APPENDIX B

New local plan for Cheshire East

Responding to the climate emergency topic paper (draft)

March 2024

Open Fair Green

Cheshire East Council

Front cover images (clockwise from top-left):

- Crewe Market Hall and Municipal Buildings
- Arclid north plant site and lake (image supplied by Bathgate Silica Sand Ltd)
- Jodrell Bank Observatory
- Lamberts Lane Bridge, Congleton
- Tabley Park, Northwich Road, Knutsford

Contents

1 Introduction

1.1 This topic paper provides further information to support the 'Responding to the climate emergency' section of the new local plan issues paper. For ease of reading, it uses the same headings that are set out in the issues paper for this topic.

1.2 Climate change is the shift in average weather conditions in a place over many years and is one of the greatest challenges facing the world. Global temperatures are rising, due to an increased level of greenhouse gases, which trap extra energy in the atmosphere near to the Earth's surface. Greenhouse gases include carbon dioxide, methane, nitrous oxide and fluorinated gases.

1.3 The increase in greenhouse gases in the atmosphere is largely due to the burning of fossil fuels (which releases carbon dioxide into the atmosphere), deforestation (as trees store large amounts of carbon dioxide) and ocean damage (like trees, organic matter in the oceans also stores large amounts of carbon dioxide).

1.4 Prior to the Industrial Revolution, atmospheric carbon dioxide levels were consistently around 280 parts per million (ppm) for almost 6,000 years of human civilisation. Since then, humans have generated an estimated 1.5 trillion tonnes of carbon dioxide emissions, raising the amount of carbon dioxide in the atmosphere to a level that reached 421ppm in 2022. The amount of carbon dioxide in the atmosphere is now more than 50% higher than pre-industrial levels. This is a level last seen more than 4 million years ago, when sea levels were between 5 and 25 metres higher than they are today, and temperatures were significantly higher.[1]

Global temperatures

1.5 As a result of the increase in greenhouse gases, the global temperature has already risen by around 1.1°C in the past 150 years. The consequences of this changing climate are now being seen around the world. Some of these include an increase in extreme weather (such as storms, floods, heat waves and droughts), rising sea levels due to melting polar ice, and the destruction of fragile habitats.

1.6 It is commonly accepted that a temperature increase of above 2°C will lead to catastrophic impacts upon natural habitats and resources, but without action, temperature increases will substantially exceed this before the end of the century.[2]

Policy and emissions targets

1.7 The 2015 Paris Agreement set the international target to limit global temperature rise to well below 2°C with the aim of limiting the rise to 1.5°C above pre-industrial levels. The Intergovernmental Panel on Climate Change (IPCC) follow-up report[3] stated that this requires a global reduction in greenhouse gas emissions of 45% by 2030. International commitments were further strengthened at the 2021 United Nations Climate Change Conference in Glasgow.

1 https://www.noaa.gov/news-release/carbon-dioxide-now-more-than-50-higher-than-pre-industrial-levels
2 https://www.theccc.org.uk/what-is-climate-change/
3 https://www.ipcc.ch/sr15/

1.8 In the UK, the Climate Change Act 2008 introduced a legally binding target to reduce greenhouse gas emissions by 80% by 2050 and in June 2019, the target was updated to reach net zero by 2050. This was further enhanced in June 2021 when the UK government committed to reducing emissions by 78% by 2035 when compared to 1990 levels.

1.9 At the local level, Cheshire East Council declared an environment and climate emergency in 2019, committing to being a carbon neutral organisation by 2025. In 2022, the council pledged to make Cheshire East a carbon neutral borough by 2045, five years ahead of the government's national target.

Progress

1.10 Progress against global targets has been slower than is required. The Emissions Gap Report 2022[4] found that global emissions continue to rise that and that enormous cuts to greenhouse gas emissions are required urgently. By 2030, further cuts to emissions (in addition to those projected under current policies) of 45% are needed to get on track to a 1.5°C rise, or 30% for a 2°C rise.

1.11 The Climate Action Tracker[5] rated the UK's overall climate action as 'insufficient', indicating that climate policies and commitments need substantial improvements to be consistent with the Paris Agreement's goals. The tracker also notes that the UK's climate action has worsened over the previous year.

