



Gloucestershire College



HILLSIDE

environmental services

Mapping the path
to net zero

Case Study



Providing a baselining for emission and designing a road map
to net zero
Gloucestershire College



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environmental services

Introduction

During Q4 2019, **Gloucestershire College** signed up to the Sustainable Development Goals (SDG accord) and took the pledge to contribute to tackling the prevailing climate emergency.

In so doing, the college established a high-level strategic pathway for achieving its ambition, setting out two core objectives:

- **To achieve net-zero carbon emissions by 2040.**
- **To engage with staff, students, and other stakeholders in raising awareness of the environmental impact of what we all do.**

To support these objectives, the college commissioned Hillside Environmental to benchmark their greenhouse gas emissions and create a range of options and tactics to enable the college to meet these objectives, covering technical, behavioural and financial options.

This case study outlines the work of Hillside Environmental Services in baselining the colleges greenhouse gas emissions profile, covering Energy, Transport, Waste, Water and Curriculum associated emissions, in helping to build the colleges:

- Net Zero strategy
- Streamlined Energy and Carbon Reporting (SECR) compliant carbon disclosure report
- Environmental awareness, through training and workshops for the leadership and delivery teams to establish the strategy and embed implementation plans.

Hillside Environmental is proud to be a carbon-negative business, so do not add to client scope 3 emissions.

The Road to Net Zero



“A net-zero GHG target for 2050 will deliver on the commitment that the UK made by signing the Paris Agreement. It is achievable with known technologies, alongside improvements in people’s lives, and within the expected economic cost that Parliament accepted when it legislated the existing 2050 target for an 80% reduction from 1990. However, this is only possible if clear, stable and well-designed policies to reduce emissions further are introduced across the economy without delay.”

The World Green Building Council has recognised that, in most cases, net zero energy buildings are not feasible. Rather than generating all energy needs on-site, a combination of on-site and off-site energy generation combined with other energy-efficient measures is more achievable on a mass-scale. Already, the move to renewable energy has significantly reduced the carbon intensity of the UK grid, from around 560 g of CO₂ e per kWh in 2012 to 256 g of CO₂ e per kWh now and forecast of that reducing further. Electrification of the heat used for heating buildings and hot water, with that heat deriving from low-carbon, non-fossil-fuel, renewable sources allows us to make significant progress on the road to Net Zero.



Unchecked emissions growth would lead to very severe and widespread climate change at 4°C or more by 2100.

The world is moving towards a low-carbon future, reducing some risks. We are currently on track for around 3°C of warming by 2100.

Damaging climate impacts are already being felt today.

Reducing global emissions faster will hold warming to lower levels.

Every degree matters.

4°C

3°C

2°C

The world has committed to reduce emissions faster to keep warming 'well-below' 2°C. This would help limit the most damaging effects of climate change.

1°C

Keeping below 1.5°C would limit many important risks further, helping to protect key ecosystems and reducing impacts on poorer people around the world.

Climate change is here today:

- The frequency of heatwaves has increased around the world. Many extreme events are being made more likely due to climate change.
- Sensitive ecosystems, such as coral reefs, are being damaged due to extreme heat.
- Animals on the land and the ocean are shifting their territories in response to climate change.

Damaging climate impacts are already being felt today at 1°C of warming.

UK action to address climate change can have an international impact



The UK can and should act as a leader in the global response to climate change - UK emissions contributed to causing it, and its leadership can have an international impact.



The UK has been a leader on climate change action. The UK has the opportunity to continue its leadership and join other countries already pursuing net-zero emissions targets.



The UK has committed to act by signing the Paris Agreement. This provides many options for countries to collaborate to reduce their emissions and prepare for the impacts of climate change.

Annual costs of achieving net-zero emissions are between 1-2% of GDP in 2050, comparable to those estimated in 2008 for achieving an 80% target.



80% reductions in emissions relative to 1990 levels estimated 2008

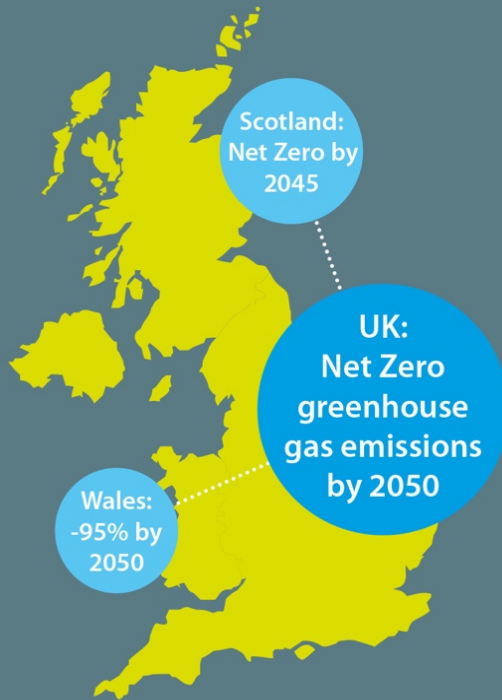
100% reduction in emissions in 2050 estimated today



Innovation has driven down the costs of key technologies, such as offshore wind & battery storage.



