



NET
ZERO
LEISTON

A Route to Net Zero in Leiston

TECHNICAL REPORT SUMMARY

A project designed to understand practical steps for getting a small town to Net Zero carbon emissions.

(COMMUNITY POWER)

PROUD TO BE WORKING TOGETHER TO TAKE LEISTON TO NET ZERO



(WWW.NETZEROLEISTON.INFO)



NET ZERO LEISTON

Developed through collaboration between Leiston Council and the local authorities, Sizewell C, world leading consultants and EDF in the UK, NZL has created a detailed Route Map showing how Leiston can achieve Net Zero carbon emissions by around 2030.

NZL's collaborative, forward-looking approach has been to create a replicable plan, meaning not only can Leiston lead the way in becoming the country's first Net Zero town, but the Route Map can inspire communities up and down the country to join us on the journey to Net Zero.

This Report Summary gives a high-level description of the steps identified in the full Technical Report, along with an explanation of why the climate emergency means we need to act now.



Caroline Rinder, Leiston Town Council Town Clerk, said: **"We all know we have a climate emergency and want to do our bit to tackle it. This project has demonstrated that reaching Net Zero is not straightforward, and that communities need all the support available to help them work towards the Government's ambition of Net Zero by 2050. It has required a talented, committed and professional collection of partners who have the expertise and global knowledge to make this all possible. We hope that by using their experience, and by developing this Technical Manual, we can help fellow communities move a few steps further along their own Net Zero journey."**

WHY WE NEED TO ACT NOW

Climate change is the single greatest threat facing the planet. If we don't act now, rising temperatures will continue to cause the increased probability of droughts, wildfires, and flooding¹.

That's why the world came together to sign The Paris Agreement of 2015, a legally binding treaty on climate change that sets targets to keep global temperature rises under control². In response to the Paris Agreement, the UK statutory target for reducing greenhouse gas emissions was strengthened in May 2019 to include a legal commitment to reach Net Zero in the UK by 2050.

On 21 March 2019 councillors at Suffolk County Council voted to declare a climate emergency and established the ambition of making the county of Suffolk carbon neutral, by 2030.

¹ www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world

² www.unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement



At its Full Council meeting in July 2019, East Suffolk Council voted unanimously to step up its positive work on environmental issues to help fight climate change. To support their activities, the Suffolk Climate Emergency Plan (SCEP) was published to outline how Suffolk could work towards carbon neutrality by 2030. Their vision is to make Suffolk an example to the UK by tackling climate change and becoming the county with the greatest reduction in carbon emissions [CHAPTER 13].

For more on what “Net Zero” means, see [CHAPTER 1].



WHY LEISTON?

As a town with a rich industrial heritage, and situated on Suffolk’s ‘Clean Energy Coast’, Leiston is in an ideal location to be at the heart of a new green industrial revolution.

Leiston is also a town that urgently needs to act if it is to reach Net Zero. To achieve the Paris Climate Agreement targets, each country has an apportioned ‘carbon budget’³ [CHAPTER 1]. Current net carbon emissions in Leiston are approximately 12,000 tonnes of CO₂ per year, which has been calculated after a detailed analysis of emissions within the study boundary [CHAPTER 2].

This means that at the current rate of emissions, Leiston’s entire carbon budget until 2100 would be exhausted in under eight years. The NZL Route Map estimates a total spend requirement of £210m for the implementation of all measures for Leiston. This will be further evaluated against available funding mechanisms.

Lifespan of Leiston’s 95 ktCO₂ carbon budget



³ The carbon budget is the amount of CO₂ that humanity can emit while still having a chance to contain global warming within 1.5 degrees centigrade compared with preindustrial levels, as advocated by the Paris Agreement

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THE NZL ROUTE MAP

Communities the size of Leiston make up a large portion of UK homes and businesses. The NZL project identified that there was not a recognisable plan available to support these communities in their ambitions to reach Net Zero carbon emissions.

The Technical Manual sets out to bridge this gap and provide the necessary research, data and modelling required for Leiston to tackle its own impact on the environment. The Technical Manual contains The Route Map, which is an achievable, although challenging, plan for Leiston to reach Net Zero by around 2030 through a phased implementation of credible, robust and available techniques. The Technical Manual provides the tools to create this path and further paths to Net Zero [CHAPTER 3, CHAPTER 7]. It combines an understanding of the baseline carbon emissions in Leiston [CHAPTER 4, CHAPTER 6] with suitable measures for reducing emissions, such as lower carbon technologies, energy reduction and heat efficiency solutions [CHAPTER 16, CHAPTER 17, CHAPTER 18] and carbon sequestration⁴ [CHAPTER 19]. The Technical Manual also includes a plan and strategy for securing finance for these measures, so that the costs don't all fall to the consumer [CHAPTER 8], supporting a necessary Just Transition⁵.

