

# BOS

BUILD OFFSITE

COLLABORATING FOR IMPACT

IS CO-HOSTING THE  
**OFFSITE SUMMIT**

AT

**OFFSITE  
EXPO**

17-18 SEP 2024

18.09.2024

**BUILD OFFSITE**  
**outputs**

Join in the conversation

@buildoffsite | @CIRIAupdates | @ExploreOffsite

#OffsiteSummit | #CollaboratingForImpact



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18.09.2024 12:45 – 14:05 | Session 3

**How offsite globally  
can deliver against  
net zero targets**



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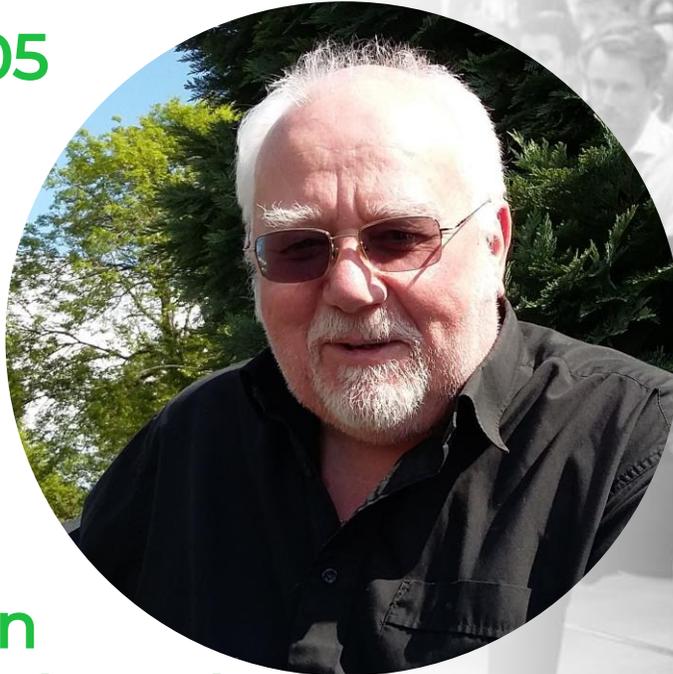
17-18 SEP 2024

18.09.2024 12:45 – 14:05

**Ken Davie**

Industry Advisor  
BUILD OFFSITE

How offsite globally can  
deliver against net zero targets



# Join in the conversation

@BUILDOFFSITE | @CIRIAupdates | @ExploreOffsite

#BUILDOFFSITE | #BOS | #CollaboratingForImpact

#ExploreOffsite | #OffsiteExpo | #OffsiteSummit

#Offsite | #Construction | #MMC | #Housing

#NetZero | #SustainableConstruction

# Celebrating 20 years of BUILDOFFSITE

Set up in 2004 as the voice of the industry, BUILDOFFSITE has sought to promote, support and increase the adoption of offsite and pre-manufactured solutions for the built environment.

*“To be the trusted independent voice of the construction industry with respect to offsite and pre-manufacturing, and to provide all relevant support to our members and other stakeholders.”*

# Join BUILDOFFSITE



Networking | Events

Exhibition Seminars

Site visits | Advice & Guidance

Knowledge Sharing | Publications

Marketing & Promoting Members

Influencing

# BUILD OFFSITE members



APPLY

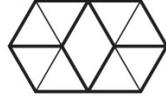


ARUP

ASDA



C-PROBE



HS2



# BUILD OFFSITE guidance 2022 – 2024

C-PROBE

buildoffsite

**Achieving sustainable resilience in new precast concrete structures**

*Taking precast concrete to a new level*

A collaborative research report from Buildoffsite and CIRIA

ciria

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**Offsite construction – concept design and delivery**

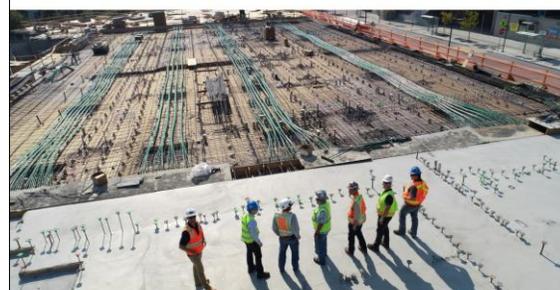
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ciria

**The management of IP specifically relating to MMC/offsite**

CIRIA and BOS guidance 'The management of intellectual property (IP) specifically relating to MMC/offsite' which will be published later this year.