Climate change and planning

1.12 The planning system has a key role to play in delivering meaningful action on climate change and the council has a legal duty to design the local plan to make sure that the use and development of land contributes to the mitigation of, and adaptation to, climate change.[6] This also is reflected in the current NPPF, which sets out that the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

4 https://www.unep.org/resources/emissions-gap-report-2022
5 https://climateactiontracker.org/countries/uk/
6 As set out in the Levelling-up and Regeneration Act 2023

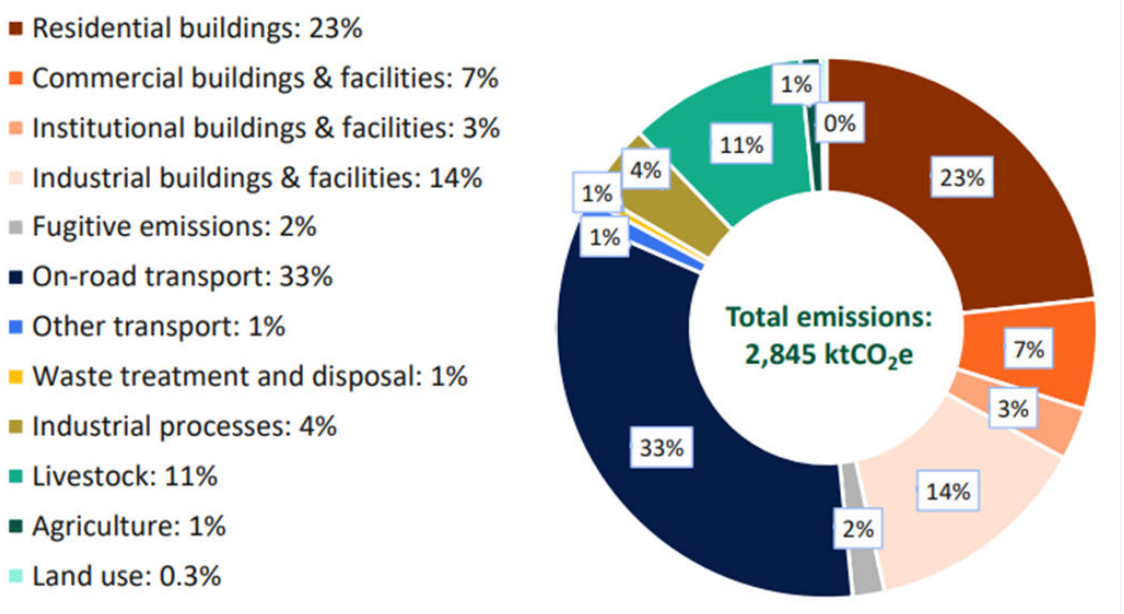
2 Reducing our contribution to climate change

Reducing emissions

2.1 Reducing the borough's contribution to climate change and ultimately achieving net zero means securing radical reductions in emissions of carbon dioxide and other greenhouse gases. It will also require a departure from the link between economic growth and emissions, which have historically risen as development increases.

2.2 There are a number of sources of emissions in the borough, but the main contributors are from buildings, transport and livestock.

Figure 2.1 SCATTER 2019 inventory for Cheshire East shown by emissions sub-category