The plan works hard to ensure a Just Transition to Net Zero for Leiston [CHAPTER 10, CHAPTER 11, CHAPTER 12]. It also provides examples and suggestions for community engagement, recognising the community-wide efforts that are required to make the difference [CHAPTER 9, CHAPTER 14]. The Route Map focuses on buildings emissions, transport emissions and agriculture emissions. Of the three sections, buildings were identified as the biggest opportunity for emissions reduction in Leiston. The result of applying these technologies, along with others noted in the Route Map, would contribute to an 85% reduction against the calculated baseline.



⁴ Carbon sequestration refers to the long-term storage of carbon in plants, soils, geologic formations, and the ocean. Carbon sequestration occurs both naturally and as a result of human activities and typically refers to the storage of carbon that has the immediate potential to become carbon dioxide gas.

⁵ A ‘Just Transition’ seeks to ensure that the substantial benefits of a green economy transition are shared widely, while also supporting those who stand to lose economically – be they countries, regions, industries, communities, workers or consumers.

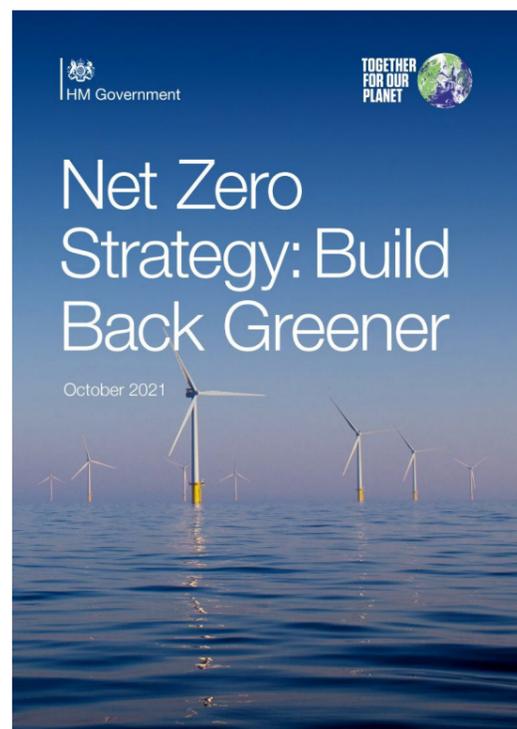
REPLICATING NZL

The following is a guide to the high-level steps required for creating a Route Map to Net Zero in a new community. It highlights the following:

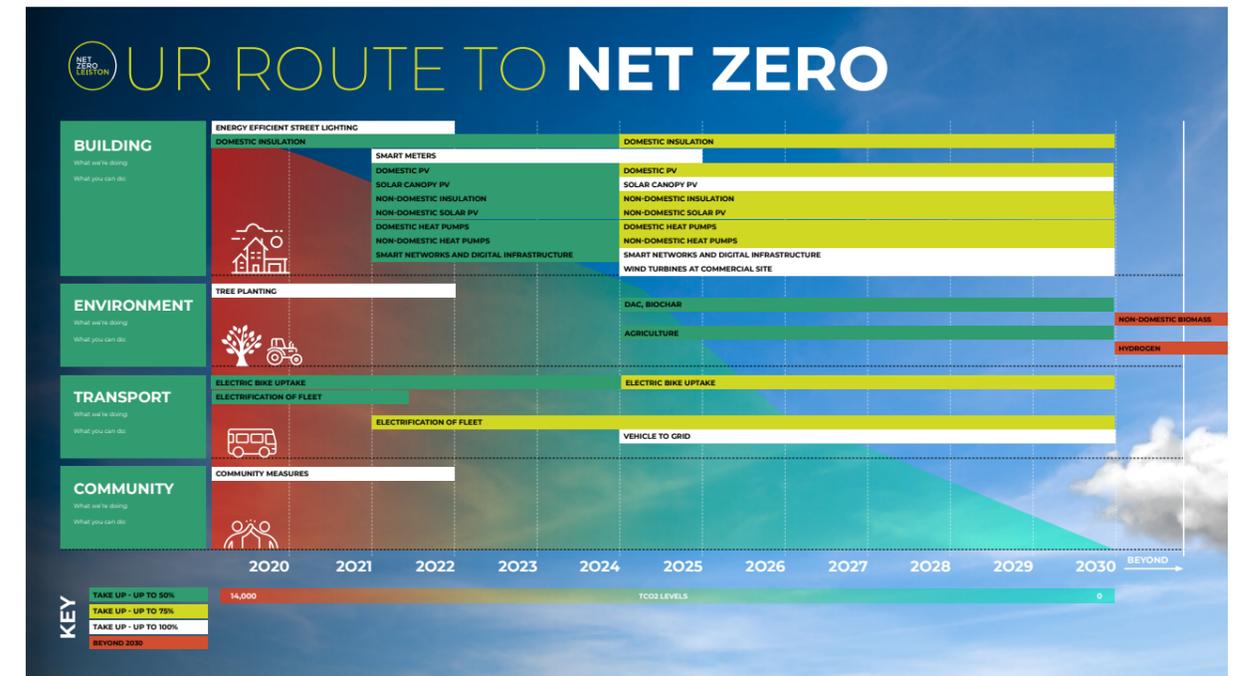
- » What steps are required to get a community engaged with the project
- » Sensible interventions that have a measurable impact on carbon emissions reduction
- » A plan to help secure finance