Funded by

 Department for Transport

Supported by  
**BEALE&CO**



Nigel Fraser  
nigel.fraser@buildoffsite.com

Client Group proposal approved for 2023 – 2024

Performance specifications guidance

# Upcoming BUILDOFFSITE events

**2-4 October**

Structural Timber Awards  
2024

**13 November**

DfMA for net zero carbon

**20-21 November**

London Build Expo

**28 November**

BOPAS Forum

**4 December\***

BOS Christmas members'  
meeting

**Spring 2025\***

Using performance  
specifications to facilitate  
the adoption of MMC –  
new BOS/CIRIA guidance

\*Provisional date

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—AT—

12:45 – 14:05

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How offsite globally can deliver against net zero targets



**David Emery**

Supply Chain  
Sustainability School



**Keith Ridgeway**

Incredible Husk  
International



**Andrew Dewdney**

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APPLY Structure



**Andrew Cowan**

OneClick LCA

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**David Emery**

Sector Manager,  
Offsite, Digital & Wales  
Supply Chain Sustainability  
School

**How offsite globally can  
deliver against net zero targets**



## Whole Life Carbon Guidance for Offsite Construction

Report from the Supply Chain Sustainability School  
Offsite Leadership Group



[www.supplychainschool.co.uk](http://www.supplychainschool.co.uk)

## Whole Life Carbon Guidance for Offsite Construction

Report from the Supply Chain Sustainability School  
Offsite Leadership Group



Our research has revealed that nine significant opportunities exist for the offsite sector to help drive decarbonisation in construction projects, both new build and in the retrofitting of existing assets.

## Whole Life Carbon Guidance for Offsite Construction

Report from the Supply Chain Sustainability School  
Offsite Leadership Group



### PRODUCT STAGE



- 1 Reduced material needs** – through designing out waste, better procurement, and optimising the use of materials
- 2 Process improvement** – a repeated process allowing manufacturers to drive efficiencies
- 3 Decarbonising factories** – currently more straightforward than on a construction site
- 4 Use of innovative low carbon materials** – examples of good practice exist

### A1-A3

### CONSTRUCTION STAGE



### A4-A5

- 5 Faster build** – can lead to 30% less site energy use
- 6 Fewer vehicle movements** – can lead to 20% reduction of transport for materials, building elements and worker transport

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IN USE  
STAGE



B1-B5

7

**Design for maintenance** – maximising the asset life of the systems and structure of the building or facility

OPERATIONAL  
CARBON



B6-B7

8

**Better performing buildings** – up to half the energy use compared to traditional buildings

9

**Industrialisation of retrofitting** – re-use of existing buildings is inherently a lower carbon solution. Industrialisation of retrofit solutions has proven to provide significant emissions savings

## Whole Life Carbon Guidance for Offsite Construction

Report from the Supply Chain Sustainability School  
Offsite Leadership Group



### ENABLERS

Key actions for clients, designers, manufacturers, and assembly teams to take advantage of these opportunities.



Leadership and Strategy



Designing and procuring out carbon



Effective collection and use of data



Encouraging and applying carbon reduction techniques



Collaboration and knowledge sharing

## Whole Life Carbon Guidance for Offsite Construction

Report from the Supply Chain Sustainability School  
Offsite Leadership Group



**In summary, there is evidence that offsite construction can provide whole life carbon reductions, support retrofit efforts, and produce good quality assets which perform to high energy performance standards. However, there is significant room for improvement around collection and sharing of data, integrating this back into designs, and taking full advantage of opportunities to design with a focus on circularity.**

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**Andrew Cowan**

Head of Sales

One Click LCA



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# Decarbonising construction & manufacturing

## One Click LCA

Build Offsite Expo  
18th September 2024  
Andrew Cowan



# Decarbonise construction & manufacturing

# Who influences material purchasing?



Specifiers



Buyers

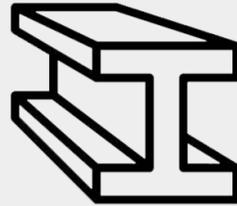


Manufacturers

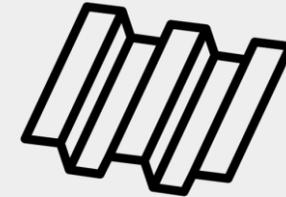
# Carbon Border Adjustment Mechanism (CBAM)



Cement



Iron & steel



Aluminium



Fertilisers



Electricity



Hydrogen

# How will CBAM impact **European manufacturers?**



- Increased raw materials costs (if importing)



- Level playing field with non-EU firms

# How will CBAM impact manufacturers importing to Europe?



- Ineligible to import to Europe, unless aligned
- Complexity and cost of compliance
- Incentive to create lower-carbon products
- May help differentiate & unlock new markets

# How will CBAM impact **buyers and specifiers?**



- Potentially higher prices for affected products



- Increased transparency

# How to win with CBAM



## Manufacturers

- Calculate embodied carbon emissions
- Invest in clean technology and processes
- Engage with suppliers



## Buyers & Specifiers

- Improve commodity traceability to reduce risk
- Select lower-carbon products for purchase
- Work with competitive, compliant suppliers

# EPDs unlock business (1 of 2)

## Environmental product declarations



Communicate the environmental impact products.



