



An Introduction to Bespoke Carbon Datasets

Jon Burrow & Edwin Lowe

circularecology.com

Today's Webinar

- ⊖ Introduction
- ⊖ What are "Bespoke Carbon Datasets"?
- ⊖ Approaches to Carbon Datasets
- ⊖ Applying a Bespoke Carbon Dataset
- ⊖ Benefits of Developing Bespoke Carbon Datasets
- ⊖ Case Studies and Examples of Bespoke Carbon Datasets
- ⊖ Q&A

Your Presenters Today



Jon Burrow

Head of Carbon Accounting

- *Over a decade working in carbon reporting and carbon reduction strategies*
- *Background in UK / EU carbon regulatory compliance*



Edwin Lowe

Delivery Manager

- *8 years' experience in the construction sector*
- *Worked for contractors, infrastructure clients and in consulting*



Background & Introduction

Circular Ecology – Introduction



Environmental consultancy, founded in 2013

Offer a range environmental services:

- Carbon Footprint Database (library) Development
- Whole-Life Embodied Carbon Assessments for Construction Projects
- Organisational Carbon Footprints, Scope 1, 2 & 3
- Product Carbon Footprints & Life Cycle Assessments (LCA)
- EPD Development & Publishing
- Carbon Footprint Verification & Assurance
- Net Zero Carbon Strategy
- Online E-Learning Training Courses
- Carbon Offsetting and Tree Planting



Hosts the Inventory of Carbon & Energy (ICE) Database

Celebrating 850,000 Trees Planted

Facilitated the planting of **over 850,000 trees**

In partnerships with **Eden: People+Planet** and **Ripple Africa**

Tree planting available on our online store - **£1 (ex. VAT) per tree**

25% of tree planting sales diverted to Circular Ecology's **SCRI fund**





What Is a Bespoke Carbon Dataset?

Core Elements of Bespoke Carbon Datasets



A bespoke carbon dataset consists of carbon data for a given list of materials, products, components or activities of a standardised unit of measure



Aligned with data that is unique and already in use by an organisation, outside of carbon, such as:

- Cost Plans
- Inventories
- Catalogues
- Work Breakdown Structures



Utilises existing, available carbon data and formulates this in a way that is bespoke, useful and able to be integrated with existing processes

What a Bespoke Carbon Dataset is Not

A carbon assessment for a building, project or product

Entirely specific to a single supplier or manufacturer

The basis for an Environmental Product Declaration (EPD)

A calculation tool

Context: EPDs vs Products



~**120,000** Published EPDs Globally ^[1] RICS



Hundreds of thousands, *likely millions*, of construction products on UK market alone



There's a clear need for data that sits between EPDs (which are highly specific) and generic data



Examples of products with limited specific data include:

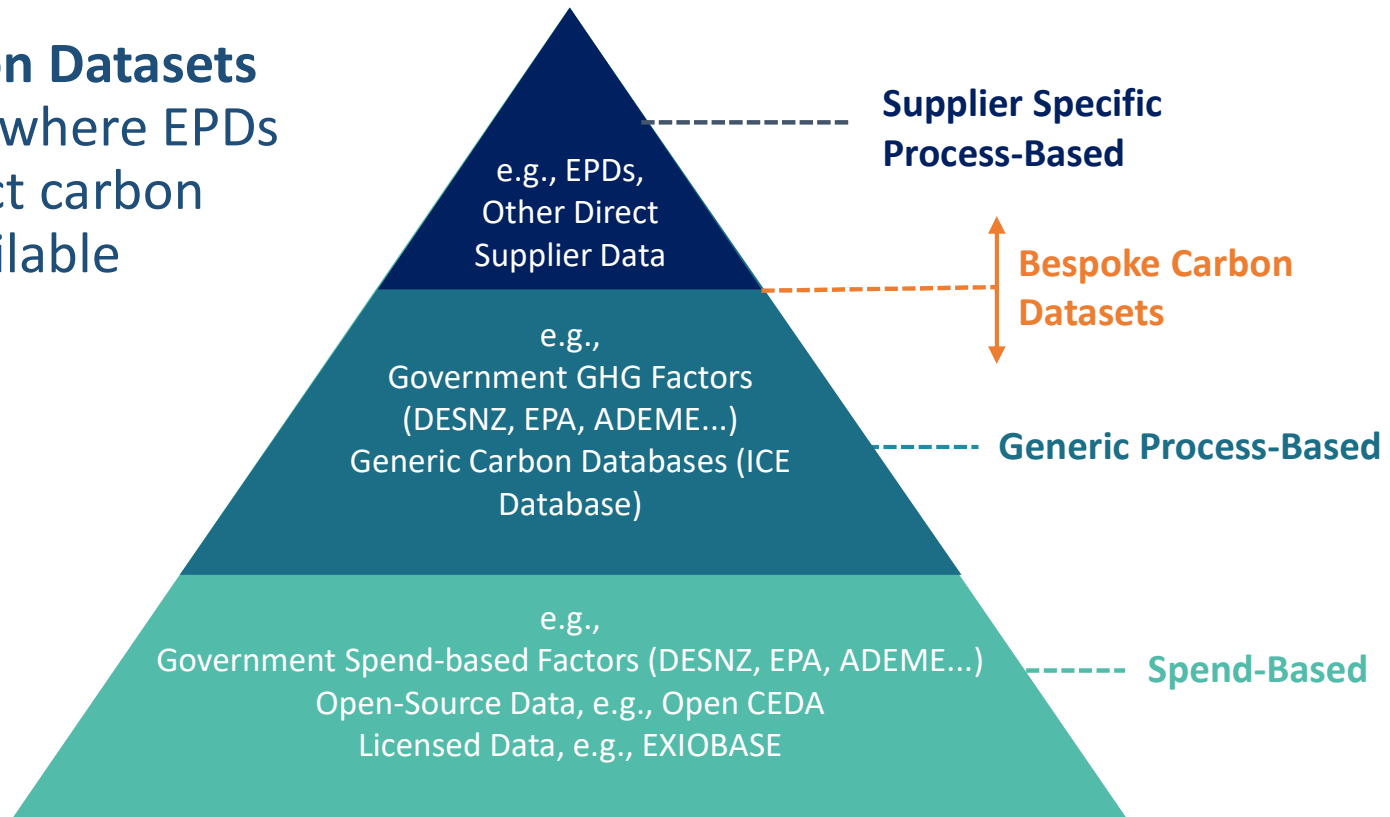
MEP Components

Fixtures and Fittings

Structural Components

Data Hierarchy

Bespoke Carbon Datasets
bridge the gap where EPDs
and other direct carbon
data are unavailable



Hierarchy of Data Quality



Approaches to Bespoke Carbon Datasets

Comparing Carbon Datasets

Generic Datasets

- Often covers raw materials or semi-manufactured materials only – less specific
- Usually built for a broad, wide application, rather than a specific sector
- Updated sporadically, with little to no influence on maintenance

Bespoke Datasets

- Can fill gaps where generic data is not available or suitable for the intended use
- Honed-in application
- Can be maintained, updated and expanded
- Control over intellectual property

Approaches to Bespoke Carbon Datasets

First Principles Modelling

Bottom-up Approach

Resource Specific Modelling

Build-up of other generic data sources

Analysis of EPDs/LCAs

Bottom-up Approach

Item Category Specific Analysis

Averages of relevant aggregated datapoints

Cost-to-carbon

Top-down Approach

Spend-based Factors

Typically used as a fallback approach where "bottom-up" modelling not feasible

Why Not Just Revert to Generic Data?

Inherent issues with spend-based data (such as broad nature of factor categories)

Generic data is helpful for single material products, but not often multi-material