Getting to Net Zero is a huge challenge that requires full engagement from the community, local businesses and local authorities. It also requires government support and empowerment. The Net Zero Strategy: Build Back Greener⁶ provides the policy and financial support provided by the UK government to communities like Leiston and outlines the national plan to achieve Net Zero by 2050.

The Net Zero Leiston Project is a local example of a community actively engaging in the climate agenda and utilising government support to help it achieve its environmental ambitions – something all communities will need to do if we are to reach Net Zero by 2050.



STEPS TO A NET ZERO PROJECT



⁶ www.gov.uk/government/publications/net-zero-strategy

STEPS TO NET ZERO

STEP ONE – DEFINE THE BOUNDARY

The first step was to determine the project’s boundaries. It should not be too large (which would be difficult to influence) or too small (not enough scope for interventions).

For NZL, the project followed the neighbourhood plan as a recognisable, non-physical boundary which had a diversity of land uses, as well as domestic and non-domestic properties. See [CHAPTER 2] for further information on setting the boundary in Leiston.

[CHAPTER 20] has a deep-dive into the greenhouse gases in Leiston and the decision making for selecting carbon dioxide.



STEP TWO – CARBON EMISSIONS

The three primary groups of emissions are Buildings (energy and heating), Transport and Agriculture.

[CHAPTER 6] helps with the steps required for mapping out emissions, and the method used in Leiston.

[CHAPTER 4] sets out the process used for identifying all the carbon emitters in Leiston, which could be replicated. Similarly, [CHAPTER 5] provides insight on the carbon removals within the boundary.

The green spaces within a boundary are already helping to reduce greenhouse gas emissions, so you need to estimate what impact they are already having at reducing carbon emissions

STEP THREE – THE NET ZERO JOURNEY

Next comes a technical step of identifying how you tackle each of the sources of emissions with lower carbon alternatives. Generally, a reduction in use of fossil fuels, and utilising electricity as a source of power, are cleaner alternatives.

For transport, this might be electric vehicles and buses, or better still, using “active travel” alternatives, such as cycling and walking. See [CHAPTER 17] for some further solutions and for the emissions reduction potential of each.

The NZL Technical Manual also models carbon reduction measures for Buildings [CHAPTER 16] and Agriculture [CHAPTER 18]. The examples in these chapters are applicable to Leiston but can be adapted for use by other communities. Some examples are below:

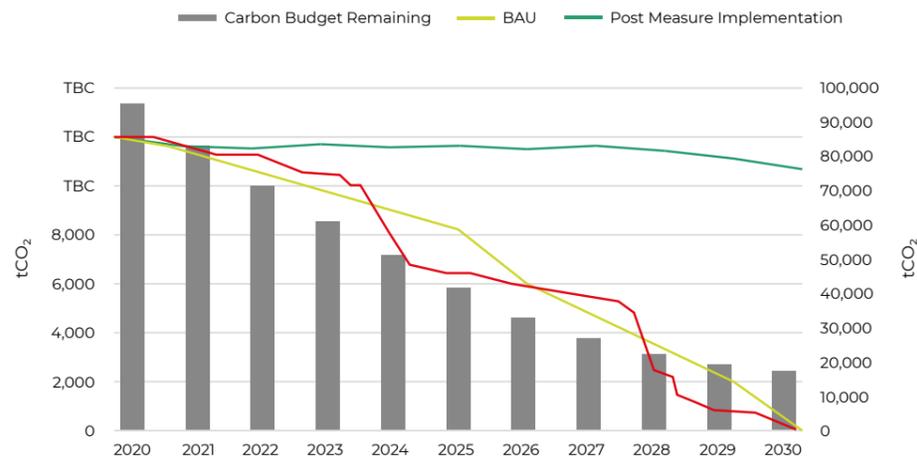
- » Household Insulation – Installing insulation in lofts and cavity walls in all the homes in Leiston results in a fossil fuel carbon saving (FFCS) of 1,241 tCO₂, equivalent to 2,103 London to New York flights.
- » Gas Boilers – Replacing an old gas boiler with a new, more energy efficient one can on average save around 10% of the energy required.
- » Heat Pumps – Replacing gas boilers in all 2,683 homes in Leiston with electric heat pumps would have a FFCS of 7,148 tCO₂. This is equivalent to over 17 million balloons of CO₂. If 15% of buildings in Leiston installed a heat pump, the carbon savings are 1,072 tCO₂, equivalent to around 2.5 million balloons full of CO₂.



Akin to assessing land use and current 'carbon sinks', which remove carbon dioxide from the atmosphere, there are ways of enhancing green spaces and increasing their "carbon sequestration" potential. See [CHAPTER 19] for further solutions. An example of this is the planting of more trees:

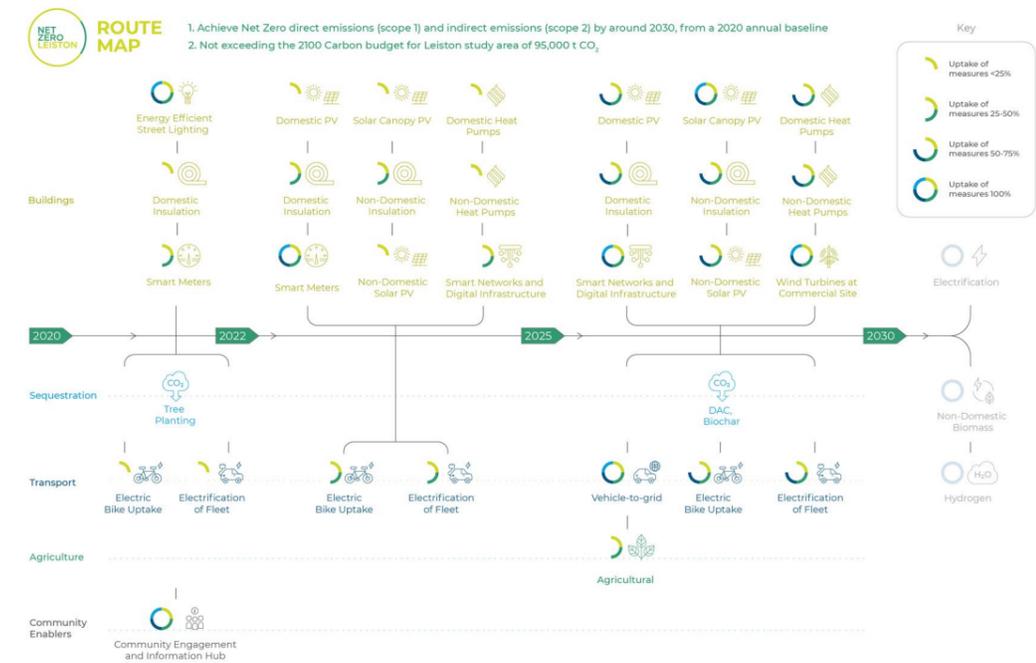
- » Woodland – Increasing Leiston’s woodland cover from 15% to 17%, by planting an additional 36 hectares of woodland (or 85 football pitches, roughly 60,000 trees) would remove 396 tonnes of CO₂ per year – or around 88 Olympic swimming pools full of CO₂.

Different variations of these interventions can be combined to find a solution that reduces the level of emissions to 'Net Zero'. [CHAPTER 3] gives a high-level overview of the process used by NZL, and [CHAPTER 7] highlights the various scenarios which create the NZL Route Map to Net Zero.