Support carbon emission reduction in the industry.



Help AEC teams choose sustainable options for projects.

# EPDs unlock business (2 of 2)

## Environmental product declarations



Optimise impact of products and market transparency.



Valid for five years according to relevant standards.



Achieve credits in certification schemes.

# Business benefits of EPDs

Secure your bottom line for CBAM



## EPDs help you meet your clients' needs

- Comply with legislation
- Help align with green building certifications
- Provide data for clients' carbon commitments

## Stand out in crowded product marketplace

- Demonstrate & prove product sustainability
- Get specified and win projects

## Future-proof your business operations

- Cutting carbon often reduces costs
- Cutting carbon limits exposure to carbon taxes
- Data helps you to create new, competitive products

# How to market your EPDs

Showcase your sustainability edge to win business



Get discovered by specifiers in One Click LCA



Promote on website, social, email channels



Brand your sales collateral with your EPDs

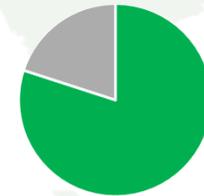
# One Click LCA By the Numbers

**+150 COUNTRIES**  
**~70,000 PROJECTS**  
**~200,000 LCA DATASETS**  
**+15 BIM INTEGRATIONS**

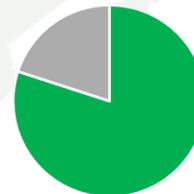
**16 Of The 20 Biggest  
Global Architects**



**16 Of The 20 Biggest  
U.S. Architects**



**8 Of The 10 Biggest  
Global Contractors**



**6 Of The 10 Biggest  
Manufacturers**



# Faster, affordable, scalable EPDs

## Classic, expensive EPD process

1. Manufacturer collects data
2. Consultant performs LCA
3. Consultant produces background report
4. Third-party verifiers must then validate
5. Program operators publish EPDs

- ✘ Several suppliers to coordinate
- ✘ Manufacturers has to manage it all
- ✘ Highly unpredictable process

## One Click LCA streamlines it all

1. Manufacturer collects data
2. Our tools, automation & support processes deal with the rest

- ✓ You need to collect your data
- ✓ Rest is automated
- ✓ Single point of contact

# EPD Generator

Unlock more business with a sustainability edge



## EPD Generator

- **Comply with ISO and EN** standards for manufactured products – construction and MEP products and other industries
- **Use the data to generate demand**
- **Easy data collection process**
- **Support & database** included





# Contact me



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[www.oneclicklca.com](http://www.oneclicklca.com)



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**Keith Ridgeway**

Chief Executive Officer

Incredible Husk International



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# Incredible Husk International

Carbon Neutral solutions provider



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# About us



Incredible Husk is an UK International Research and Development company, founded in January 2020.

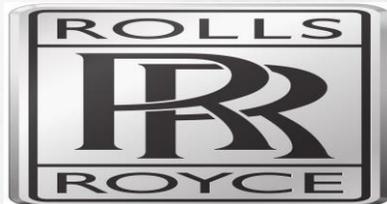
We provide one-stop **Carbon Neutral solutions and assessments** across industries.

Our goal is to **replace unsustainable high carbon footprint products** made from unsustainable and harmful **synthetic chemical materials**, which have a negative impact on the earth's ecosystem and all life.

# WHO Is Keith Ridgeway



Incredible Husk CEO  
Carbon & ISO  
Certification Expert  
BAMS Ai Software  
CQI & IIRSM  
Green World Gold Award  
Green World Ambassador  
UK Innovation Award Winner



ISO9001 Quality, ISO14001 Environmental, OHSAS 18001 (ISO4500) Health & Safety ISO22301 Business Continuity, ISO27001 Information Security, ISO29001 Oil & Gas , ISO39001 Road Traffic Safety, ISO50001 Energy Management, ISO55001 Asset Management, ITAF 16949 Automotive

# UK Legislation

## Environmental Protection Act 1990

**The Environmental Protection Act 1990** defines, within England and Wales and Scotland, the fundamental structure and authority for waste management and control of emissions into the environment

## Climate Change Act 2008

**The Climate Change Act 2008** The Act ensure that the net UK carbon account for all SEVEN Kyoto greenhouse gases for the year 2050 will below the level of 1990 to keep below 1.5 deg C. The SEVEN Kyoto greenhouse gases are: Carbon dioxide (CO<sub>2</sub>) 76%, Methane (CH<sub>4</sub>) 16%, Nitrous oxide (N<sub>2</sub>O) 6% & HFCs, PFC s, SF<sub>6</sub>& NF<sub>3</sub> 2%

## The Environment Act 2021

**The Environment Act** which became law in 2021, acts as the UK's new framework of environmental protection. Once the UK left the EU, rules on nature protection, water quality, clean air and other environmental protections that originally came from the EU Green deal and Fit for 55 were at risk. This Act is intended to fill the gap.

