



UK Net Zero Carbon Buildings Standard

December Quarterly Update

15 December 2023

BBP BETTER BUILDINGS PARTNERSHIP



The Institution of **StructuralEngineers**



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Hello!

It has been a momentous year for the development of the UK Net Zero Carbon Buildings Standard. I am pleased to share our latest updates with you in our final Quarterly Update of 2023.

We saw a huge response to our Technical Consultation, with over 500 individuals and organisations sharing their thoughts and insights. **Thank you to everyone who responded.**

This Update is focused on major developments since summer. It starts with a progress update and an overview of the consultation. It then covers major updates and a general overview of the technical topics, explaining the relevant Consultation responses and next steps. Finally, it describes our next steps.

I have been working as the Technical Project Manager for the Standard for nearly a year. I am now stepping into the role of Chair of the Technical Steering Group (TSG). This role was previously held by Clara Bagenal George, who will remain on the TSG as LETI's representative. All those working on the Standard, myself included, are immensely grateful to her. We thank her for her fantastic work as Chair, and for her continued support as a TSG member.

The development of the Standard is made possible by the collaborative efforts of hundreds of volunteers across the Industry, as well as our sponsors and support team. Everyone who supports us is playing an important role in defining Net Zero Carbon Buildings in the UK. I am immensely grateful to you all for your continued support.

With the launch of the Beta Test standard set for Spring 2024 I expect we will have plenty to talk about in the next Quarterly Update. Until then, thank you for your interest, and I hope you find this update insightful.



Katie Clemence-Jackson
Chair, Technical Steering Group

Contents

1. <u>Background</u>	4
2. <u>Progress since the Technical Update</u>	11
3. <u>Consultation Response Overview</u>	15
4. <u>Major Updates</u>	19
5. <u>Technical Consultation Findings</u>	32
6. <u>Next Steps</u>	38



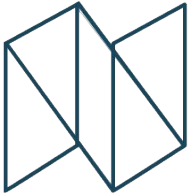
1. Background

A recap of the Standard's origin, principles, and progress



UK Net Zero Carbon
Buildings Standard

Origins of the Standard



In May 2022 a cross-industry Steering Group, representing stakeholders across the built environment, joined together to develop a Standard for to define the requirements for buildings in the UK to be Net Zero Carbon (NZC).

The UK Net Zero Carbon Buildings Standard, or “The Standard”, will enable our industry to robustly determine whether our built assets are Net Zero Carbon, and in line with the UK’s climate targets.

1. Background

What will the Standard cover?

The Standard will set out metrics by which net zero carbon performance is evaluated, and provide performance targets and limits.

The Standard will be science-based, aligned with delivering a Net Zero Carbon UK by 2050 and a 78% reduction by 2035 in the UK in order to limit global warming to 1.5°C.

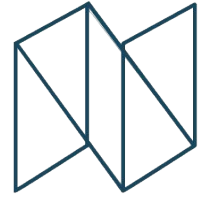
The Standard will incorporate targets and limits that have been derived from an analysis of the UK’s Sixth Carbon Budget and from data gathered across different sectors within the built environment.

Who is it for?

The Standard is for developers, contractors, asset owners and managers, occupiers, investors, financiers and funders, consultants, building industry professionals, building managers and product/material manufacturers, suppliers, and distributors.

It is for anyone who wants to either fund, procure, design, or specify a Net Zero Carbon building and anyone wanting to demonstrate that their building is Net Zero Carbon in accordance with an industry-agreed Standard.

Principles of the Standard



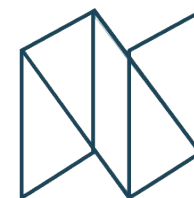
Overall principles

- Clear, consistent definitions and trajectories for Net Zero Carbon (NZC) buildings
- Collaboratively created by, and for, the built environment industry, and not owned by any one organisation or Institute
- Driving market transformation through industry engagement, uptake and support
- Ensuring that the Standard is easy to understand and use, with achievable but stretching requirements
- Aligning asset-level requirements with the system-level changes needed for a NZC UK
- A Standard that is politically neutral

Technical Principles

- Informed by climate science (science-based)
- Including both operational and embodied carbon
- Prioritising energy efficiency and eliminating the performance gap by using measured performance data
- Prioritising the reuse of existing buildings and assets
- Adopting a whole life carbon approach
- Enhancing renewable energy generation
- Ensuring that buildings are responsive to electricity grid fluctuations

More detailed explanations of these principles can be found in our previously issued [April Quarterly Update](#).



Application of the Standard

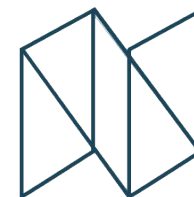
1. Background

The approach will be applicable to both existing and new buildings.