	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Business As Usual	12,013	11,514	11,360	11,468	11,335	11,356	11,212	11,334	11,202	11,024	10,833
Post Measures Implementation Emissions	12,013	11,428	10,680	9,940	9,217	8,463	6,027	4,623	3,240	1,881	0
2100 Carbon Budget	95,000	82,987	71,560	60,879	50,939	41,722	33,259	27,232	22,609	19,369	17,488

Figure 1: The combination of different carbon reduction solutions in Leiston achieves Net Zero by around 2030



STEP FOUR – FINANCING

It is important to work with local businesses and residents to start looking at what funding is already on offer for them. This will be key to highlighting available grants, funds and private investment sources.

When public sources of finance have been exhausted, there is a matrix of options for willing participants. These could group together in community buying schemes, to achieve a better value for money for solutions. Or, if finance is an issue, several carbon solutions can be grouped together to form an investable proposition for a private investor.



STEP FIVE – ENGAGEMENT AND COMMUNITY MEASURES

A key step for any project is to work with the community.

The average person today has several personal priorities that come ahead of climate change, despite almost universal acceptance that climate change is one of the most pressing and urgent threats to humankind. A study carried out with The University of Suffolk for Net Zero Leiston highlighted that awareness of climate issues is generally very high, and an understanding of household carbon emissions was good. However, 30% of respondents to the study had never heard of the term “Net Zero”, and around 50% of those could accurately describe what it meant⁷.

Working with schools is a positive way a project can raise awareness of climate issues, but education for adults is also usually required. See [CHAPTER 9] for more ways in which Net Zero Leiston is approaching community engagement and raising awareness of climate issues to support the project’s ambitions.

Once the Route Map is delivered to the local community, there will need to be an initial focus on behavioural change and trying to get early engagement with initiatives. NZL piloted several easily accessible schemes which started to highlight what the project was all about and what the community’s participation looked like.



STEP 6 - MONITORING AND PROMOTIONS

The final step is to put steps 1-5 into motion concurrently and begin to implement carbon reduction measures. This is not an easy step, but the tools available within the Technical Manual provide a strong foundation.

When implementing measures, their impacts should be tracked in order to calculate the carbon saving. By doing this, it will be possible to track the progress of the project against the baseline and will provide an excellent evidence base to celebrate successes of the project. Publicising the early implementations can have a positive impact on community engagement and can be used to attract further external finance sources to the project.

Some simple visual examples could be:

- » % of Leiston homes rated EPC (Energy Performance Certificate) C or above (domestic insulation installs will increase this figure)
- » Trees planted in the town, total woodland coverage % (increasing woodland coverage is a great carbon sink enhancement)
- » % of Leiston homes with solar PV (photovoltaics)
- » % of non-domestic properties with solar PV
- » % of Low carbon heated homes in Leiston

CONCLUSION

Climate change is one of the biggest threats to humankind. Reversing human impact on the environment and reaching Net Zero is a huge undertaking. Net Zero Leiston aims to provide a structure for communities to tackle carbon emissions collectively.

This summary can be used to introduce communities to the concept of Net Zero and inform them about what they can do to help reach it. The Net Zero Leiston Technical Manual provides full detail and analysis of the NZL project in Leiston and can be adapted and replicated with the support of local authorities and expert input. Reaching Net Zero requires a collaborative effort from all stakeholders within the community.

- » In addition to tackling the urgent threat of climate change, the measures described in this summary have numerous further benefits. For example, enhancing green spaces in a community can have a huge positive impact on mental well being, and can be great areas for recreational activities.
- » Making climate-conscious choices around transport, such as walking and cycling more, decreases carbon emissions whilst also having a positive impact on physical health. Taking public transport is also a good lower-carbon choice and may suit some people better than walking or cycling. It is also less expensive than purchasing an electric vehicle, which for some households may not be a viable option.
- » Reducing carbon emissions should not be seen as an expense in all cases. Installing better household insulation, especially where public grants are available for funding, can lead to a reduction in household energy use on heating and save money. The carbon savings of this intervention are an added benefit, rather than the primary driver for this intervention.