Struggles with presenting data where multiple boundaries are covered

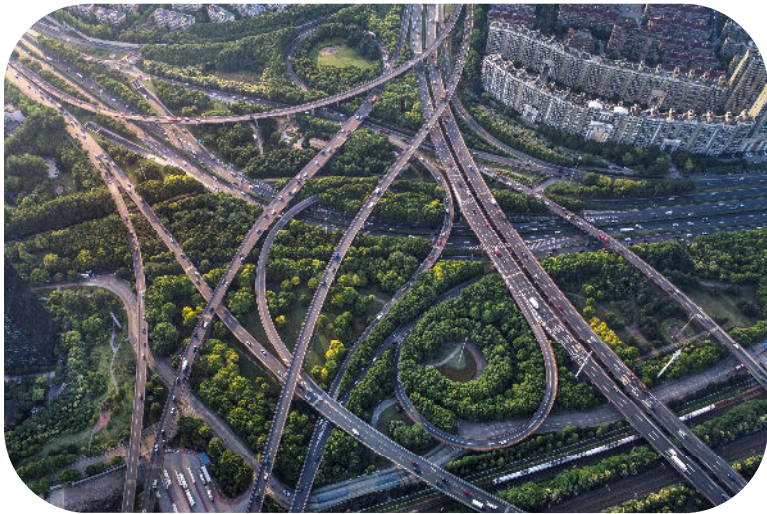
Mapping can be inaccurate

Bespoke Carbon Datasets provide reduced uncertainty, increased confidence

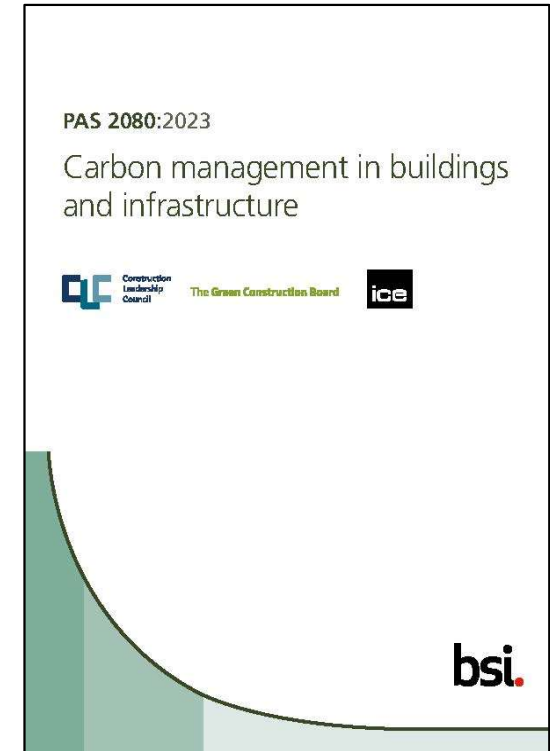
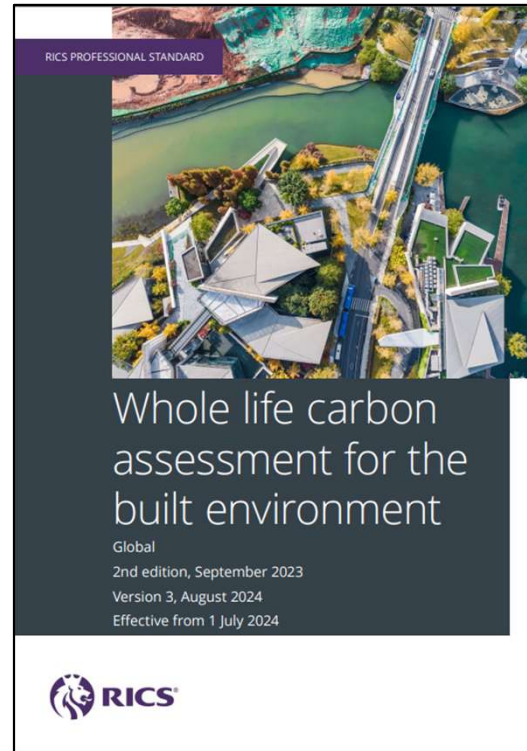


