Edition 2 March 2024

THE CONISBEE CARBON CIRCULAR

The *Conisbee Carbon Circular* is bought to you by the Sustainability Group. Here we cover Conisbee's sustainability journey as well as global stories on carbon in construction. Stay informed, inspired, and empowered as we navigate the path to a greener future together.

Find out what we as a company have been up to in the section ECO-ENDEAVOURS p.3

The Sustainability Scoop... ...brings you notable stories about carbon in the construction industry across the world – keeping you up to date with the latest technology, most recent updates to legislation / guidance and other interesting news. p.5

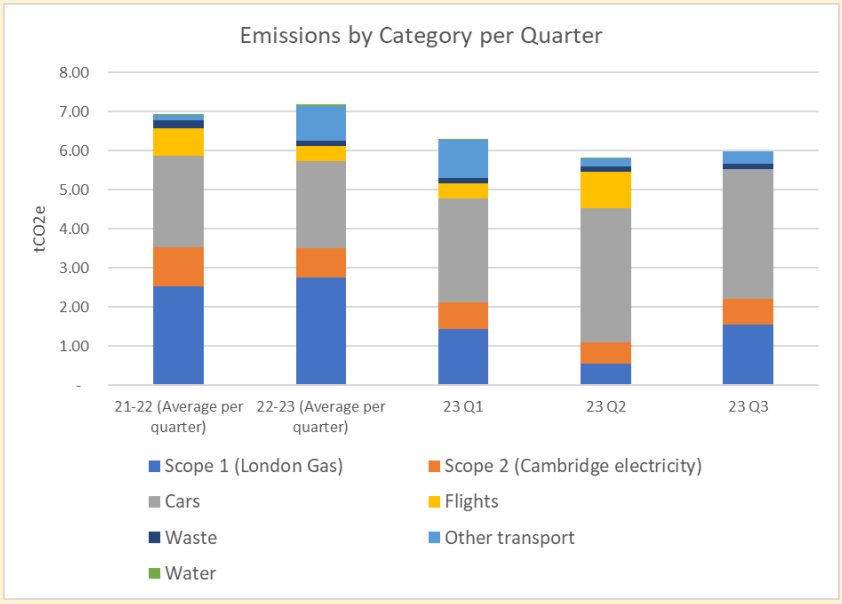
SPOTLIGHT STORY ON.... Renovations to a Grade II Listed Hotel p.4

CASE STUDY: LONDON OLYMPIC STADIUM – CIRCULAR ECONOMY IN ACTION p.6

CONISBEE OPERATIONS EMISSIONS

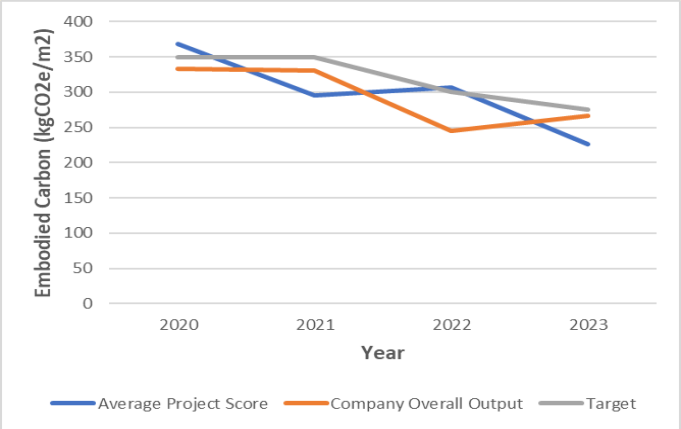
See below for the latest Scope 1-3 greenhouse gas emissions associated with our operations for the first three quarters of 2023-24, as well as a comparison with historic data from the previous two years.

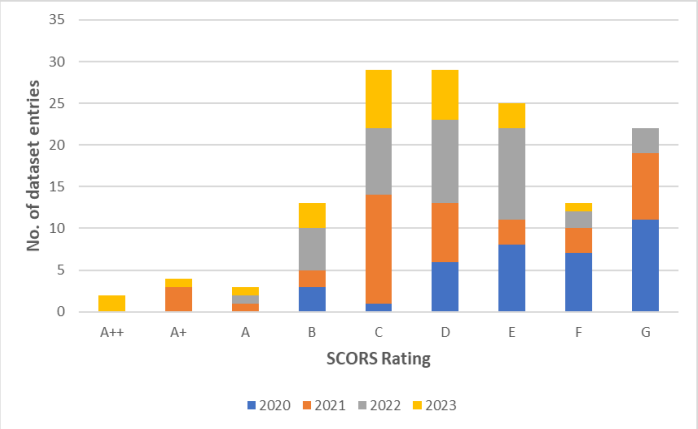
- Car journeys account for *over half of our emissions* in 23-24 Q2-3, followed by energy usage in the *London* and *Cambridge* offices.
- Flights have a *disproportionate impact* on the figures with one return flight in 23 Q2 making *up 15%* of all emissions.
- The overall trend continues to be *downward with emissions* in all of the first three quarters of 2023-24 coming in *less than the average* for 2021-22 and 2022-23.