To start with, the focus will be on the most common building typologies, especially those for which industry stakeholders have already robust performance data available to inform the setting of performance targets.

The Standard is seeking to develop performance targets and limits for the following typologies.

Homes	Sport and Leisure	Hotels
Offices	Retail	Commercial Residential
Schools and Further Education	Culture and Entertainment	Logistics / Warehouses
Healthcare	Heritage	Datacentres
	Science and Technology	



The people behind the Standard

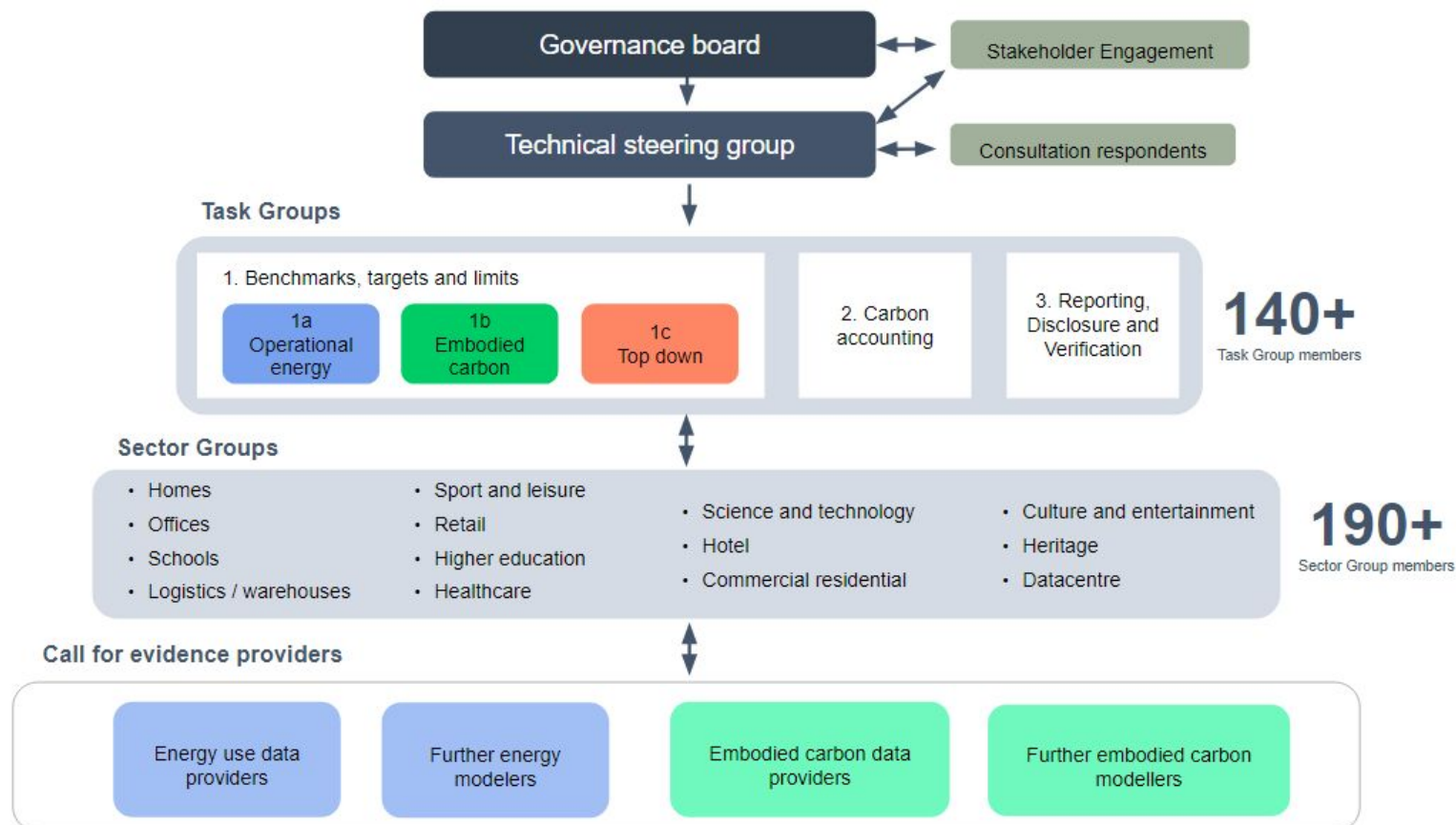
The Standard's project team is made up of more than 350 voluntary experts from all parts of the built environment industry.

The **Governance Board** oversees the development of the Standard, leads on stakeholder engagement, and secures resources for the Standard.

The **Technical Steering Group (TSG)** oversees the specification, design and development of the Standard. The TSG is supported by a series of Task Groups and Sector Groups.