Applying a Bespoke Carbon Dataset

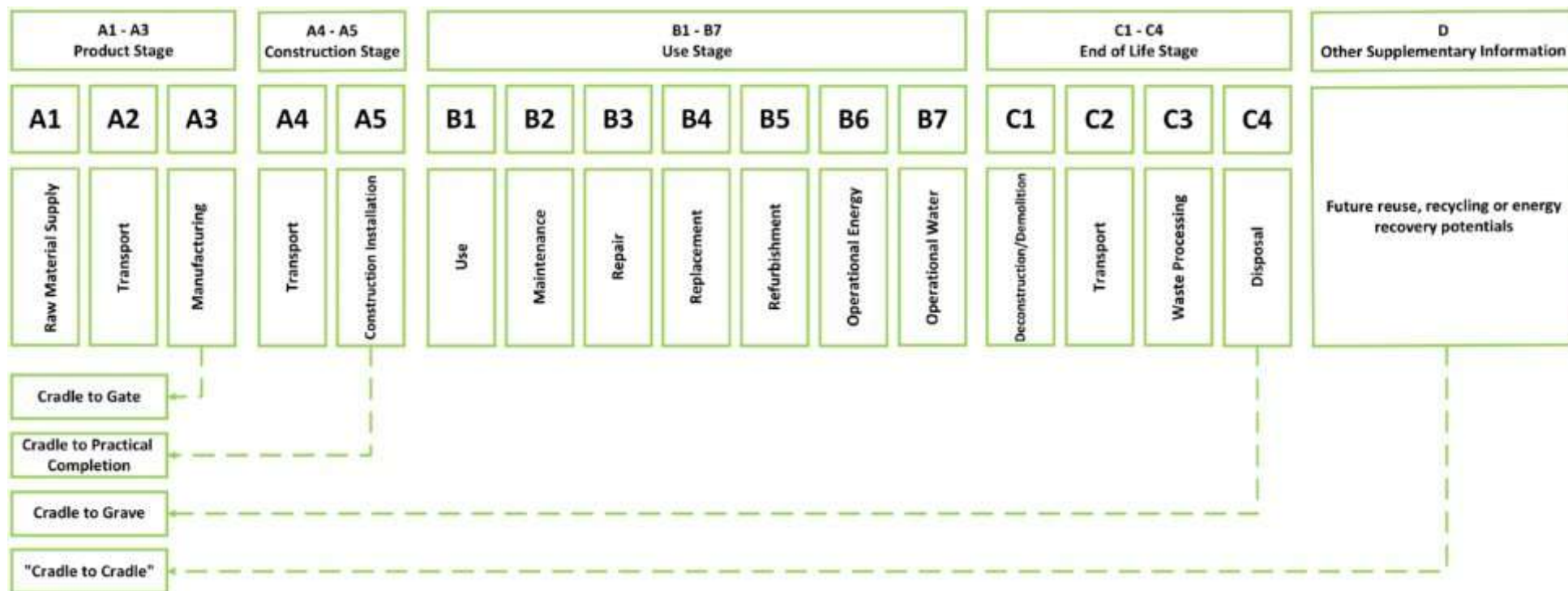
Use Cases



Alignment to Relevant Standards



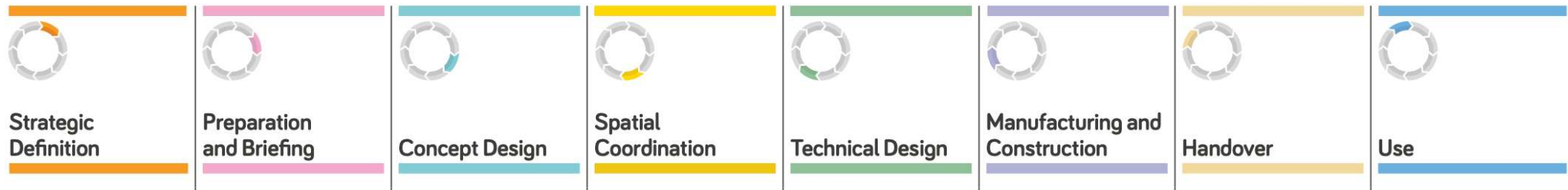
RICS WLCA Modules



Circular Ecology have built bespoke carbon datasets for clients covering a range of modular configurations.