Some costs to consumers, such as increased heating bills, can be offset by cheaper transport costs (thanks to a widespread shift to electric vehicles) and cheaper electricity bills (thanks to low cost renewable electricity).



There are many benefits of phasing out harmful emissions



For the economy

New green industries with new jobs and export opportunities for the UK.



For the individual

Quieter streets, cleaner air, less congestion.

Smarter cities and more comfortable homes.

Healthier lifestyles, with more active travel and healthier diets.



For the country

More biodiversity, cleaner water, more green space to enjoy.

Reduced global warming, avoiding climate damages like flooding.

Using known technologies, the UK can end its contribution to global warming by reducing emissions to Net Zero by 2050



This transition will require a concerted effort and action by all



Any remaining emissions in 2050 must be offset

Gloucestershire College Project

Occupying 39,150 m² of floor space, providing office accommodation and educational facilities for over 6,000 staff and students, Gloucestershire College is located on 3 sites in Cheltenham, Gloucester & the Forest of Dean. The greenhouse gas emissions of the college are driven by four key aspects:

1. Buildings Energy use
2. Transport
3. Water and Waste
4. The consumption of 3rd party goods and services for curriculum activity

With a mix of building types, age profiles and service installations, the 3 sites presented different opportunities for achieving emissions reductions.

Gloucester Campus



Constructed around 2007, the Gloucester site presented a number of opportunities to adopt a mix of energy saving measures to support the net zero ambition, including the installation of new controls, lighting system, heat pumps, solar and battery technologies.

Cheltenham Campus



Constructed around 2003, the Cheltenham site presented a number of opportunities to adopt a mix of energy saving measures to support the net zero ambition, including the installation of new controls, lighting system, heat pumps, solar and battery technologies.

Cinderford Campus



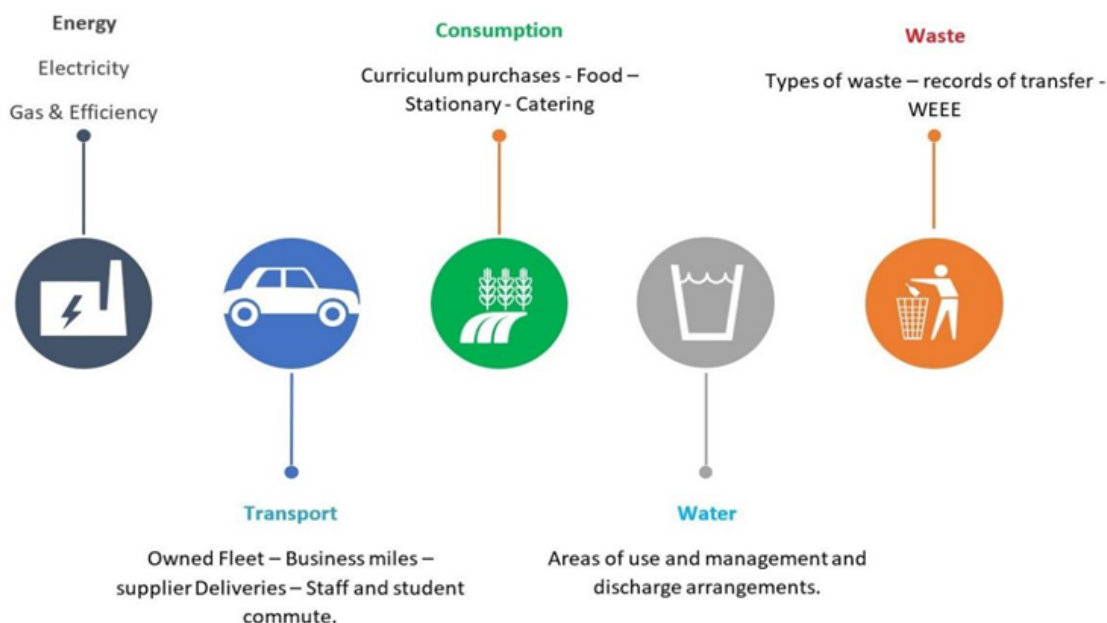
Located in the heart of the Royal Forest of Dean adjacent to the Steam Mills Lake, the Cinderford site is an environmentally friendly building constructed in 2018, to BREEAM standards illustrating the College's environmental credentials and intent.