EMBODIED CARBON DATASET TRENDS

- Dataset entries in 2023 showed an overall company output of *266 $kgCO_2e/m^2$*, meeting our target of *275 $kgCO_2e/m^2$*. The below figure shows the trend of our project carbon over time – we'd like to continue the downward trend, so for 2024 we have a new target of 250 $kgCO_2e/m^2$.





- In the figure above, the blue line averages all the individual project scores, while the orange line sums the total embodied carbon and divides by the total GIFA to give an overall company output, i.e. the orange line accounts for some projects being much larger than others.

- The figure on the right shows one highlight of 2023: our *first two A++ SCORS rated* entries into the dataset! Refurb projects continue to excel with all the projects rated A or better refurbs.

In 2023 we had 24 dataset entries, down from 40 entries in each of 2022 and 2021. Group A led the charge with 11 entries in 2023 – can anyone overtake them this year? Keep adding your projects to the dataset which can be found on CS on the embodied carbon tab of the landing page or under The Herd/Technical/Conisbee Guides & Procedures/Environment & Carbon.

IDEAS IN DEVELOPMENT

Embodied Carbon Guidance & Calculator Updates

Coming soon is an update to our current guidance for extracting volumes from Revit to carry out carbon calculations. This will include some additional hints and tips on some of the pitfalls to watch out for. We're also investigating making some additions to the available materials and products that can be selected in the Conisbee embodied carbon calculator. Current ideas include adding more concrete mixes, JJI joists, additional pose-joist sizes, masonry repair mortar, and Comflor. If there's any more additions to the dataset or guidance that you'd like to see, please let us know – we want to make carbon calcs as easy for you to do as possible!

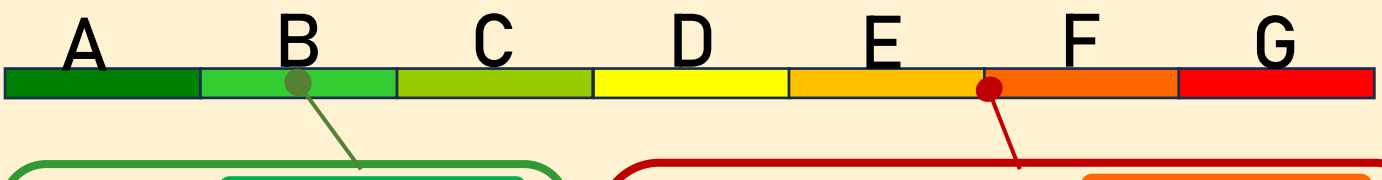
Circular Economy Details

Designing for deconstruction is a key circular economy principle. We're looking to develop a set of standard details to aid with this. If you think you have any useful details from a past job, please let us know. Remember a pdf copy of the Instructed Circular Economy Guide can be found on CS here.



Have you got any ideas for how we can improve our carbon reduction response? – if so let us know by dropping the Sustainability Group a message.

SCORS SPECTRUM



220656

171 kgCO2e/m²

Winner of the Thunberg Award for Best New Build



Two-storey new build private home. Passivhaus timber frame construction, including suspended timber ground floor, easi-joist first floor, JJI joist external walls and roof. The client had the original structural drawings from the existing 1966 timber frame house on the site, so we have designed the timber ground floor and some columns to be able to use as much reclaimed timber from the existing house as possible.

220484

354 kgCO2e/m²

Winner of the Sunak Howler



Two storey new-build private home. Blockwork cavity walls, beam and block floor, posi-joist first floor and roof. The project was originally designed as a refurb, but later changed to demolish and new-build due to party wall issues. The same design was kept for the new-build option despite being inefficient.

Lack of continuity between ground and first floor walls means several of the first-floor walls are supported on steel beams, and there were challenges in achieving lateral stability. No GI was undertaken and the ground is suspected to contain clays, with several nearby trees leading to very large concrete foundations. A retaining wall is required to one side of the plot. Long, narrow shape of building means small GIA for large blockwork perimeter and foundations.

ECO-ENDEAVOURS

What have we busy 'conis'-BEES been up to?

Masters Projects with the University of Cambridge

Our Cambridge office is teaming up with the University of Cambridge to sponsor some 4th year research projects. Several of the project proposals we've put forward are sustainability focused, for example looking at how our real-world data can be used to improve early-stage carbon estimates.