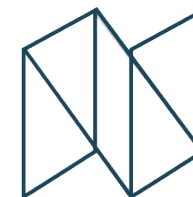
The **Task Groups** develop the technical basis for the Standard alongside the TSG, and will draft parts of the Standard.

The **Sector Groups** provide expertise on the decarbonisation of that sector and support the development of performance levels.



There is more information on roles and responsibilities of these groups in our [April Quarterly Update](#).

1. Background



Developing Net Zero Carbon Limits

1. Background

Two key principles for the Standard are that it should be stretching but achievable, and also that it should be science-based.

To reconcile these aims, two workstreams have been established to develop the Net Zero Carbon limits.

The **bottom-up workstream** will use benchmarking, case studies and modelling to create Levels of Performance.

The **top-down workstream** will establish the relevant national carbon ‘budgets’ which show what the industry needs to achieve to play its part in a NZC UK.

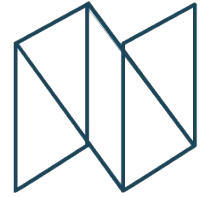
The outputs from these workstreams will then be combined to create NZC limits and targets for the Standard.



The summer Consultation covered the **New Build Performance Levels**, which are not the final NZC limits. More information on the development of limits can be found in our [April Quarterly Update](#).

Glossary: Performance levels: These levels provide the technical evidence on what can be achieved by the individual sectors, based on benchmarking, case studies and modelling. They are not limits or targets, but will be used to inform the NZC limits and targets in the next stage of work.

To all of our Contributors - Thank You



1. Background



140+
Task Group members

800
Projects embodied
carbon data

190+
Sector Group
members

3200
Projects metered
operational energy
(large datasets)

500+
Consultation
Respondents

200+
Projects metered
operational energy
(individual projects)



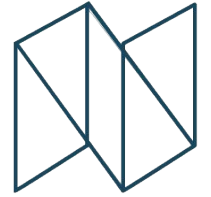
Your support is
essential
to the Standard

2. Progress since the Technical Update



UK Net Zero Carbon
Buildings Standard

Progress since the Technical Update

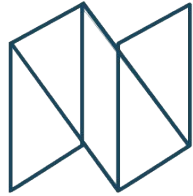


We have made significant progress since our last Update in June:

- Created a Tool which we will be using to balance “top-down” budgets and “bottom up” performance levels to produce overall, and sectoral, Net Zero Carbon pathways and limits
- Continued development of the verification process, which will allow built assets to evidence conformity with the Standard
- Begun a programme of wider industry engagement in order to understand better how the Standard might be used by the whole real estate ecosystem
- We have raised over £100,000 in Sponsorship from the generous organisations listed at the end of this Update, which has enabled us to:
 - Recruit a technical writer; a data analyst to process the results of the Summer Consultation; and significant project management support to progress the development of the Standard
 - Create a plan and structure for compiling the written Standard document

The programme overleaf shows our progress within the overall context of Standard-development.

