

Designers driving decarbonisation through PAS2080



Interchange 2024 – Round table summary



Why this topic?

The climate crisis is the defining challenge for our generation, and as engineers we have a pivotal role to play in addressing the issue. PAS2080:2023 Carbon Management in Buildings and Infrastructure (PAS2080) has been recognised across industry as a key tool to delivering decarbonisation. The recent ICE State of the Nation: Infrastructure in 2024 report notes:

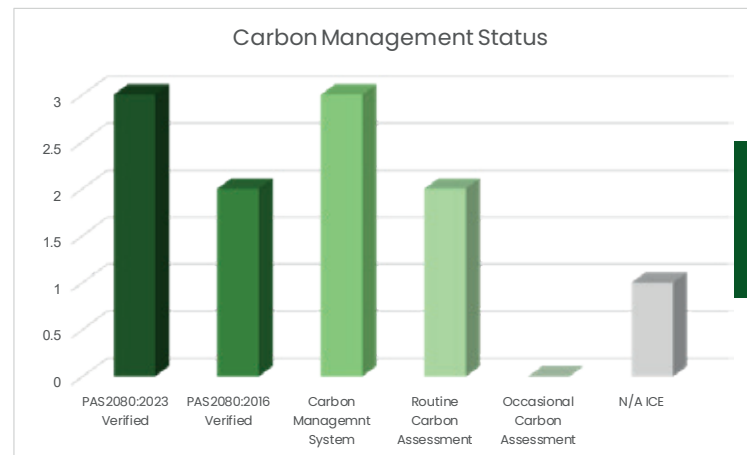
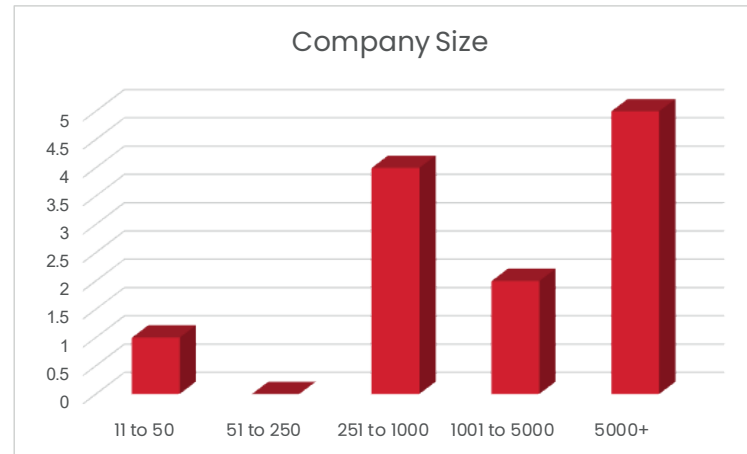
“Carbon management must become mainstream practice for ICE members.”... “It is the ICE’s view that the consistent application of the principles of PAS 2080:2023 across the institution’s civil engineering community and professional practice will help to deliver national net-zero policies around the world.”

Aim of the discussion

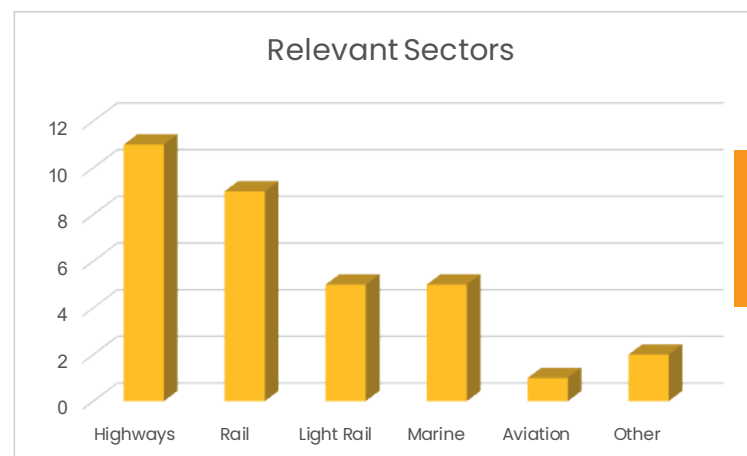
The aim of the session was to identify the actions we can take **together** as a collaborative of ‘designers’ under PAS2080 to accelerate the use of the designer role in decarbonising infrastructure. In the context of the climate emergency, and the need to act quickly, we wanted to find the parts of the carbon management process where we can put competition to one side and work together. Ultimately, we want to free up our time and creativity to focus on the parts that will really make the difference in reaching Net Zero.