The Challenge

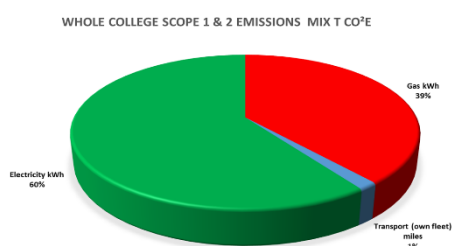
Understanding the source of emissions was critical for the college to clarify where to start the journey and focus its resources.

Hillside undertook a detailed environmental audit to identify the source and scale of greenhouse gas emissions from college activity, covering;

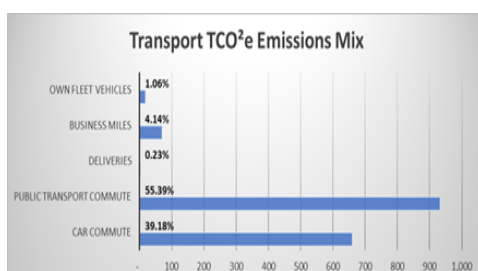


The outcomes of the audit clarified emission sources across the categories and established 2017 as the base line year for future reporting.

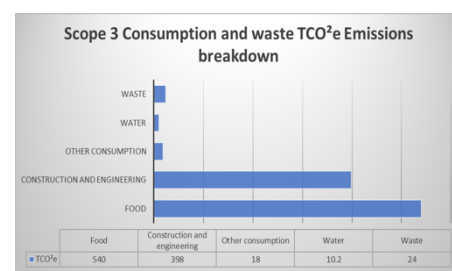
Energy



Transport



Waste, Water & Circulum



Energy was established as a significant and critically the most controllable source of emissions. With clear focus on the scale of opportunity energy forms the foundation for the colleges net zero plan.

Including an analysis of staff and student commuter activity, transport was identified as a significant emissions aspect. Establishing a college strategy to address these emissions required more granular analysis and Hillside developed subcategories of emissions to help the college leadership team to build a transport strategy.

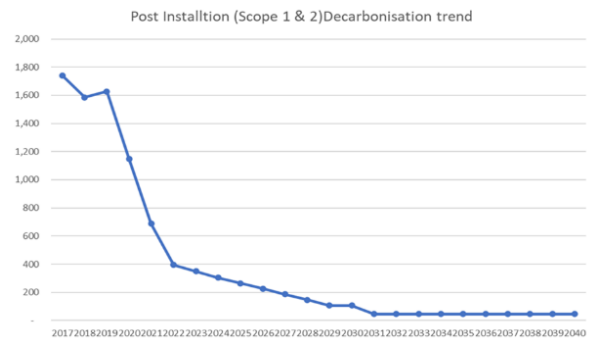
With good practice adopted in managing waste and water, curriculum based purchases were identified as a significant source of emissions. Conducting a deep dive into these supply lines helped to establish more granularity over the profile and identify opportunities to adjust procurement activity and embed environmental factors into course & learning syllabus.

Clarifying the options and mapping to net zero

With a clear line of sight over the emissions profile, Hillside worked with the college leadership team to evaluate each aspect of the analysis and clarify the boundaries of college responsibility and action plan to achieve a net zero programme.

Energy

Identified as the most controllable source of emissions, and with a range of technical options available, Hillside modelled out an economic and carbon reduction profile. With the established business case for delivering a deep energy retrofit and efficiency project across all 3 sites, the modelling showed that over the first 10 years the college could achieve a 90% carbon reduction, whilst reducing operating costs to boot.



Transport



Adopting fleet electrification and installing on-site charging infrastructure were identified as key strategies for reducing the emissions generated by the colleges owned and grey fleet activity. Developing wider strategies to adjust commuter behaviour remains under review, with greater emphasis on exploring barriers to wider adoption of public transport, walking and cycling.

Waste, Water and Curriculum emissions

A deep dive analysis of the supply lines supporting curriculum activity and re-shaping course content with students to incorporate environmental considerations, presented significant opportunities. The potential to go beyond the college gates and support wider community engagement, in building climate resilience, including support for local employers and business partners was clear.

Stationary, capital purchases, food supplies to the catering department and material supply to the construction and engineering departments were all considered and wider strategies to adjust procurement policy and supplier engagement in these areas is now a feature in the net zero planning.