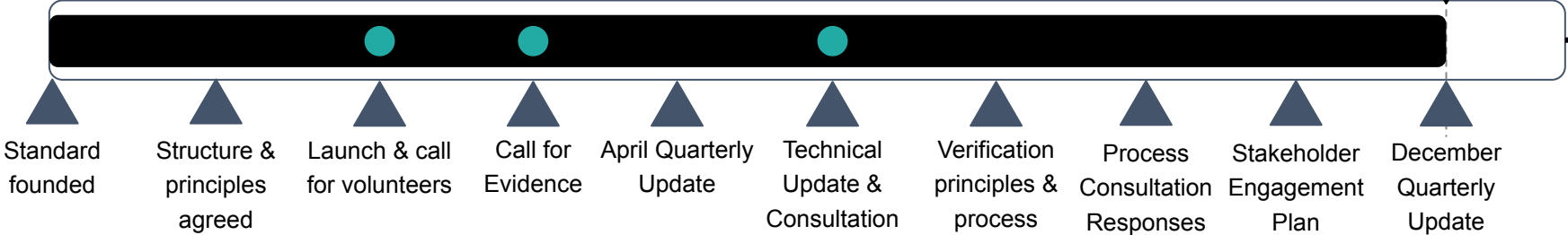
Progress towards the Standard



2. Progress since the Technical Update

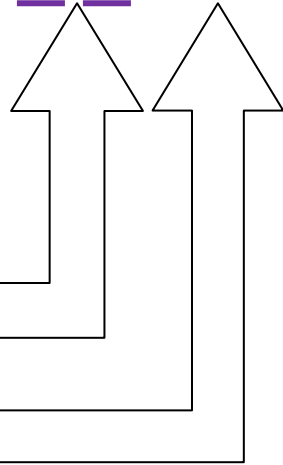
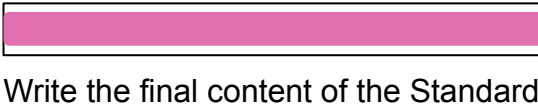
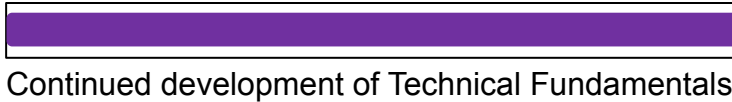
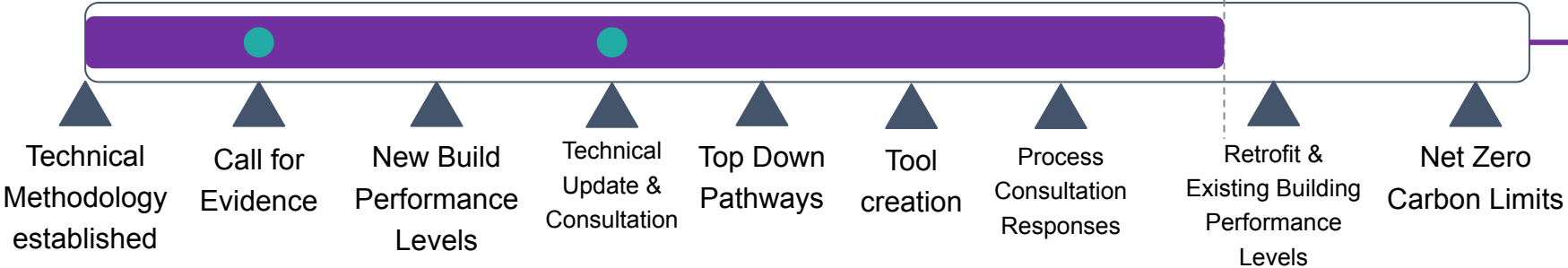
WE ARE HERE

