potentially deliver a net zero council, with some use of carbon credits, by 2029/30. However, this is still based on some optimistic assumptions and there remain risks with revising a target to 2030.
61. A 2030 target has a number of potential benefits which would enable a smoother and potentially more cost-effective transition to net zero, these are likely to come as a result of:
  - a. Technological advances should enable the fledgeling market for battery operated vehicles such as waste trucks and grounds maintenance vehicles and associated kit to develop to the extent that they become realistic and affordable options for the council.
  - b. The carbon offset markets should expand and hopefully provide more options for local offsetting of the council's residual emissions. A well-designed local offsetting market has the potential to deliver multiple benefits such as flood prevention, nature recovery and sustainable farming systems, as well as allowing carbon offset money to be spent locally.

**APPENDIX 1 - LIST OF ASSUMPTIONS**

1	Carbon factors	Carbon factors reduce for the next five years, due to an increase in renewable grid electricity, in line with the average variance over the previous five years, afterwards level out
2	PSDS	PSDS projects have a two-year delivery timescale from funding award, year 1 project design, permissions and contractual arrangements, year 2 deliver out of heating season
3	Solar farm	Timescale for project delivery three to four years, estimated commissioning date 2028/29
4	Leisure centre decarbonisation	Carbon savings from proposed low carbon heating, energy efficiency measures and renewable energy, and outline costs, in site decarbonisation reports – Concept Energy 2023.
5	Waste fleet	<p>For illustrative purposes it is assumed that the cost of an electric 26 tonne RCV £430,000 and the average cost for remaining smaller vehicles and sweepers estimated is £350,000. The cost is then divided equally between South and Vale.</p> <p>Assume 70 per cent reduction in emissions when changing diesel vehicle to EV. Emission reductions may be greater if using alternative fuels such as Hydrogenated Vegetable Oil.</p> <p>For the purposes of modelling, we have included an assumption that 80 per cent of vehicles transition to low carbon by 2029/30 with a staggered introduction over the next 6 years.</p>
6	Grounds maintenance	<p>Electric alternatives are currently not available for vehicles that tow. No project plan is currently available for the new GM depot. For the purposes of modelling, we have assumed all GM vehicles transition to EV in 2029/30</p> <p>Assume 70 per cent reduction in emissions when changing diesel vehicle to EV.</p>
7	Public conveniences and facilities	<p>Mileage data of existing users is used to calculate current carbon emissions.</p> <p>Assume 70 per cent reduction in emissions when changing diesel vehicle to EV.</p>
8	Didcot Gateway	<p>Assume 93% reduction in emissions compared to baseline council offices at Milton Park – based on modelled data. In line with government guidance, we report operational emissions and do not include embodied carbon.</p> <p>Assume no energy use for council operations in Abbey House from 2026</p>

9	Carbon credits	Price of £45 based on Woodland Credits, estimated price of Pending Assurance Units (PAU). Very few projects were planted and registered long enough ago to be yielding Carbon Units now i.e. around 15 years ago, as trees sequester significant amounts of carbon between Year 15 and Year 65 of planting. PAUs are the 'promise' of Carbon Units in the future once the trees have grown. Price taken from the upper end of the estimate as likely high inflation in coming years.
10	Retrofit-based offsetting	Our research shows that some UK local authorities (such as Reading Borough Council and Bristol City Council) are requiring developers to pay an offsetting fee if new build housing does not meet their net-zero standards. Others (such as Camden Council) have established optional offsetting schemes for local businesses to purchase carbon credits through. Such schemes set a precedent for a retrofit-based scheme to offset council emissions.