

Working with existing nature and human based systems, rather than in opposition to them, will notably reduce the carbon impacts of landscape projects.

Go with the Flow

It is easier to go with the flow and swim downstream, than against the flow and swim upstream. This simple theory applies to implementing change in environments where there are existing nature and human based systems. For example, levelling an undulating site rather than working with the natural landform, culverting a river rather than letting it occupy its natural floodplain and creating a development in an isolated location where there are no active travel or public transport links, all require significantly more input and give rise to significantly greater carbon impacts.

0 Strategic Definition

1 Preparation and Briefing

Undertake early survey and analysis to ensure the siting, scope and layout are planned responsively in respect of the site and context. Use carbon calculations to understand the potential impacts of the project and how these can be mitigated.

2 Concept Design

3 Spatial Coordination 4 Technical Design

Use detailed survey and analysis of existing and evolving, nature and human based systems to inform the development of the design. Use carbon calculations to guide and deliver a design that works positively with existing nature and human based systems.

5 Construction

6 Handover

Minimise impacts on existing nature and human based systems during construction through ensuring effective protection is in place.

7 Use

Inbuild adaptability so the design can evolve with changes in the nature and human based systems over time.

8 End-of-life

Design and develop a responsive approach to end of life that minimises impacts and restores and enhances existing systems in perpetuity.



Measuring Carbon

Indicative measurements of existing carbon stores can be carried out relatively easily using data collected by Natural England in their document 'Carbon Storage and Sequestration by Habitat 2021 (NERR094)'. Indicative values in terms of 'tonnes of carbon per hectare' have been calculated in relation to England's National Scale Habitat types. These habitat types have been mapped across England and this information can be applied to the project site to give areas that can be multiplied with the values to result in indicative measurements of existing carbon stores. This then forms the baseline for the site and subsequent calculations based on changes to the land can determine how carbon stores will be increased or reduced.

Pathfinder and Elemental are quick and easy to use tools that enable the calculation of baseline carbon stores for specific sites. The Landscape Carbon Tracker tool is useful for larger scale, strategic planning and target setting, while the carbon calculators for the UK Woodland and Peatland Codes calculate baseline carbon stores relative to these components.

Carbon Data and Tools for Baseline Assessment:

[Carbon Conscious App](#)
[NatureInsight](#)
[Build Carbon Neutral](#)
[Elemental](#)
[Pathfinder](#)

Existing and Evolving Nature Based Systems

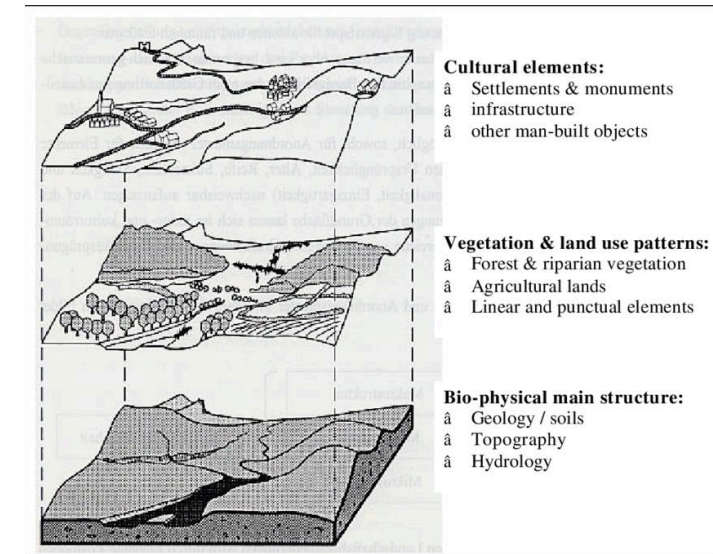
The following responsive approach to nature-based systems forms the foundation of traditional landscape design, and also enables significant reductions in carbon impacts.

- Keep soils undisturbed wherever possible, otherwise protect better quality soils and direct development towards poorer quality soils. Follow best practice in stripping and storing soils, minimise soil capping, match plants suited to existing soils, and avoid loss of soils to landfill.
- Work with the existing landform wherever possible, otherwise minimise earthworks, avoiding exposed and steeply profiled soils and using nature-based solutions to provide stability.
- Make space for water by respecting its natural system and enhance this system through the creation of ponds and wetlands that will help regulate water levels and reduce flooding and drought.
- Retain existing vegetation where possible, including trees and woodland, scrubland and grassland, and manage to maximise carbon sequestration and biodiversity.
- Design with sun and shade, wind and shelter, rain and cover in mind and design with the need for climate resilience by inbuilding flexibility and adaptability.

Existing and Evolving Human Based Systems

Working with existing and evolving human based systems presents the greatest potential for carbon reductions at the strategic planning stage of a project.

- The development of urban sites, compared to greenfield sites, presents multiple ways to reduce carbon impacts. For example through sharing or supporting the existing provision of utilities, public transport, active travel, shops, health and education facilities, recreational facilities and community networks.
- Sites in urban areas can also contribute by providing missing or over-used facilities to complement and enhance existing provision.
- Sites in greenfield areas should look to maximise public transport and active travel links as private vehicle use is often the biggest associated carbon impact.
- New developments present the opportunity to inbuild green energy generation, water conservation and waste recycling to reduce use of resources in the design.



Links to information on responsive design:

[Climate Action Plan \(2022-2025\) | asla.org](#)

[Landscape Design for Carbon Sequestration | ASLA 2020 Student Awards](#)

[Design with nature : McHarg, Ian L : Free Download, Borrow, and Streaming : Internet Archive](#)