Overall Development

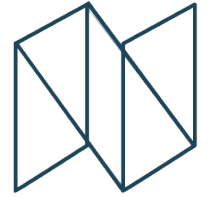


Technical Development

● Industry engagement



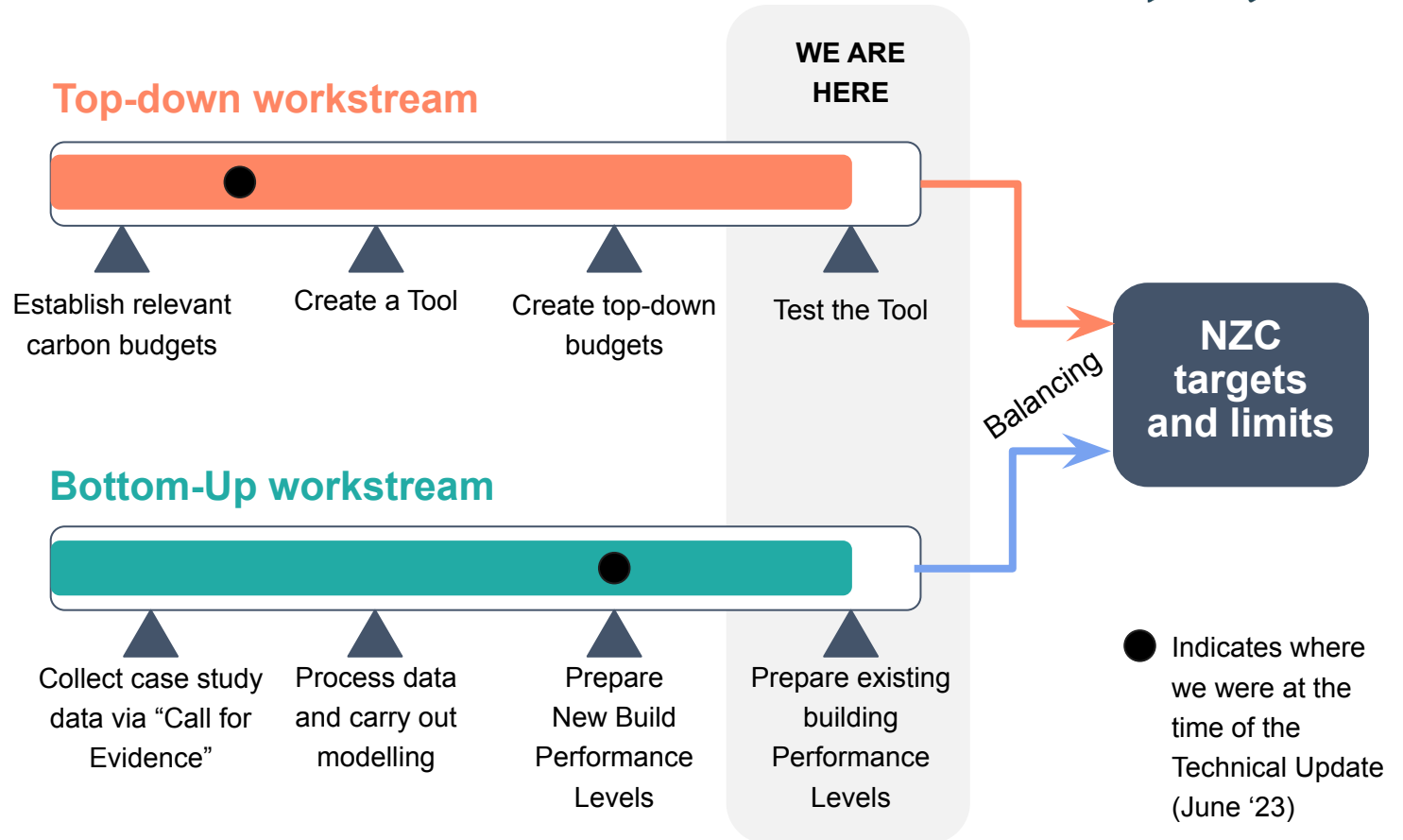
Progress towards NZC Limits



In June we issued proposed **New Build Performance Levels*** for operational energy and embodied carbon, and asked for industry comments in the Consultation.

Since then,

- A Tool has been created to feed into limit-setting for the Standard, and is currently being tested
- Carbon Budgets have been finalised for use as inputs to the Tool
- Industry responses to the Consultation are being drawn upon as we work to create Performance Levels for existing buildings and retrofits.

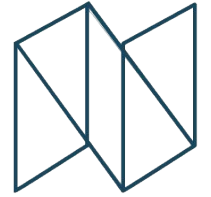


*Glossary: *Performance levels: These levels provide the technical evidence on what can be achieved by the individual sectors, based on benchmarking, case studies and modelling. They are not limits or targets, but will be used to inform the NZC limits and targets in the next stage of work.*

3. Consultation Response Overview



The NZCBS Technical Consultation



- The Consultation launched on 14 June 2023 and ran until 31 August
- 61 questions covering topics including:
 - Technical Fundamentals - critical aspects of Standard
 - Technical Requirements - key technical aspects
 - Performance levels
 - Carbon Accounting
 - Top Down Modelling Approach

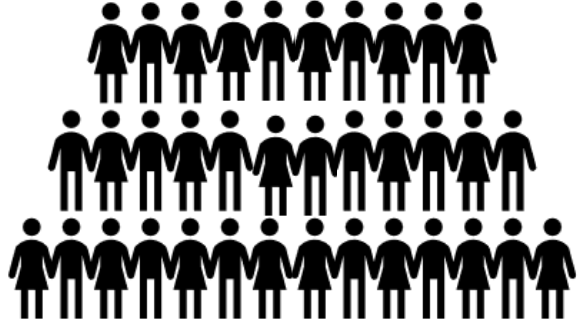
UK Net Zero Carbon Buildings Standard

Technical Update & Consultation

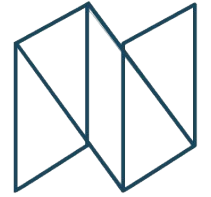
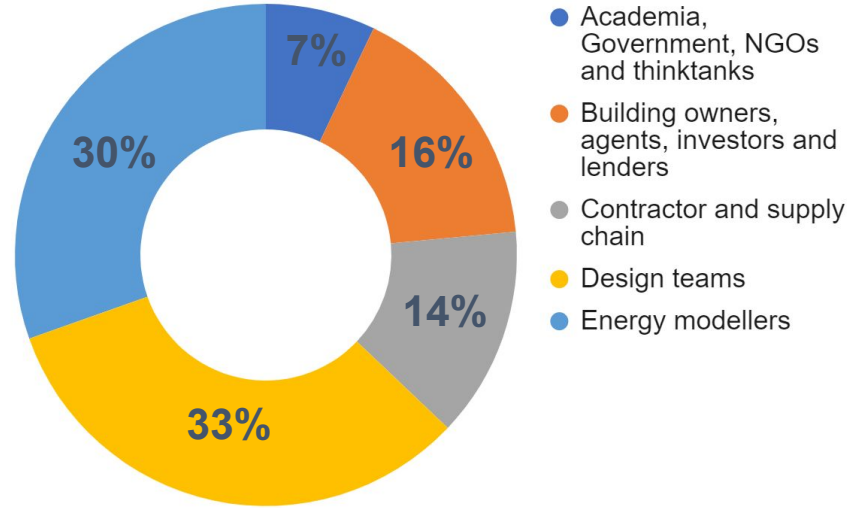
14 June 2023