Who was involved?

The round table had 12 participants from across the design sector; large, medium and small organisations, with individuals approached who could represent their personal, organisational and also sector group views.



Across the board -
Not client driven in carbon consideration

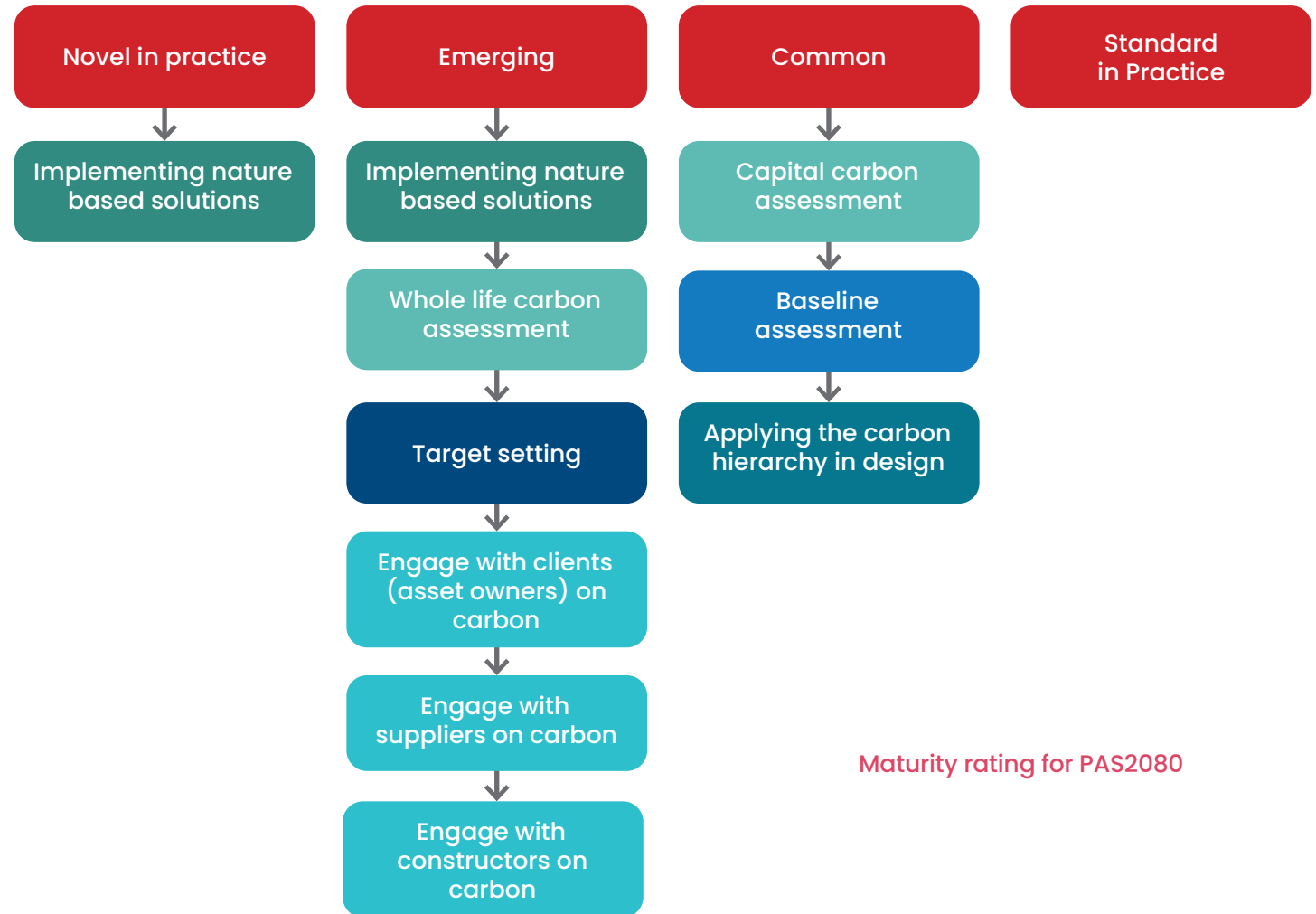


All in the UK
with some international use

The biggest challenges we face as designers delivering projects to PAS2080:2023

The first part of the discussion was to use our collective experience to rate the 'aspects' of PAS2080:2023 in terms of how mature the implementation of them is in industry.