Typically covering all modules except for Use and Operational Energy / Water

Project Lifecycle



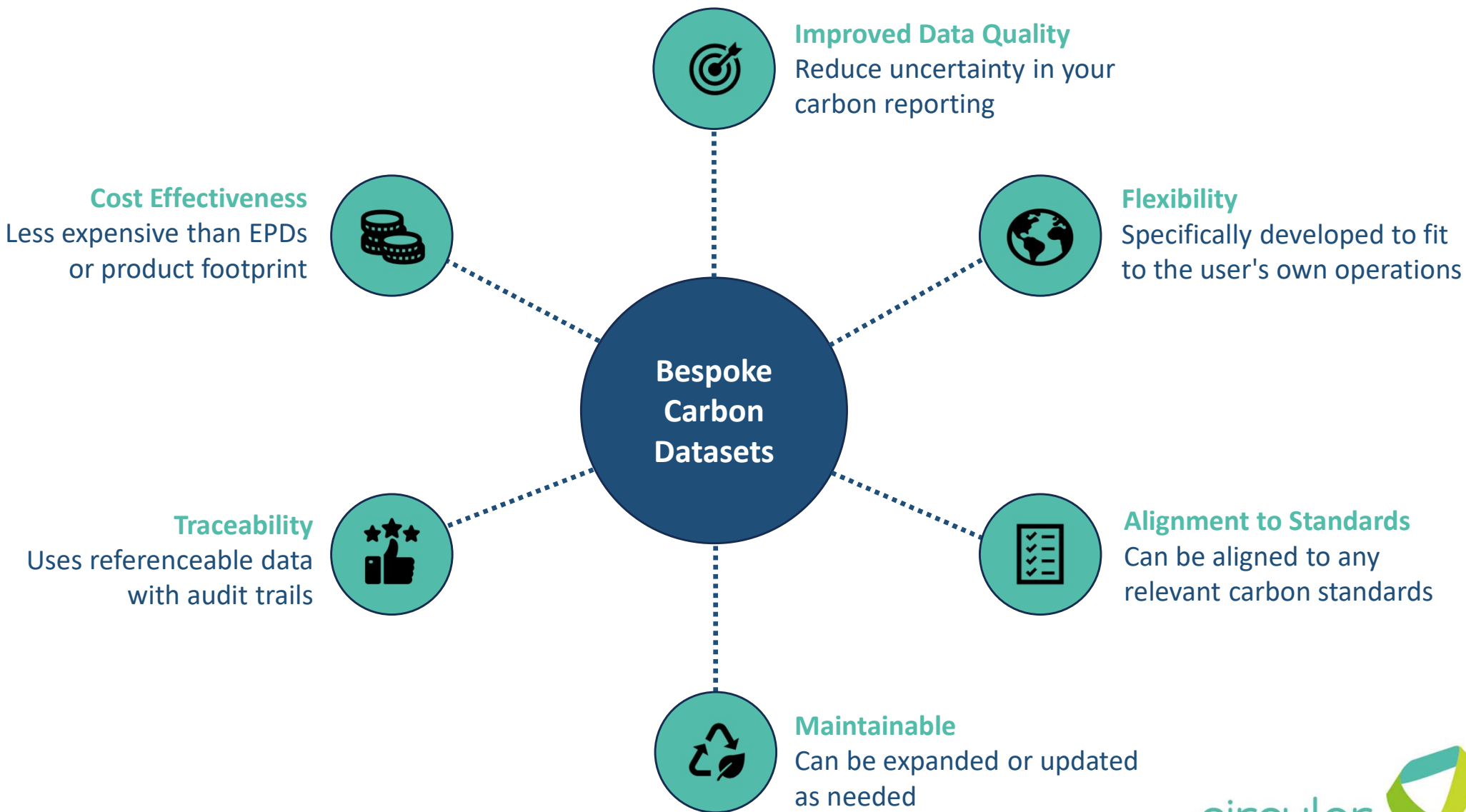
Royal Institute of British Architects (RIBA) - RIBA Plan of Work 2020

- Bespoke Carbon Datasets can be useful at **any** stage of project development
- They are of particular use during the **design stages**, where less specific information about materials and products is known



Benefits of Developing a Bespoke Carbon Dataset

Benefits of a Bespoke Carbon Dataset



Example: First Principles Modelling

Let's consider: Modelling the carbon for an Access Cover & Steel Frame

Generic data is typically high-level and can lead to big assumptions.

Assumes the item is
100% Galvanised Steel
Material 1

Generic Carbon Data

Final Product
Manufacturing Uplift

30% Composite Plastic
Material 3

5% Rubber Material 2

65% Galvanised Steel
Material 1

Bespoke Carbon Data

Also considers wider nuances missing from generic data.