BBP BETTER BUILDINGS PARTNERSHIP | bre | CARBON TRUST | CIBSE | The Institution of Structural Engineers | LETI | RIBA Architecture.com | RICS | UK GBC | PIA | RIAS | ice

524 respondents



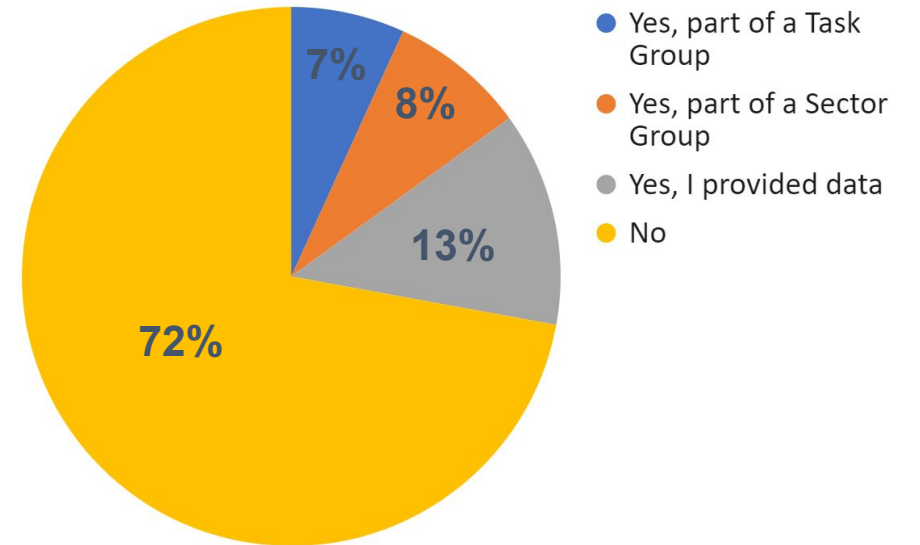
Type of respondent



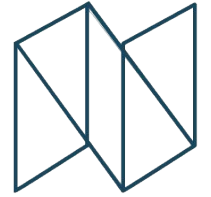
90% UK based



Prior Involvement in project



How did we process the responses?



- Consultation Insights Analyst - Jack Poulton of SimpsonHaugh Architects - hired in September 2023 to review responses and prepare analysis and findings
- Data cleansed to remove duplicates and erroneous responses and to incorporate non-standard responses (i.e. email / document responses)
- Respondents organised into high level typology, to assist in understanding views of different segments of market and adjust for sampling bias.
- Where results are reported as 'weighted', each of the categories below were adjusted to equal weighting.



Academia, Government, NGOs and thinktanks

Taking a wider view of the built environment. Providing guidance and requirements to industry.

No. of respondents: 37



Building owners, agents, investors and lenders

Focussed on the financing, leasing and managing of existing and proposed buildings.

No. of respondents: 86



Contractors and supply chain

Focussed on the construction process and the manufacture of building products/systems.

No. of respondents: 72



Design team (architects, mep + structural engineers)

Focussed on the design process for new/retrofit buildings, integrating the environmental requirements

No. of respondents: 170



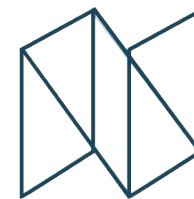
Energy modellers and consultants

Specific knowledge relating to energy and embodied carbon calculations and assessments.

No. of respondents: 159

4. Major Updates





Major Updates - Overview

This section covers major updates to the Standard that have been agreed since our June Update.

Where these relate to questions in the Consultation, we have also included the consultation responses and how these were factored into the decision. The decision-making supporting these major updates was collaborative, involving both the Technical Steering Group and Governance Board. The consultation responses were taken into account in all discussions.

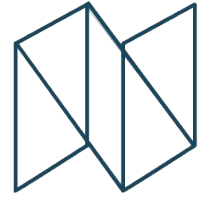
The Role of
Offsetting

Whole
Building
approach

Components
of the
Standard

Verification
Updates

The Role of Offsetting



What we asked

We asked whether offsetting should be mandatory as part of the Standard.

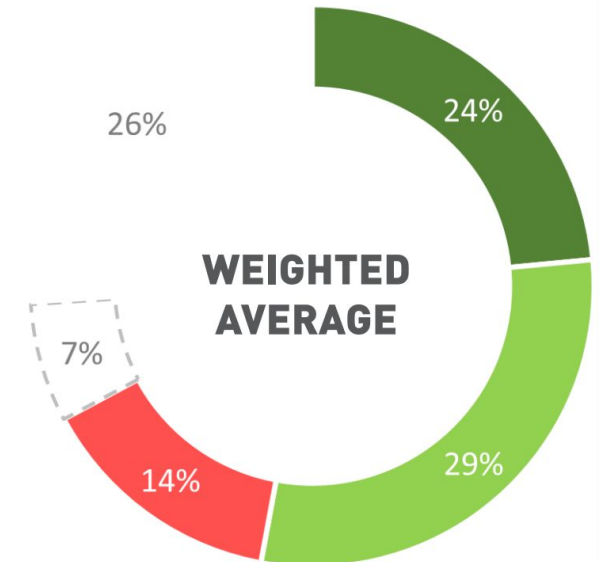
See page 17 of the TUC document

What we heard

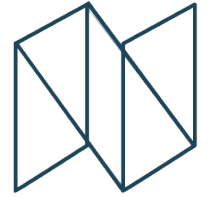
07

Which of the following approaches do you think the Standard should take?