The graphic opposite illustrates the *general* view of the group. There were of course some differing experiences, between organisations, sectors, and projects.



Maturity rating for PAS2080

Nature based solutions

There was consensus that nature-based solutions present a challenge, however there was some debate on whether it was the understanding of what these solutions could be or the successful application of them in projects. The view was that there is good expertise, guidance and advice on what can be achieved; however, it takes commitment of the whole project team to see them realised making application more challenging. Client approval / drive to deliver is a key factor in success. The biodiversity net gain requirements for 10% through planning, is driving a shift to more focus on nature in infrastructure which should help this aspect going forward.

It was also flagged that for smaller organisations that don't have in house ecology / landscape teams accessing the relevant expertise for nature-based solutions is more of a challenge..

Whole life carbon assessment

The issue of carbon assessment was another aspect with some mixed views. It was generally agreed that the capital or construction carbon elements

(A1-5) are easier to assess than later lifecycle stages, similarly user carbon is harder to assess than other life cycle stages.

Completing consistent carbon assessments

across the sector was a point of challenge in this aspect. Whilst guidance exists, there is no standardised methodology infrastructure carbon assessment that can drive consistency.

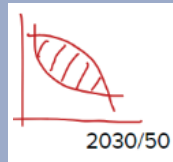
Target Setting (and baselines)

Baselines and target setting garnered a lot of discussion in the session with a range of views on what could be done, and what is being done. We acknowledged that targets should be set by asset owners and aligned with their own science-based targets for reaching net zero. However, it was also clear that there are few clients that are mature enough in their own carbon journeys for this to be a commonplace reality on projects. So, the question becomes, as designers what can we do ourselves?

Access to meaningful consistent data to use as a starting point for baseline setting is a

challenge, at asset level or at component level. We need to be clear that these are accurate guesses, albeit as accurate as we can be. Care needs to be taken not to over inflate a baseline and to ensure there is transparency in the assumptions made.

Target Setting (and baselines) - The challenge was raised as to whether there should even be a single baseline and target, or whether it is better to have a rolling improvement plan that looks to reduce carbon at every subsequent stage of the project compared to the last. For very long duration schemes, as technology improves over time, this may be a better approach.



We won't necessarily take a straight line from baseline to target, and without the intermediate steps defined we could be pushing a bigger decarbonisation issue down the line. Some

target setting approaches discussed were:

- aligning with the rate of reduction required from the CCC carbon reduction pathways;
- aligning with the rate of reduction in the IEMA significance and reduction curve;
- in the absence of anything else setting a basic reduction target to get started gives direction and allows us to start to build the process. The target can be developed over time.

The reality is that it is very hard to prove that the quantification of baselines and targets are "right". Targets really do work when they are used well, for example in the NH Lower Thames Crossing project where a carbon limit was set, and the tender process / contract clauses promote further reductions. However, we also noted that they can drive perverse outcomes and even greenwashing

Engaging with clients

When it comes to engaging with clients (asset owners / managers under PAS2080) there is a wide range of maturity and approach that designers see. Where PAS2080 has been applied, experience shows substantial savings can be made at no additional cost, e.g. National Highways believe 30-50%

savings are achievable at no cost premium.

Engaging with Clients - In some cases, we see attrition of commitment at middle management. There may be very clear leadership and goals from the top with net zero carbon plans in place, and enthusiasm for delivering low carbon within the project teams, but if the Project Managers in the middle are not on board they can easily veto low carbon

solutions or ideas. This may be down to training and understanding or a need for a cultural shift away from simply doing what has always been done before.

One of the cultural challenges we face is that, when it comes to financial budgets, you simply can't spend money you don't have. However, when it comes to carbon, there isn't the same external hard stop on 'spending'

Designer actions to accelerate the maturing of PAS2080 in infrastructure

To really progress in delivering decarbonisation using PAS2080 we need to be able to move aspects of the process from the novel and emerging towards standard practice. In the context of designers using the PAS, we considered priority aspects and ways in which we can address the challenges. We looked at actions we can take together in collaboration, as opposed to working in competition, as well as actions we can individually take in our own organisations.

The ideas raised have been split into two categories.