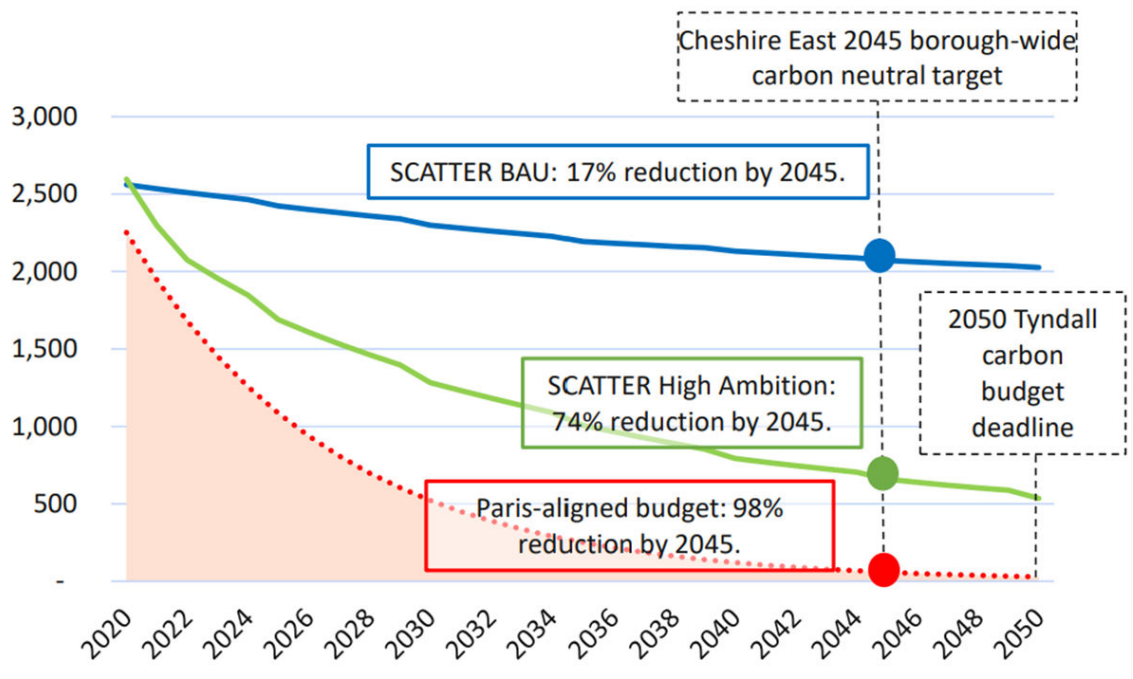


2.3 The need to reduce emissions is urgent. Figure 2.2 below shows two possible future emissions pathways for Cheshire East as modelled by SCATTER.[7] The Business As Usual (BAU) Pathway (shown in blue) assumes Cheshire East continues along its current trajectory in terms of nationally-led policy and behaviour change, with reductions in emissions largely the result of continued decarbonisation of the National Grid. The High Ambition Pathway (shown in green) assumes Cheshire East goes significantly beyond the business as usual route and results from 30+ carbon reduction interventions modelled by SCATTER at maximum ambition levels.

2.4 The Tyndall Centre for Climate Change Research has translated the Paris Agreement targets of limiting temperature change below 2°C into a fixed emissions 'carbon budget' for each UK local authority and Figure 2.2 also shows the annual reduction rate that would be required under this scenario (shown in red).

7 Setting City Area Targets and Trajectories for Emissions Reduction. Further information available at https://scattercities.com/

Figure 2.2 Future emissions pathway for Cheshire East (2020-2050)



2.5 There are many carbon reduction measure outside of the scope of the planning system. But there are also many that can be influenced by planning. Delivery of the high ambition pathway requires energy efficiencies in buildings to have heavily decreased domestic and non-domestic emissions, whilst electrification of vehicles will have also reduced transport emissions significantly. The amount of emissions sequestered through increased tree coverage and other natural means will also need to increase significantly.

2.6 Figure 2.2 shows that, even with the implementation of extensive carbon reduction measures, there remains a gap to both the Paris Agreement targets and the council's carbon neutral ambitions by 2045. Further ambition and additional technologies and nature-based solutions will need to be found.

2.7 Further information on emissions in Cheshire East and the pathways to reduce these is available in the 'Borough-wide Baseline & Carbon Reduction Options' report (November 2022).[8]

2.8 It will be essential for the new local plan to include ambitious policies to help deliver the radical reduction in emissions through the planning system. The Local Plan Issues Paper sets out a number of ways in which it might do this and we are keen to hear your views on the measures that it could include.

Sequestration

2.9 As set out, radical and sustained reductions in emissions of greenhouse gases are needed to limit the worst effects of climate change. In addition to the reduction of emissions, significant offsetting and sequestration measures to remove emissions from the atmosphere will also be needed to reach net zero.

8 Available at https://www.cheshireeast.gov.uk/environment/carbon-neutral-council/carbon-neutral-by-2045.aspx

2.10 The natural environment can play a vital role in tackling the climate crisis as healthy ecosystems take up and store a significant amount of carbon in soils, sediments and vegetation. Alongside many other negative impacts, the destruction and degradation of natural habitats has resulted in the direct loss of carbon stored within them. Restoring natural systems can start to reverse this damage at the same time as supporting and enhancing biodiversity, alongside delivering co-benefits for climate change adaptation, soil health, water management and society.