- **Offsetting mandatory:** The Standard should only recognise assets that have met carbon and energy limits, and then purchased offsets to 'net' these emissions
- **Offsetting optional:** The Standard should not mandate the purchasing of offsets, but should recognise when a project has purchased offsets to 'net' the asset's emissions
- **Offsetting not required:** The Standard should recognise assets that have met carbon and energy requirements without mandating the requirement to purchase offsets
- Don't know / Unsure
- Not Answered (blank)
- N Total number of responses (excl. those who did not answer)



The Role of Offsetting



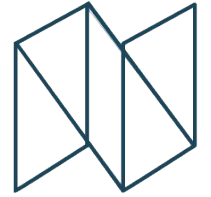
Summary of feedback

The Consultation responses indicated that there was not a strong majority of respondents in favour of either making offsetting mandatory, or excluding it from the Standard.

The pros and cons section in the Technical Update explored our thinking around offsetting. To mandate it would increase a risk of greenwashing associated with potentially unreliable offsetting sources. However, to exclude it would mean that the Standard is not encouraging the development of the “carbon mitigation” supply chain, which is essential for the overall decarbonisation of the UK.

As a result, we are proposing that offsetting is voluntary when meeting the Standard. This means it will be possible to meet the Standard with or without offsetting. In both cases you must meet the same relevant limits and targets. Different terminology will be applied for these cases, but both will be considered to meet the UK Net Zero Carbon Buildings Standard.

The Role of Offsetting



Carbon Emissions to be Reported and Offset

Where offsetting is being pursued, sufficient carbon offsets must be purchased to cover all carbon emissions that are required to be reported for the Standard - Not just those that are limited.

For existing buildings, operational carbon emissions will be reported annually. This includes operational energy, refrigerant gases, operational water and significant sources of embodied carbon in use e.g., fit out, and significant emissions from the replacement or repair of components

For new buildings, the scope of reported carbon includes operational carbon during the first year of operation plus upfront embodied carbon at practical completion

Requirements for Carbon Credits / Offsets

In order to offset building emissions in line with the Standard, the offsets must meet certain requirements.

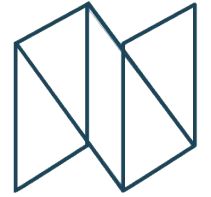
The carbon credits must be from a provider that is **accredited to ICROA or CCP-labelled credits**.

There are no restrictions on the location or types of project that can be used

The carbon credits must have a **vintage of the same year, or +/- 5 years** from the year when the carbon emissions occurred.

See overleaf for justification of these principles.

The Role of Offsetting



Rationale for the Standard's Requirements for Carbon Credits

No restriction on offsetting type and location

- The supply of UK carbon removal credits may not be sufficient to meet demand in the short term
- Potentially greater benefits in carbon offsetting outside the UK, particularly where funding of decarbonisation is limited

ICROA accredited offsetting

- The ICVCM's Core Carbon Principles present a higher level of assurance than ICROA
- However requirements for assessing carbon credits against CCP criteria have not yet been implemented
- ICROA provides a currently available benchmark

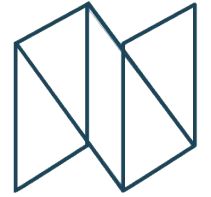
Restricting vintage to +/- 5 years

- It is not always practical to relate carbon credits to the same timeframe as the residual emissions
- Older carbon credits may be lower quality, while future credits are more uncertain
- +/- 5 years is a reasonable compromise and encourages future woodland carbon credits

The proposed approach aligns with the minimum requirements set out in the UKGBC guidance on carbon pricing and offsetting. The Standard will encourage adoption of the UKGBC's Guidance, and going beyond the minimum requirements.

For future versions of the Standard we will consider restricting the types of project that are allowed in line with UKGBC guidance /Oxford Offsetting principles.