The what	The tangible things that need to happen
The how	The facilitating mechanisms that will help us deliver action

The what

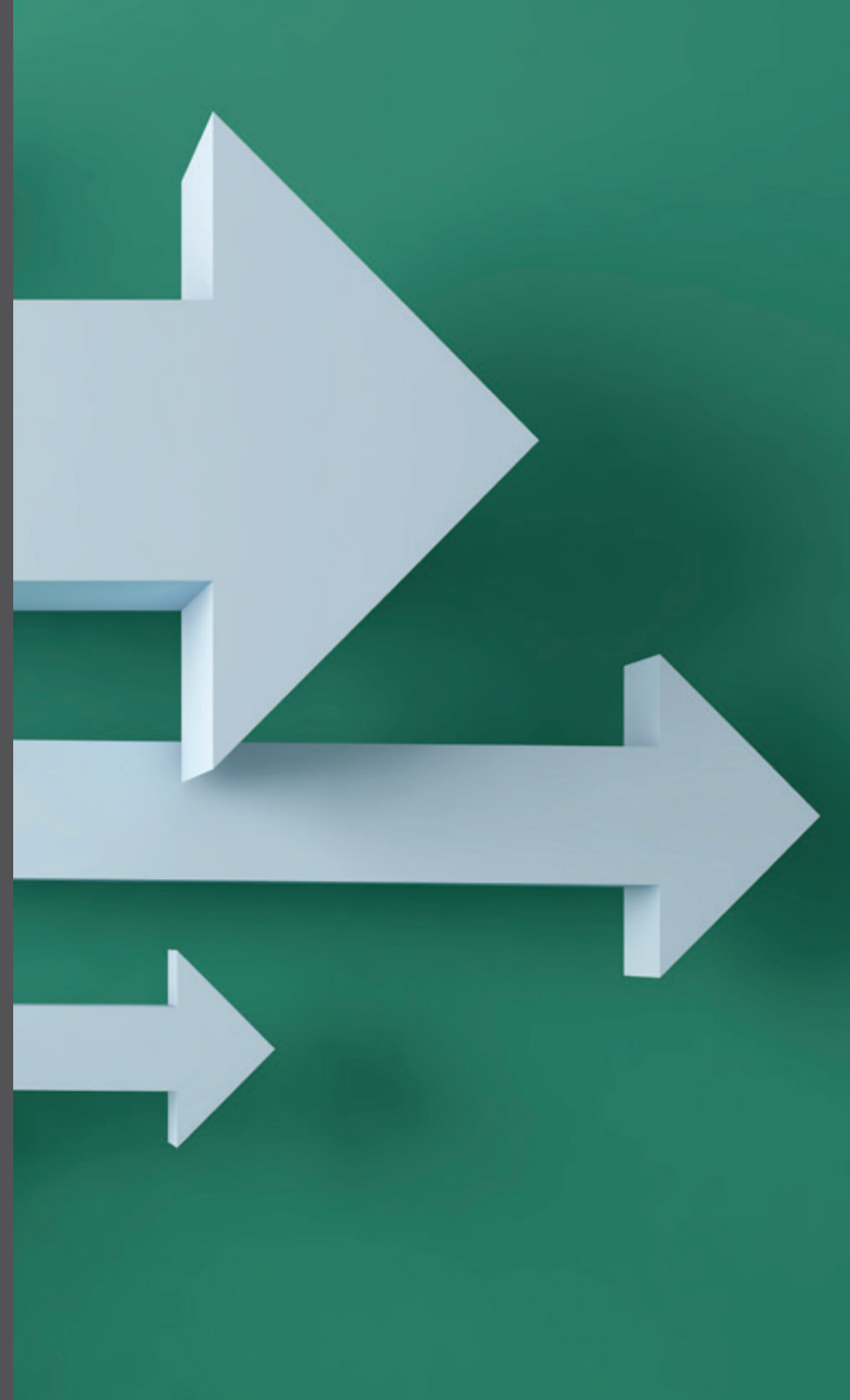
Designer driven decarbonisation – Just do it

The application of the carbon hierarchy was generally rated as a more commonplace aspect of PAS2080. For those not already engaged, we discussed ways to de-mystify carbon assessment and ultimately 'just do it'. Access to the data to ensure the lowest carbon option is selected is key – and that means lowest whole life carbon, not just lowest capital carbon. Carbon calculations are not difficult sums – adding and multiplying – there is of course nuance in where the numbers come from, but to get carbon into the

decision-making process should be straightforward.

Whole value chain training was highlighted to improve confidence for all parties, and that includes SMEs. Applying the carbon hierarchy in projects is not just the role of the specialist, all designers need to do this.

Post round table question: Skanska are taking steps to open source share their PAS2080 procedures for the benefit of others looking to adopt a compliant system. Can we as designers do the same to help other organisations to develop Carbon Management Systems?