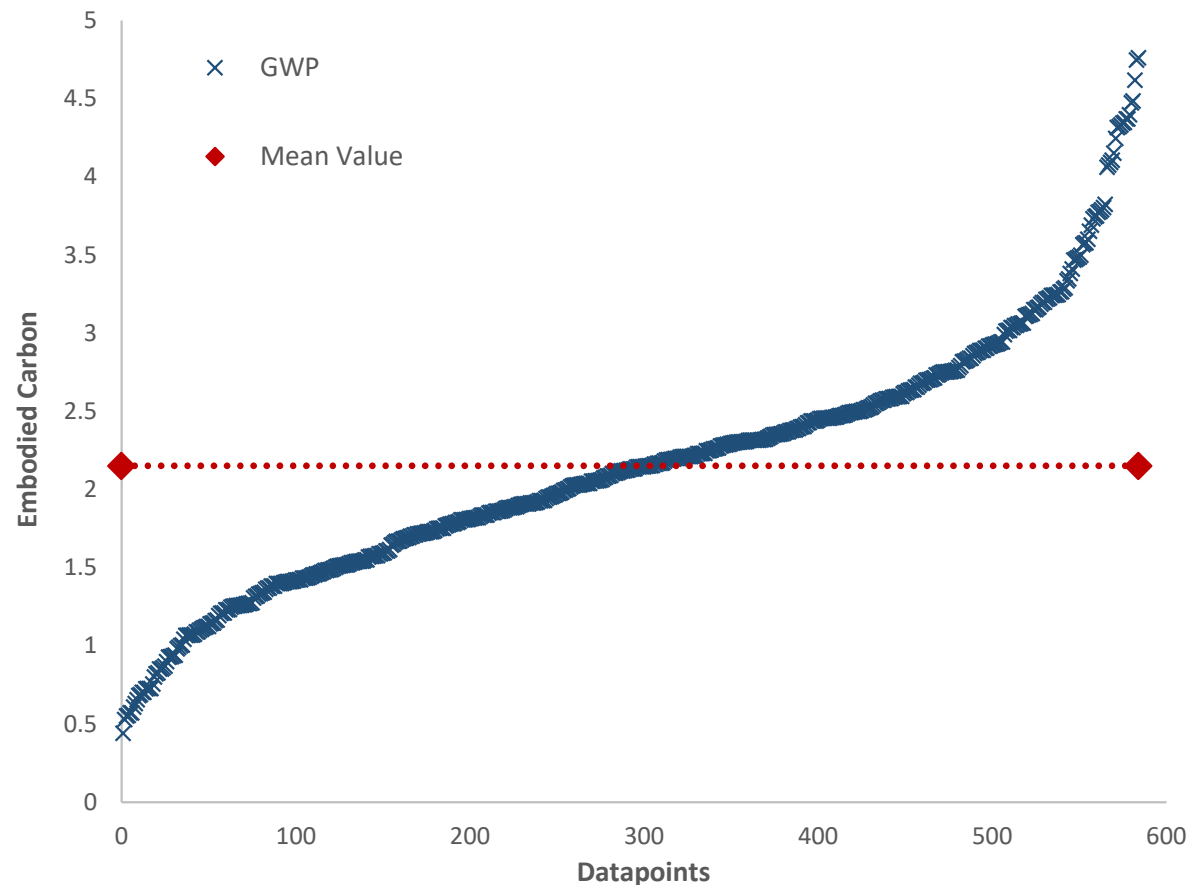
Bespoke carbon modelling can improve accuracy for complex items.

Example: Bespoke Carbon Data Analysis

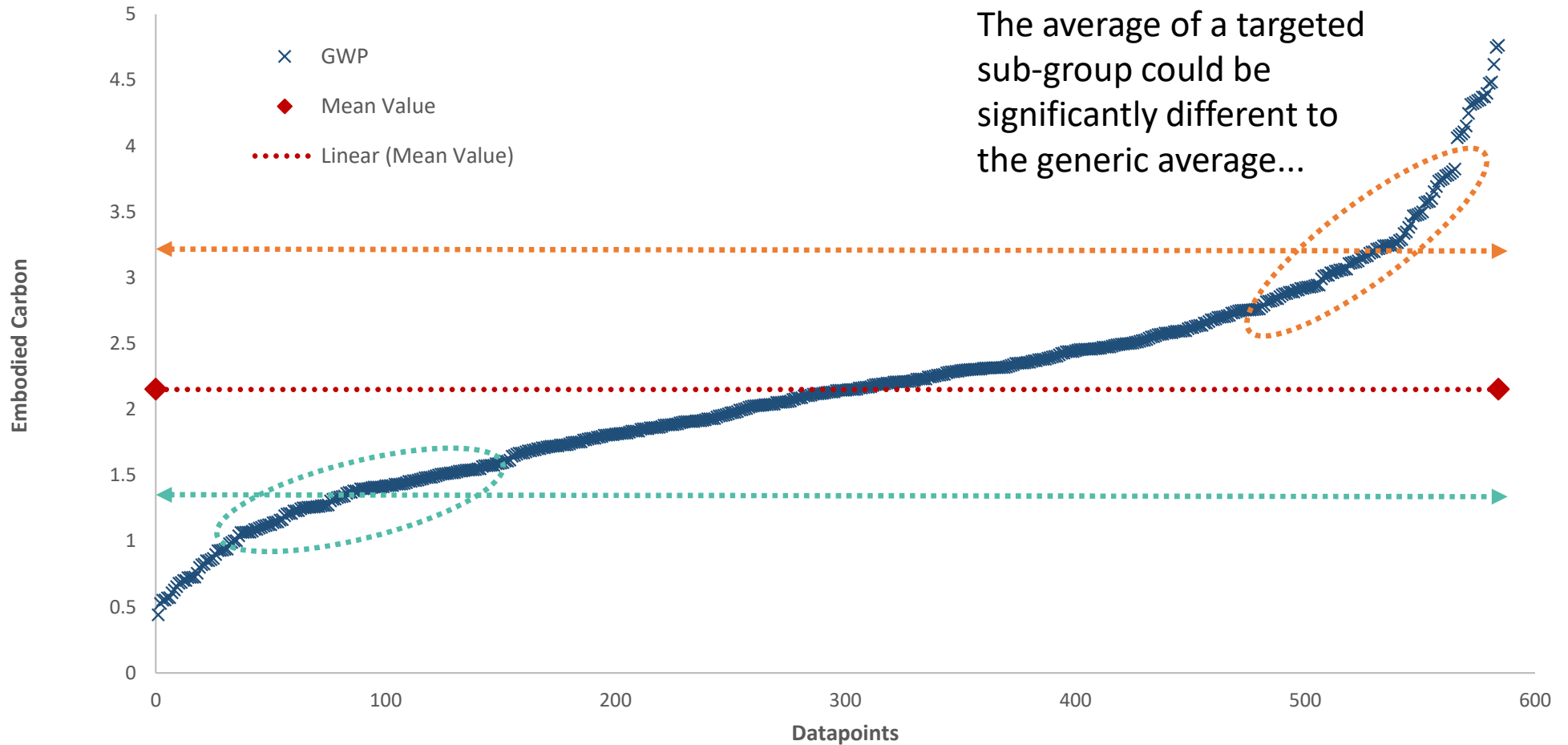
Carbon Datasets - typically developed from averages of suitable aggregated datapoints.