# International Standards Organisation (ISO) Management Standards & Climate Change

On February 29th, 2024, ISO updated all its certifiable management standards in a significant way, requiring organisations to consider climate change risk in their context and the needs and expectations of their stakeholders

**Clause 4.1** is understanding the organization and its context. The climate change addition to this clause is, *“The organization shall (meaning must) **determine** whether climate change is a relevant issue.”*

**Clause 4.2** is understanding the needs and expectations of interested parties, who may be affected by climate change



# Construction LCA and EPD standards for Scope 1,2 3

- **Cornerstone standards**
  - ISO 14025 – Environmental labels and declarations: Type III environmental declarations, Principles and procedures (cornerstone standard for EDPs)
  - ISO 14040 – LCA: Principles and framework
  - ISO 14044 – LCA: Requirements and guidelines
  - ISO 14067 - Product Carbon Footprint Requirements and guidelines
  - ISO 14068 - Carbon Neutrality Requirements and guidelines
- **Construction works specific standards**
  - EN 15643 – Framework for assessment of buildings and civil engineering works
  - EN 15978 – Sustainability of construction works, calculation method
  - ISO 21929-1 – Sustainability in building construction, sustainability indicators
  - ISO 21931-1 – Sustainability of buildings and civil engineering works, assessment methods
- **Environmental Product Declaration standards**
  - EN 15804 – Core rules for construction product EPDs
  - ISO 21930 – Core rules for EPDs of construction products and services <sup>42</sup>

# Construction Industry Structure of accounting principles and standards



ISO Standards - A Common Basis for Life Cycle Assessment  
ISO 14040/44 Life cycle assessment  
ISO 21929-1 Construction - Sustainability indicators



EN-standards  
EN 15978 Environmental performance of buildings - Calculation method\*  
EN 15804 Environmental product declarations

National regulations and voluntary environmental certification schemes



Level of details

# what are the scopes of carbon emissions?



**scope 1**

**GREENHOUSE GAS EMISSIONS**

Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles).

**SOURCE: EPA.GOV**

**SCOPE 1**  
Direct Emissions from Reporting Company

**scope 2**

**GREENHOUSE GAS EMISSIONS**

Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling and are a result of the organization's energy use.

**SOURCE: EPA.GOV**

**SCOPE 2**  
Indirect Emissions from Upstream Activities

**scope 3**

**GREENHOUSE GAS EMISSIONS**

Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

**SOURCE: EPA.GOV**

**SCOPE 3**  
Indirect Emissions from

**Upstream Activities**  
Purchased Goods & Services  
Capital Goods  
Fuel & Energy Related Activities  
Transportation & Distribution  
Waste Generated in Operations  
Business Travel  
Employee Commuting  
Leased Assets  
and...

**Downstream Activities**  
Transportation & Distribution  
Processing of Sold Products  
Use of Sold Products  
End-of-Life Treatment of Sold Products  
Leased Assets  
Franchises  
Investments

# Whole life carbon assessment information

## Whole life carbon - system boundary

### Embodied carbon/life cycle embodied carbon

#### Upfront carbon

| Pre-construction   | Product             |           |               | Construction |                               |
|--|---------------------|-----------|---------------|--------------|-------------------------------|
| A0   | A1                  | A2        | A3            | A4           | A5                            |
| Nonphysical process before construction, preliminary studies, tests and design | Raw material supply | Transport | Manufacturing | Transport    | Construction and installation |

Upfront biogenic carbon

| In use |             |        |             |               |
|--------|-------------|--------|-------------|---------------|
| B1     | B2          | B3     | B4          | B5            |
| Use    | Maintenance | Repair | Replacement | Refurbishment |

Biogenic carbon

| End of life                   |           |                  |          |
|-------------------------------|-----------|------------------|----------|
| C1                            | C2        | C3               | C4       |
| Deconstruction and demolition | Transport | Waste processing | Disposal |

Biogenic carbon

#### Operational carbon

|    |                    |
|----|--------------------|
| B6 | Operational energy |
| B7 | Operational water  |

### Information beyond the construction works life cycle

Benefits and loads beyond the system boundary

D1  
Net output flows from reuse recycling energy recovery other recovery

D2  
Exported utilities, e.g. electric energy thermal energy potable water

Biogenic carbon



+



+



Global LCA & EDP  
software experts

ISO Management System  
Ai Software

UK Government Crown Services  
g-cloud 14 approved

Award winning implementation  
and auditing of ISO standards,  
LCA and EPD specialists.

# BAMS AI & PMS IoT Process



Zero carbon production as a minimum but we strive for negative carbon production at all times

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Interactive  
discussion and  
Q&A

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