



Cotswolds National Landscape



Cotswolds
National
Landscape

A natural capital evaluation of the Cotswolds National Landscape supporting landscape management, conservation and community initiatives.

COTSWOLDS NATIONAL LANDSCAPE

The Cotswolds National Landscape (CNL – a new name for the Cotswolds Area of Outstanding Natural Beauty and the organisation which helps look after it) is the largest of its kind in England covering 200,000 hectares, spanning six county/unitary authorities. This stunning area is managed by the small team at CNL – an independent public body that works hard to conserve and enhance the natural environment while fostering the wellbeing of local communities.

Environmental asset manager, Beyond Zero, and environmental and agricultural data consultancy Environment Systems have used their market-leading approach and systems to redefine how the organisation sources, analyses and presents data to inform decision-making and create landscape management strategies that will benefit conservation initiatives and local communities for generations to come.

THE CHALLENGE

Under the remit of the Department for Environment, Food and Rural Affairs, the UK's Protected Areas are required to deliver an evidence-led five-year Management Plan, and CNL has developed a Cotswolds Nature Recovery Plan to provide further guidance. This requires robust, consistent and up-to-date data.

Sourcing reliable data across these vast landscapes has always been a major roadblock. CNL works with multiple partners across public, private and not-for-profit sectors, many of which have undertaken their own studies, but all at separate times and for different purposes. Data previously collected has been inconsistent, gathered using different methodologies, presented in different formats and stored in multiple locations – meaning that there was no single-source-of-truth set of natural capital baselines.

In addition, there was no consistent landscape-wide set of natural capital opportunity maps which identify areas of land which are most suitable for enhancing ecosystem services, such as nature recovery networks, carbon sequestration, farming, and improvements to natural flood management and water quality.

Furthermore CNL has no in-house GIS personnel or platform needed to deliver this momentous task.

Whilst daunting the brief was simple: create the single-source-of-truth required to support the creation of the Cotswolds Management Plan and Nature Recovery Plan, and to help inform decision-making to deliver practical on-the-ground enhancements to natural capital throughout the landscape.



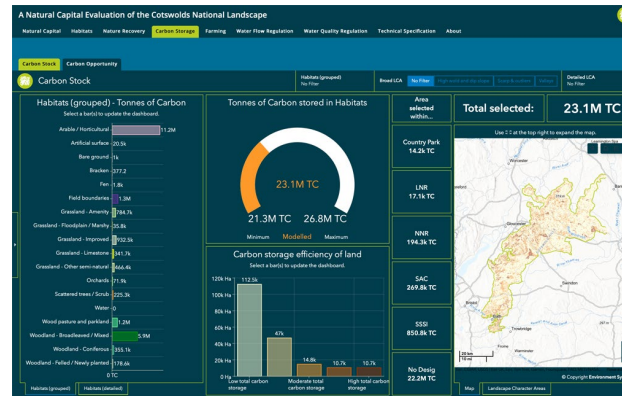
THE SOLUTION

CNL reached out to Beyond Zero, a leading environmental asset manager that works with Esri's ArcGIS Platform – the world's leading mapping and analytical software – and Environment Systems, the UK's leading environmental and agricultural data consultancy.

The first step was to download the CNL boundary from the Living Atlas, Esri's repository of thousands of ready-to-use maps and datasets, the foremost collection of geographic information from around the globe. This was shared with the Environment Systems team who then sourced third party data including the most recently available Sentinel satellite imagery covering the entire area.

These were used within their market-leading natural capital tool SENCE (Spatial Evidence for Natural Capital Evaluation) to generate a set of baseline maps and opportunity maps for the whole of the Cotswolds protected landscape.

On receipt of this geo-database, Beyond Zero ran some simple GIS routines within ArcGIS Pro which included clipping, intersecting, joining and buffering



Dynamic dashboards deliver interactive data visualisations and reports in a single platform.

the data into the Cotswolds National Landscape Areas.

Buffering habitat data and filtering the mapped information by Landscape Areas has further enabled CNL to tailor their Nature Recovery Plan for specific areas, something which had previously been impossible. The data files were uploaded and published into ArcGIS Online, Esri's web-based GIS mapping software and, with ArcGIS Dashboards, used to create interactive data visualisations and reports on a single screen.

Beyond Zero built more than 20 separate dashboards, and these were organised and grouped by ecosystem service theme using ArcGIS StoryMaps, a next-generation storytelling tool.



Conserving and enhancing the natural beauty of the Cotswolds





“This online dashboard gives us access, for the first time, to the sophisticated data we need to plan the delivery of nature recovery. It also provides us with an interactive engagement tool for authoritative and informed discussions with landowners about what practical on-the-ground steps can support the delivery of the Cotswolds Nature Recovery Plan.”