2.11 Natural England has published research[9] looking at the scientific evidence relating to carbon storage and sequestration by habitat. This found that the largest carbon sequestration rates are in woodlands. In particular, native woodlands are reliable carbon sinks that continue to take up carbon over centuries. The net sequestration rate is slow over the first few years of a newly created woodland, but can then increase quickly. Hedgerows, orchards and other trees outside of woodland can also sequester and store carbon, as can heathlands and semi natural grasslands.

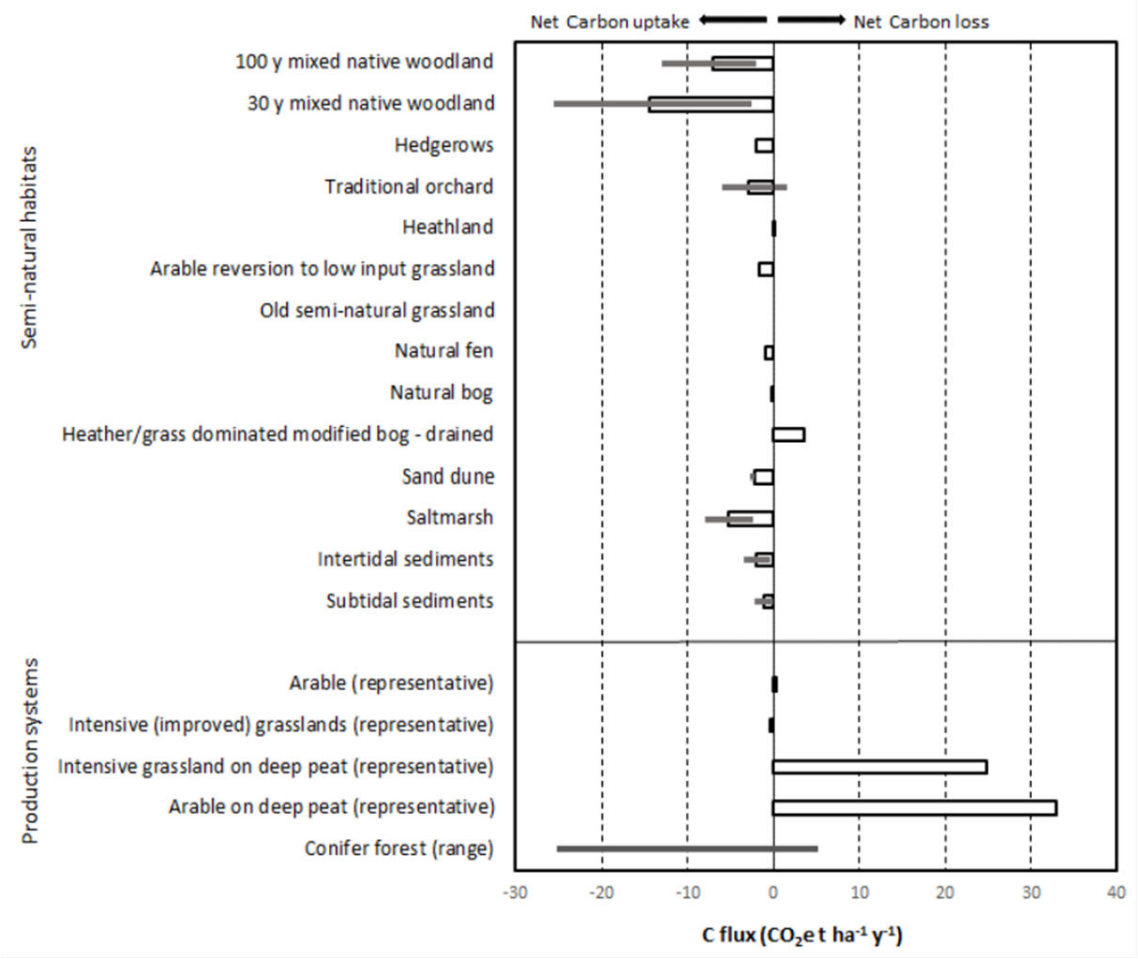
2.12 When in healthy condition, peatlands also sequester carbon from the atmosphere, but at a very slow rate. The major difference peatlands and other carbon-sequestering habitats is that peatlands can continue to sequester carbon indefinitely. Because existing peatlands have been forming and sequestering carbon over millennia, they are able to store significantly more carbon than other habitats. However, peatlands can become damaged by drainage, conversion to agriculture or forestry, burning, air pollution and overgrazing. When in a damaged state, peatlands can release the carbon stored within them and become a major source of greenhouse gas emissions.