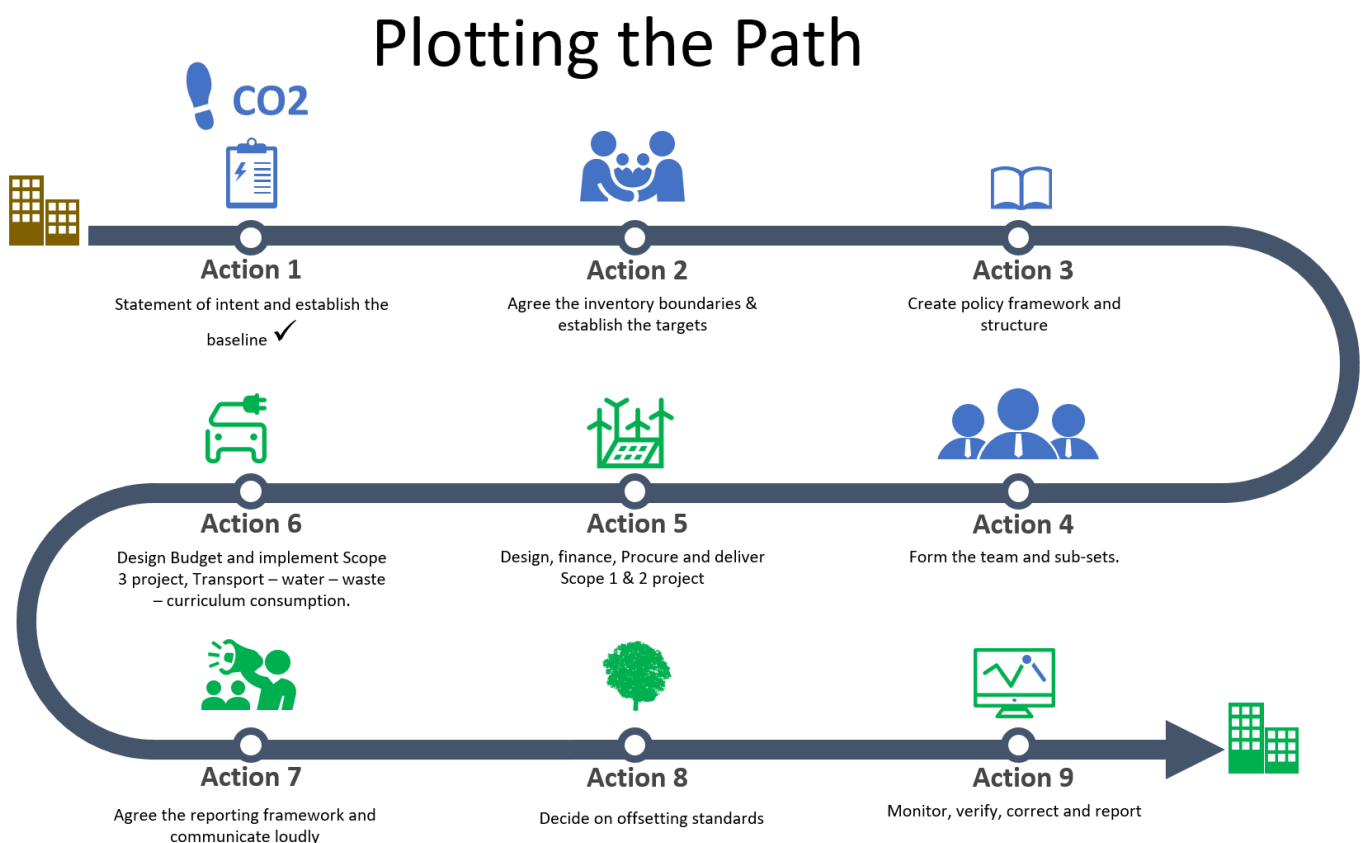
Engagement, Awareness and Collaboration

Recognising the need for cross functional advocacy, Hillside developed a program of environmental awareness workshops, built around college specific issues identified during the audit and net zero planning.

Delivered workshops to the executive team on evidenced based environmental awareness. These helped to clarify strategy in aligning the interconnectivities across all college functions, covering course leadership, HR, Estates and Finance.

Key actions arising were

- Clarification of the colleges approach to managing the emissions boundaries
- Agreeing policy requirements to embed environmental action into the college DNA
- Form a working group to collaborate on building a cross functional delivery plan
- Building the detailed business case for securing Governance & funding support.
- Building the KPIs and Management Information system to report progress
- Establishing the pathway from “Brown to Green”



Ongoing Support and Next Steps

With the baseline established, Hillside continue to work with the college to support their journey to net zero including

Carbon Accounting, Auditing and SECR reporting

Establishing KPIS and management information to maintain focus on delivery and report outcomes was identified as a critical element of the program. The college finance team embraced the opportunity and Hillside provided training in SECR compliant carbon accounting and environmental reporting.

Project Design, Procurement and Delivery

Moving the project to the next stage will be carried out during 2021, supported by the Governments Green recovery programme.

For more information, and to take the next steps on your own Road to Net Zero, contact Hillside Environmental for a free, no-obligation discussion.

Contact Russ Burton direct: russell.burton@hillsideenvironmental.co.uk



Hillside Environmental Services



Hillside
Debdale Hill
Caunton
Newark
Nottinghamshire
NG23 6BG



07702236275



www.hillsideenvironmental.co.uk



russell.burton@hillsideenvironmental.co.uk



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