Generic - Dataset covering a wider category of items that are similar in nature (e.g., Iron).

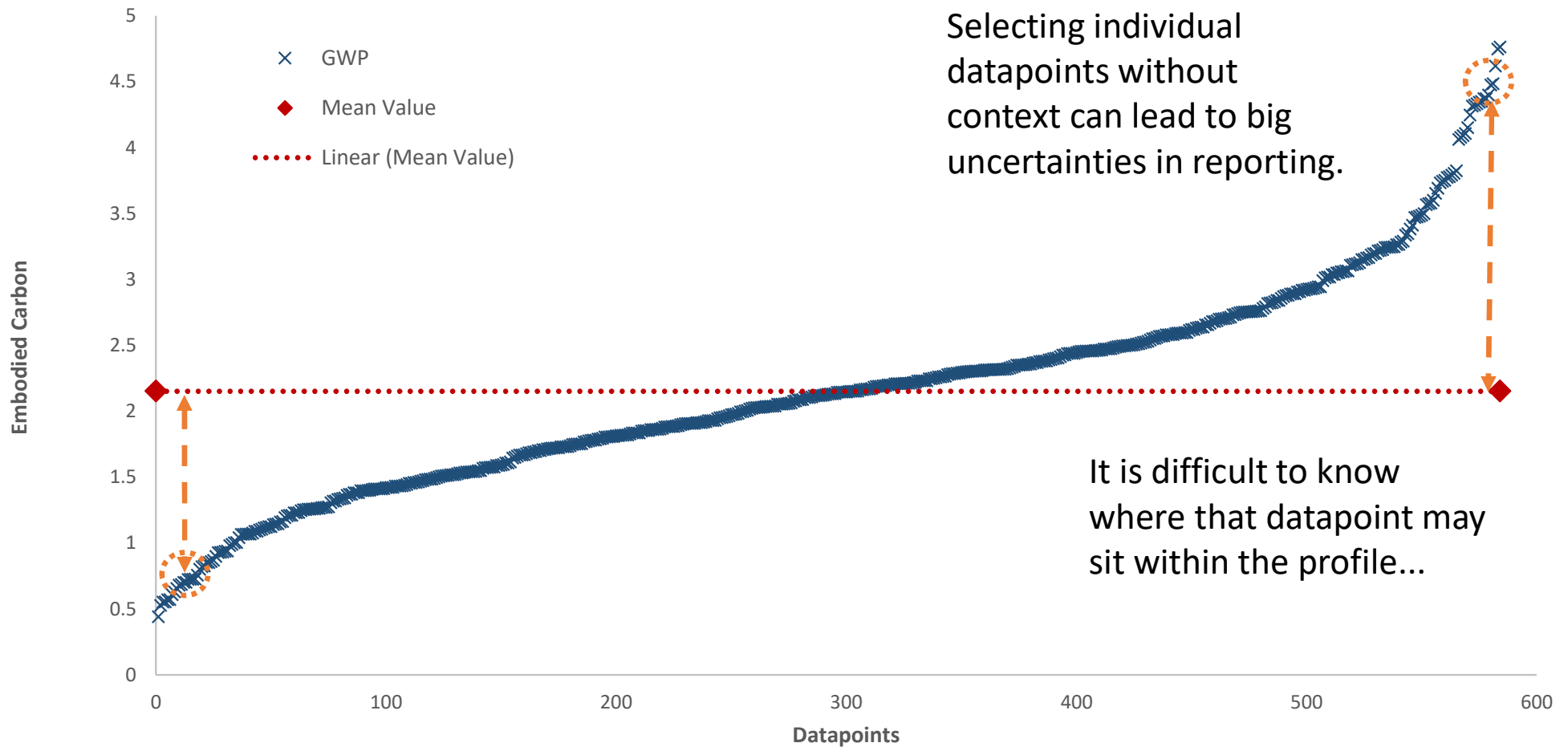
Bespoke - can focus on a targeted sub-grouping which more closely matches the required item (e.g., Ductile Iron Butterfly Valve)