2.13 Figure 2.3 below shows the Natural England research showing carbon flux in contrasting habitats and land managements, using representative data.[10]

9 Available at https://publications.naturalengland.org.uk/publication/5419124441481216

10 Best available data have been used and includes data from a wide range of different sources, modelled and field data. A negative value indicates sequestration, positive values are emissions. The thicker bars (black outline) show the values by habitat/land management type, whilst the thinner grey bars show the likely range of values across sites where this is available.

Figure 2.3 Natural England research showing carbon flux in contrasting habitats and land managements, using representative data



3 Adapting to the effects of climate change

3.1 Whilst a significant reduction in greenhouse gas emissions and a journey to net zero is essential to avoid the most catastrophic effects of climate change, those greenhouse gases emitted already and on the journey to net zero will remain in the atmosphere for a long time. This means that the effects of climate change will continue to increase for many decades to come and it will be very important for the new Local Plan to include measures to build resilience and adapt to the effects.

3.2 The impacts of climate change are wide ranging including extreme weather events, heavy rainfalls, higher sea levels, flooding, droughts, more and longer-lasting heat waves, air pollution, reduced production of major crops, illnesses and diseases, deaths, extinction of species and reduced economic growth.

3.3 In the UK, average surface temperature has already risen by around 1°C and the effects of climate change are already visible. New UK weather and climate records are becoming more frequent, with unprecedented high temperatures and heavy rainfalls. We can also see trends, with recent years bringing lots of extremes. Seven of the last 10 summers (2011 to 2020) have reached a temperature of 34°C. Before this, just 7 of the previous 50 summers (1961 to 2010) reached 34°C. Six of the 10 wettest years on record have been since 1998.[11]

3.4 Two key areas for the new local plan to consider will be in relation to overheating and flooding. The issues of warmer, drier summers means that buildings are at greater risk of overheating. This issue is likely to be exacerbated in urban areas where development is denser due to the urban heat island effect – whereby artificial impermeable materials absorb solar radiation during the day and re-radiate it during the day and into the night, raising the local temperature. The effect can also be further compounded by the presence of machinery and mechanical systems (including vehicles) that radiate heat.

3.5 The presence of impermeable materials like concrete and tarmac, coupled with inappropriate or insufficient drainage systems means that when rain falls, the water has reduced ability to soak away and can quickly overcome sewers and lead to surface flooding. Wetter winters and more frequent heavy rain events mean that flooding may become even more of a risk. When the ground becomes over-saturated, the risk of flooding is exacerbated when rain falls on top of already impermeable surfaces within many urban areas.

11 See Climate Change in the UK available at https://www.metoffice.gov.uk/weather/climate-change/climate-change-in-the-uk

4 Additional benefits of taking action

4.1 Importantly, many measures to reduce our contribution to climate change and to adapt to its effects have multi-functional benefits and can bring enhanced value to a development. For example, green infrastructure not only has climate resilience benefits but can also help improve mental health and wellbeing as well as providing space for biodiversity. It is also important to acknowledge that incorporating climate adaptation measures during the initial construction is much cheaper than retrofitting later.

4.2 In addition to tackling the climate emergency, there are multiple benefits associated with many of the actions set out. These include:

- health improvements – investing in measures such as active travel (such as walking and cycling) and green spaces will help to improve health and wellbeing, through increased physical activity and reduced air pollution
- quality of place – less traffic congestion, reduced waste and greener, quieter neighbourhoods
- environmental – through investments in natural solutions to climate change such as tree planting and peatland management, increasing biodiversity
- economic – such as energy cost savings due to increased energy efficiency, job creation in the low carbon/green technologies sector, reduced NHS costs due to health improvements, increased productivity through greater health and wellbeing