Joel & Katie Planting



Katie and Joel contributed some social value hours by joining the local Islington Clean Air Parents (ICAP) group in January, to help with planting in a local pocket forest near Highbury and Islington. The pocket park was donated a van load of plants by a local landscape firm that had a surplus of plants and shrubs that were going spare. Find out more here.

Renewable Energy

The London office electricity supply has switched to certified 100% renewable energy. 10 trees have also been planted to support reforestation projects aimed at reducing carbon emissions on a global scale.

Spread the Word – please help to spread the word on all things sustainability by sharing this newsletter with other industry professionals.

SPOTLIGHT STORY

Renovations to a Grade II Listed Hotel in London (220704)

This London hotel is formed from a row of eight Grade II listed mid-19th century six-storey townhouses.
The buildings have been collectively in use as a hotel for the last 40+ years. Numerous internal alterations have been made to the buildings over this period including the series of townhouses being merged into the hotel we see today.

The proposals involve the removal of several load-bearing brickwork and timber walls in their entirety, plus the formation of door openings through internal load-bearing brickwork and timber stud walls, as well as undertaking necessary repairs and strengthening works to the structure. The project was to run in two phases with 30% of the hotel operational during Phase I. The intention of the client is to reservice and refit the entire hotel whilst joining together rooms to create bigger spaces and significantly improve circulation and commercial gain of the currently untapped basement areas.

Conisbee got involved in the project at Stage 2 when Kevin was called in after a partially intact original cantilever stone staircase was discovered, in one of the mock-up rooms before the full works took place. The staircase was in poor condition and required safe removal. Whilst reviewing the staircase we got a glimpse of the proposed structural alterations.



Following this we were appointed to complete an independent technical review (category III check) of the current structural proposals at the time, prepared in 2017/2018 by a different engineering firm. The aim of this review was to identify whether the proposals were proportionate, suitable, and appropriate for the application whilst also identifying any structural concerns.

In outline our review found substantial areas of proposed structure that were not required, based on our experience of similar historic properties and structural fundamentals, offering various reductions to the structural package of works and savings in material tonnage both in the permanent and temporary works. Based on the permanent steelwork alone the total embodied carbon was reduced from 48 tCO_2e (Previous engineers' scheme) to 26 tCO_2e (Conisbee initial scheme).



At this point in time the hotel was still fully functioning, therefore the exact structural layout out was not fully known and there were a number of assumptions built into both schemes. Following the technical review, we were appointed to progress the Stage 3 design to Stage 5 while the contractor was on site, which meant a quick turnaround of our design package and constant coordination and inspection of the opening up works in with LBC consent. Evangelos of Group J has been acting as the lead designer for the project.

We were therefore able to further reduce the embodied carbon down to 11 tCO_2e by eliminating further steel structures where load paths became clear and by justifying the existing structure for the new loading where we could. In many areas we also replaced steelwork and pre-cast lintels with C24 timber members.

Inevitably during the strip out of the finishes, we found various repairs/strengthening works that were needed and as a result, there would have been multiple interventions that will have added to the overall embodied carbon value but a sustainable approach of using predominantly timber has been followed. The carbon calculations for this comparison are based on the weight of steel only due to this being the common and most carbon heavy material within the previous engineers' original scheme and through into our new scheme.

One of the challenging things with a restoration/repair project is having a suitable comparison and carbon scale. The original engineers' scheme didn't detail any of the timber and masonry repair work, strengthening of the flitch beams and strapping of the floor plates etc. that we had to carry out as part of the works and therefore this has not been included in the carbon calculations.

By Holly Morgan Group J

SUSTAINABILITY SCOOP



Structural Engineers Declare Summit

The Structural Engineers Declare annual summit was held in October 2023. Melissa, who attended, said, "My main takeaway was that the picture is much bigger than embodied carbon – circular economy is also really important, and we should look to push this in our designs. Even if the idea isn't pursued, starting those conversations can help spread the word and lead to circular economy design principals being integrated into future projects.". All the presentations from the summit can be found here.

Imposed Loading Updates

The draft revision of the Eurocodes is looking to harmonise imposed loading for offices across countries. Using the draft Eurocodes with the current factors in the UK NA would increase imposed loads in the UK. However, we can influence the values used in the UK by contributing to the discussion on the revised UK NA, which will come alongside the revised Eurocode. With the aim to inform the new UK NA, academic research is being carried out into UK office loadings, with initial research suggesting a total imposed loading of 2.5kN/m^2 for office loading, rather than 2.5kN/m^2 + 1.0kN/m^2 partitions, is sufficient. More information is in the BCO and EC1 Consultation talk here.