Example: Bespoke vs. Generic Datasets



Example: Bespoke vs. Specific Datapoints





Case Studies and Examples of Bespoke Carbon Datasets

Case Study - Nationwide Builders Merchant

Requirements

- Better quality carbon factors to **improve Scope 3 reporting** for complex items.
- Better represent complex **MEP type products**, where generic factors are not readily available.

Approach

- Screening & grouping of products into distinct **Product Categories** for factor development.
- Development of bespoke **cradle-to-gate carbon factors** from analysis of EPDs/LCAs.

Outcome

- A Bespoke Carbon Dataset of **160+ product category factors**.
- Factors applied to a list of **3,400+ building products** for Scope 3 reporting purposes.



Case Study - Insurance Claims Software Provider

Requirements

- **Align carbon to existing cost estimating** for reporting of insurance repairs activities.
- Easily integrated into **software platform**.

Approach

- **First principles modelling** of carbon for resources used in existing schedule of rates.
- Alignment of carbon modelling to recognised standards (i.e. **RICS WLC, A1-5 & C**).

Outcome

- Bespoke carbon library of **2,000+ material, labour, and plant** resources.
- Reporting aligned to current schedule of rates.
- Integrated into software platform to present **cost & carbon** for insurance repairs activities.



Case Study - National Infrastructure Clients

Requirements

- Water Utility and Transport organisations aiming for **PAS 2080 certification**.
- Development of processes and background carbon datasets to **align Cost & Carbon estimating**.

Approach

- Develop overarching **carbon estimating approach** aligned to existing cost estimating.
- First principles (bottom-up) carbon modelling of majority of cost plan resources.
- Top-down dataset of bespoke **cost-to-carbon** (spend-based) factors used as fallback approach.

Outcome

- Development of dedicated **Carbon Library of resources** aligned to cost plan resources.
- Processes and reporting aligned with **PAS 2080 & RICS WLC Assessments** for built environment.



Could You Benefit from a Bespoke Carbon Dataset?



Contractors - using their own estimators and BOQ build-ups for design and build of projects



Cost Estimating or other Multidiscipline Consultants



Facilities Management - for repairs or renovation work etc.



Infrastructure companies – Procurement, estimating, sustainability

- Utilities: Water & Energy
- Transport: Road, Rail, Multi-modal
- Local Authority: Buildings
- Other Infrastructure: e.g., Marine, Nuclear, Aviation
- Flood Defence and Other Environmental Infrastructure

Today's Webinar - Recap

- ✓ Introduction
- ✓ Defining what "Bespoke Carbon Datasets" cover
- ✓ Comparison of Approaches for Bespoke Datasets
- ✓ Application of Bespoke Carbon Datasets
- ✓ Benefits of Developing Bespoke Carbon Datasets
- ✓ Case Studies and Examples of Bespoke Carbon Datasets

Next Webinars

Next Webinars -

- Whole Life Carbon Assessments of Buildings – 15th April 2026
- An Overview of Carbon Neutrality: Measure, Manage, Offset, Improve – 30th April 2026

Recap of earlier webinars - Watch these again at on our website...

- How to Produce an EPD: An Overview
- An Introduction to the Circular Ecology EPD Programme
- Organisational Carbon Footprints - From Measurement to Meaningful Action
- Product Carbon Footprints & LCAs: What You Need to Know

Keep an eye on our networks for more information

- Website - circularecology.com
- LinkedIn - linkedin.com/company/circular-ecology