There is a need to frame a project with all the benefits that participants feel are important. The following are informed by studies undertaken with the University of Suffolk in Leiston:

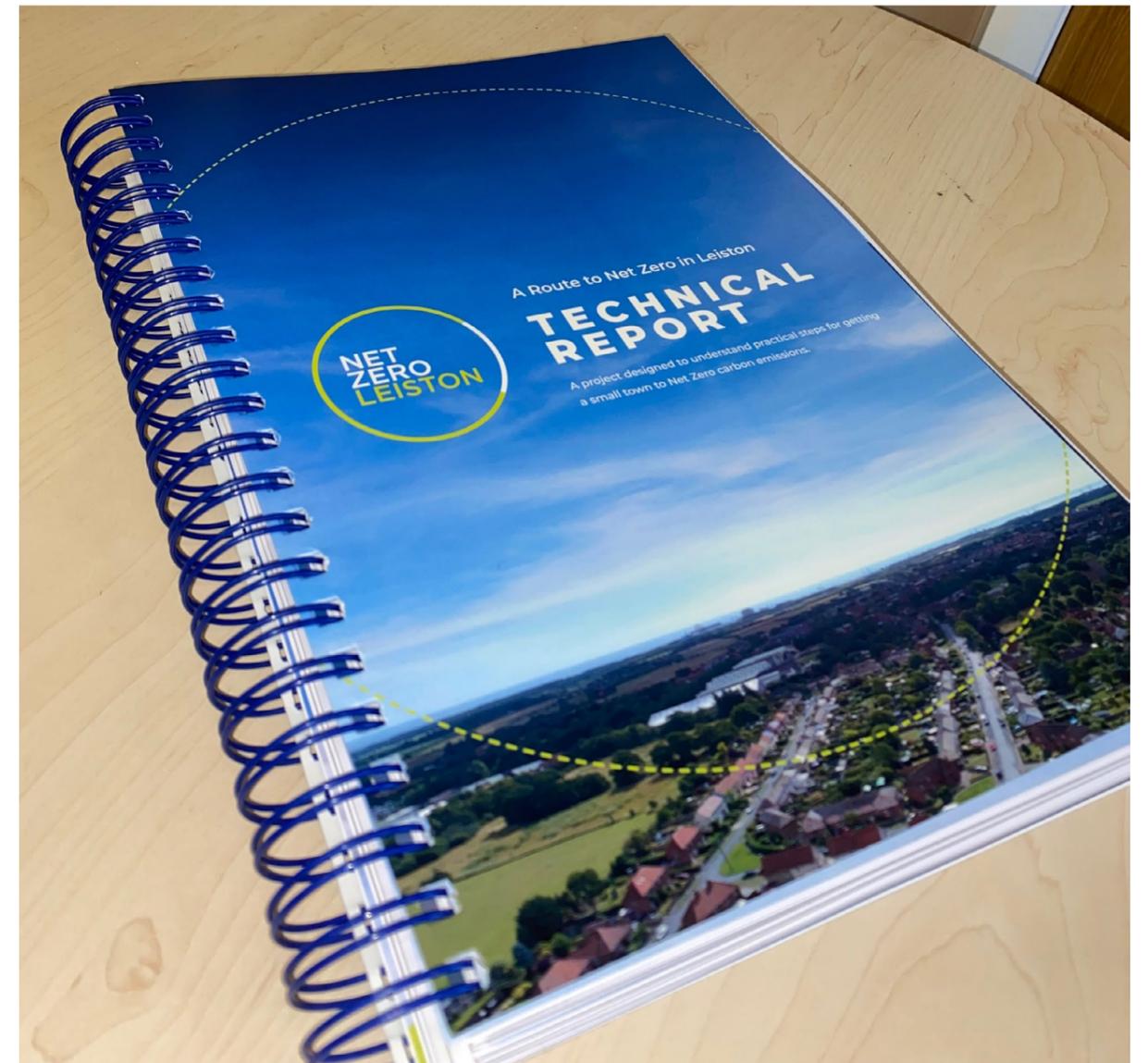


It is worth remembering that a Net Zero project can be a local source of pride and can bring a great deal of opportunity to an area in the form of jobs and investment, hence the very appropriate phrase which describes the role of Net Zero Projects: creating a green industrial revolution.

NEXT STEPS FOR NZL

The development of the NZL Route Map is the first stage in Leiston's journey to Net Zero. Following the publication of the Technical Manual and Route Map, the project's next phase is to implement and find ways to finance the proposed changes.

There is also an important role for the community to play in changes to their behaviours, alongside changes to buildings, transport and agriculture.



An aerial photograph of a residential town, likely in the UK, showing a main road leading towards a power plant in the distance. The town is characterized by red-brick houses and green spaces. The sky is blue with light clouds. A dashed yellow arc is visible in the top corners of the image.

THE ROAD TO NET ZERO STARTS HERE