Value for carbon not value for money

As designers we can start to change the conversation and present our designs and ideas in a different way.

We can move the conversation to a broader discussion of the benefits and outcomes from a project. Having KPIs that reflect the full range of outcomes can help to maintain momentum from initial concept through to delivery and broaden the conversation at key decision points.

We discussed representing a matrix of benefits that can be achieved – delivering ‘value for carbon’ as opposed to value for money.

Share the data we need make move towards standard practice

One of the hardest challenges we need to crack is sharing data that can help us all move forward. We need to find a route to share carbon data from projects – at a macro level at least – to help the industry move forward with baselines, benchmarks, and target setting. We simply don’t have time in a climate emergency to compete on the basis of data ownership, and for smaller companies there isn’t the time or capacity to build independent databases before we decarbonise our designs.

Having an open-source centralized assembly of carbon data would help us all set baselines and contextualise our decisions. We need to challenge whether there is commercial advantage in knowing how much carbon is in assets that have been built, or whether the advantage is really in the solutions to reduce it.

The comparative example raised is the British Geological Survey (BGS) shared database of borehole records. Data from ground investigations is shared for the benefit of all, rather than only being kept in company archives. Can we have a similar centralised

carbon database? We noted that there are already some moves towards this in industry, for example; Net Zero Bridges are building a bridges carbon database and guidance on calculating carbon for bridges, IStructE are looking at a SCORS style carbon rating scheme for bridges (and potentially other assets), and the Built Environment Carbon Database (BECD) is open source database for carbon assessments. How can we accelerate adding data to these or other tools?

Post round table question: Is there a way to take advantage of AI in delivering a mechanism to collate and interrogate carbon assessment data of different types and qualities? Having had an introductory conversation with a company in this space there appears to be mileage in investigating the option.

Client buy in

We discussed how, from a designer perspective, engaging with clients on carbon has some real challenges but also opportunities. We recognised that we can’t rely on the argument to just do the right thing, because it is the right thing to do. We can help depoliticise carbon and bring the conversation back to the benefits, particularly where ESG measures are required to secure funding for projects. Addressing carbon isn’t just about ‘being green’, it makes good business sense.

Positive engagement with clients has come from applying a ‘carbon lens’ on top of ‘value engineering’ exercises saving materials (incl. transport), programme, costs and carbon. Having good case studies that demonstrate this help to show clients that adopting PAS2080 in their schemes and projects need not come at a risk, and in fact offers a breadth of benefits. We can, and should, use cross sector or cross client experiences to encourage and support clients in mandating PAS2080 and raise the bar.



The how

Governance and the 'Holistic Decision Maker'

Accountability and responsibility for carbon reduction through the project development requires better governance and chain of custody. This is particularly relevant for long duration infrastructure projects that may have multiple designers inputting to the scheme development. We discussed whether there should be third party assurance of carbon assessments, or at least rigorous checking procedures in line with the way we treat designs.

We discussed the idea of a 'Holistic Decision Maker'— someone who has the authority to make decisions and can bring cost, programme, carbon, risk etc together and balance the trade-offs. Can a designer do this or facilitate this? This could be a "Sustainability Champion" on a project, similar to the Design Champion required for major projects. Someone who can be at the table where key decisions are made and represent sustainability. We also raised whether this can be part of the "lead designer" role.

A forum to drive action

This was a short but rich round table discussion, to really make a change we need a forum through which we can develop the ideas and deliver some actions. There is a lot of existing activity in this space and we want to take full advantage of that. The round table participants were involved in / chairing several of the industry groups working in this area.

The initial proposal was to approach the ACE Climate Change Advocacy Group to act as a vehicle to collaborate on the actions identified above. This group represents the consultancy, and so designer, element of the sector and is therefore well placed to focus the voice of the designer.



With thanks to the participants

Facilitated by

- Natalie Cropp, Sustainability Group Director (Tony Gee)
- Francesca de Petris, Sustainability Principal (Tony Gee)

Attendees

- Alice Berry
- AtkinsRealis
- COWI
- Cundall
- Ian Farmer Associates
- Institution of Civil Engineers
- Mott MacDonald
- Pell Frischmann
- Ramboll
- Waterman Group

The sector groups represented

- ACE SME Forum
- ACE Climate Change Advocacy Group
- Civil Engineers Declare
- Deep Foundations Institute
- European Federation of Foundation Contractors
- ICE North West
- Net Zero Bridges





Tony Gee