**Simon Smith, Nature Recovery Lead
– Cotswolds National Landscape**

“This data-rich natural capital evaluation of The Cotswolds provides the evidence-led blueprint of how to better target support to farmers that leads to objective National Landscape improvement. Furthermore, there is a great opportunity for Defra to embrace this standardised approach which has hitherto been impossible without this consistent and up-to-date data.”

Howard Davies, former Chief Executive – The National Association of Areas of Outstanding Natural Beauty

THE OUTCOME

A single URL embedded in CNL’s website gives users access to the final product: [A Natural Capital Evaluation of the Cotswolds National Landscape](#). Beyond Zero used ArcGIS StoryMap design features to include CNL branding and corporate colours, embedded videos as well as separate tabs for Habitats, Carbon Storage and Farming amongst others, all containing a wealth of data. An embedded link to the project report enables users to review the full methodology including nature recovery network modelling.

THE UNLOCKED VALUE

Large amounts of spatial data have been transformed into manageable information. Using ArcGIS Pro processing tools, data has been analysed and insights gained. Online users can interrogate accurate and reliable data enabling them to make recommendations on e.g. policy direction for landscape strategies.

Improved stakeholder engagement

Digital storytelling gives the author’s narrative, in this case CNL, a greater sense of place by visualising spatial relationships across the region.

Embedded dashboards let readers engage with spatial and non-spatial data and, along with embedded photos and videos, enable stakeholders to easily assess and absorb information.



A Natural Capital Evaluation of the Cotswolds National Landscape

Natural Capital

Habitats

Habitat Description

Habitats (grouped) - Area

Total selected: 203,805

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Grassland Stock

Core Habitats (grouped) in Grassland Network

Grassland Network

Core Habitats (detailed) in Grassland Network

Grassland Core

Total selected: 104,255

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Opportunities to enhance Grassland Network

Habitats (grouped) within the opportunity space

Opportunities to enhance Grassland Network

Total selected: 92,965

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Wetland Stock

Core Habitats (grouped) in Wetland Network

Wetland Network

Core Habitats (detailed) in Wetland Network

Wetland Core

Total selected: 3,275.9

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Opportunities to enhance Wetland Network

Habitats (grouped) within the opportunity space

Opportunities to enhance Wetland Network

Total selected: 9,924.8

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Woodland Stock

Core Habitats (grouped) in Woodland Network

Woodland Network

Core Habitats (detailed) in Woodland Network

Woodland Core

Total selected: 105,917

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Opportunities to enhance Mosaic Network

Habitats (grouped) within the opportunity space

Opportunities to enhance Mosaic Network

Total selected: 4,152.9

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Carbon Stock

Habitats (grouped) - Tonnes of Carbon

Tonnes of Carbon stored in Habitats

Carbon Opportunity

Total selected: 23.1M

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Carbon Opportunity

Habitats (grouped) within the opportunity space

Carbon Opportunity

Total selected: 92,965

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Farming Stock

Current state of Farming - Habitats (detailed)

Current state of Farming (under agr-environment)

Current state of Farming (no agr-environment)

Total selected: 124,240

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Opportunities Associated with Farming

Available / Horticultural land with opportunities to support ecosystem services

Opportunities associated with Farming

Total selected: 91,622

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Natural Flood Management Stock

Natural Flood Management Opportunity

Total selected: 203,048

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Natural Flood Management Opportunity

Habitats (grouped) in the opportunity space

Natural Flood Management Opportunity

Total selected: 16,104

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Water Quality Stock

Water Quality Stock - Habitats (grouped)

Water Quality Stock - Habitats (detailed)

Total selected: 32,685

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Water Quality Opportunity

Habitats (grouped) in the opportunity space

Water Quality Opportunity

Total selected: 65,373

Accuracy of information

As well as providing the first set of accurate and consistent basemaps across the landscape, near real-time data updates can be automated ensuring that the StoryMap contains the most recent data. Readers and stakeholders have access to the most current information, helping them to identify trends as they occur, thereby improving efficiency and accuracy of decision-making.

Better resource management

As a fully hosted solution, the published [A Natural Capital Evaluation of the Cotswolds National Landscape](#) requires no support or resources internally. CNL can focus its limited resources on its core remit, to conserve and enhance the natural beauty of the Cotswolds, increase understanding of its special qualities and foster the social and economic well-being of local communities.

Making SENCE

We deliver world class environmental and agricultural information to help manage our environment and feed our population. We are trusted providers of evidence and insight to governments and industry across the world. Our SENCE and ArcGIS solutions are fully scalable, and as well as being used by strategy and policy makers at country, regional and landscape levels, our approach unlocks value for landowners at farm and farm cluster level. Learn more: hello@beyondzero.ag

For project details and further Case Studies:



Cover image credit: Rachel Hudson Illustration

PARTNERS



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