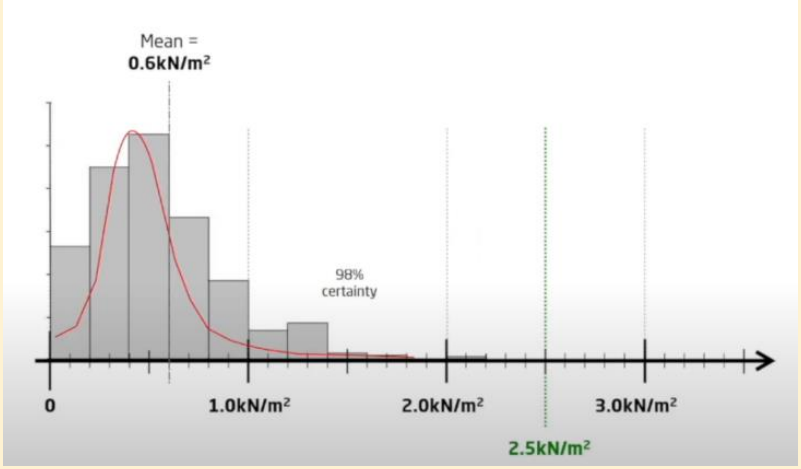
Updates to BS8500:2023

The updated BS8500 has now been published (Nov 2023). This change to the standard increases the range of lower carbon concretes that can be specified. The Concrete Centre have launched a new publication '*How to design concrete structures using Eurocode 2: BS 8500 for building and civil structures*', which provides guidance on how to use the new standard to reduce embodied carbon. The recording of the launch webinar can be watched here and the presentation slides can be downloaded here.



Efficient Use of GGBS

IStructE have published a paper on the efficient use of GGBS. GGBS is a limited resource so, while global supplies must continue to be fully utilised, locally increasing GGBS use is unlikely to decrease global emissions. The free talk on the paper can be found here.



BECD

The Built Environment Carbon Database has been launched. The database aims to become the main source of carbon estimating and benchmarking for the UK construction sector. Watch the launch talk here. We are currently looking at adding Conisbee's embodied carbon data to this collaborative database.

Futurebuild

A three day exhibition showcasing advances in sustainable construction and emerging technologies for creating a better built environment. More information on Futurebuild can be found here.



Podcasts

There are plenty of great sustainability podcasts out there – do you have any favourites?

CASE STUDY

London Olympic Stadium: Adapting Design to Incorporate Repurposed Steel Pipes – Circular Economy Principles in Action

The London Olympic stadium is a contemporary example of resource-led design. The Olympic Delivery Agency was keen to reduce the environmental impact of construction. During early discussions with Cleveland Steel & Tubes Ltd, it was identified that unused oil and gas pipes, left over from previous contracts, could be used as the large diameter tubes in the main roof structure. The design of the roof was, therefore, developed around the properties of the available materials.

This project followed the 'requirement — resource/design — construct' paradigm, with the design being adapted to suit the available materials.

The stadium is juxtaposed against the ArcelorMittal Orbit in the foreground. This huge steel sculpture is an example of a 'requirement — design — resource — construct' approach, with the website proclaiming that the project uses "enough steel to make 265 double decker buses".



UPCOMING TALKS

Tue 26th March 17:00 – 18:00 Online
FREE Webinar (ICE): Implementing the UN Sustainable Development Goals as Civil Engineers. Book your place here.

Wed 8th – Thurs 9th May Old Billingsgate London:
Footprint+ Conference: The UK Property Event for a Zero Carbon Future. More information can be found here.



Wed 19th June 12:30 – 13:30 Conisbee London Office & Online
Conisbee CPD: Embodied Carbon Update

Wed 26th June 09:30 – 17:00 Hamilton House, Mabledon Place, London
UK Timber Design Conference. Find out more here.



Sustainability Group Info

Your Conisbee sustainability group is ….

Allan Dunsmore (G)	Matthew Quant (E)
Beena Doal (H)	Melissa Nash (A)
Helen Hawker (L)	Sandra Dejczoova (H)
Holly Morgan (J)	Simon Prior (P)
Jake Dooner (E)	Steve Marks (A)
Jay Shann (D)	Tanya Blackwood (H)
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This edition was edited by:
Yasin Luhar & Melissa Nash

Thank you to the following contributors:
Holly Morgan
Jay Shann
Joel Waugh
Rachel Fallow
Steve Marks

If you would like to contribute to the newsletter – whether you have a case study of interest, a project that's done really well or really badly, have attended an interesting lecture, or have presented one yourself – then let someone on the sustainability group know.