The Role of Offsetting



Offsetting-related Topics for Further Development

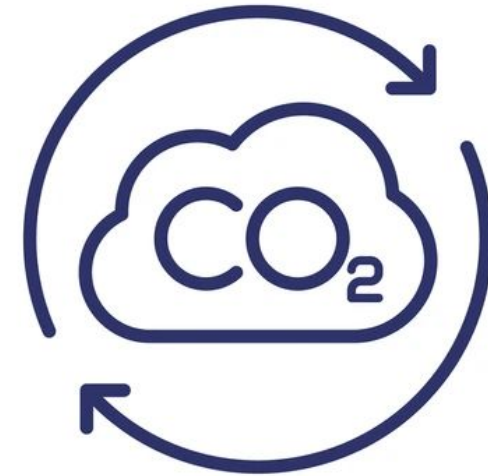
Encouraging offsetting

Whilst the Standard can be achieved with or without offsetting, we want to encourage the uptake of carbon offsets and mechanisms for doing this are being investigated.

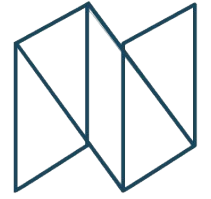
Renewable Procurement

It is proposed that certain types of renewable electricity procurement may be used to offset Scope 2 carbon emissions from grid supply electricity, in place of purchasing voluntary carbon credits to meet the Standard (with offsetting).

Requirements for acceptable types of renewable electricity procurement are being developed.



Whole Building Approach



What we heard

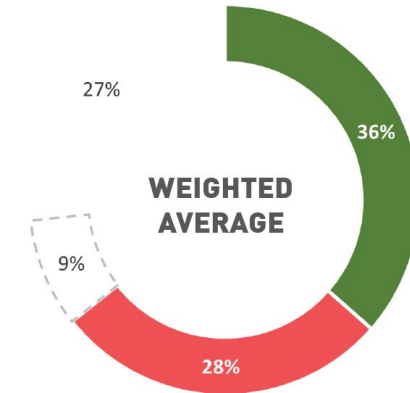
What we asked

We asked whether Net Zero Carbon verification should apply to whole buildings, or whether a delineated approach should be taken

See pages 19-20 of the TUC document

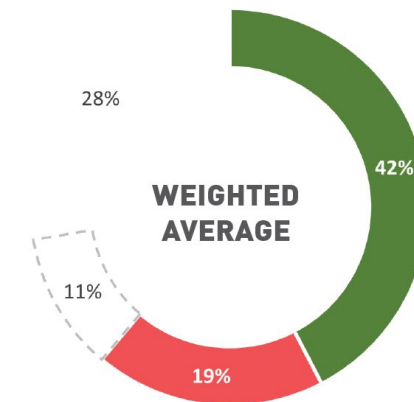
08

Do you agree with the working assumption that the Standard will apply only to a whole building, with no separation of landlord and tenant activities and no ability to verify part of a building (e.g. base build only, or a single tenant demise)?



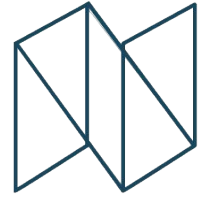
09

Alternatively, do you think the Standard should seek to explore owner/occupier accountability and building delineation?



Note: Respondants were only asked to comment if they had responded "yes" to Q9. Therefore those giving reasons for "no" to Q9 is limited. No opportunity to provide comment with Q8.

Whole Building Approach



Summary of feedback

The Consultation responses indicated that there was a mix of views on how this should be approached. Many supported a whole building approach while others supported delineation between owners and occupiers and / or between individual tenant demises.

It is recognised that taking a whole building only approach may lead to some buildings being excluded where end uses and/or areas within the responsibilities of landlords or tenants cannot be included within the scope of the assessment.

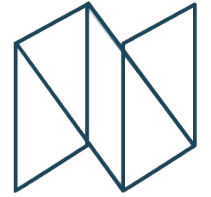
It is also acknowledged that the recommendations of the Sector Groups - convened as part of the Standard - varied. For example, the Offices sector group recommended a delineated approach between base building and tenancies for commercial offices - while a whole building scope is the ultimate goal, each party must play their part and that it is fair to recognise when each achieves net zero requirements for the energy uses they control and/or are responsible for.

Our end goal is to allow delineation in-use for sectors where this would be appropriate. However, it will take time to develop the principles of delineation and we would prefer not to delay development of the Standard further to establish these principles.

We will develop the first iteration of the Standard on a Whole Building basis to meet the pressing industry need for the Standard. We will look to define a delineated approach in future, acknowledging that for sectors such as Offices this was recommended by the relevant sector group. The delineated update may be produced prior to the next formal 'version' of the Standard, as we will seek to develop these principles in parallel.

In the first iteration, new build projects and whole-building retrofits must apply the NZCBS rules on a whole-building basis. Once the delineated update is available, NZC status will be achievable either as a whole building or independently for different demises.

Upcoming Issues and Documents



4. Major Updates

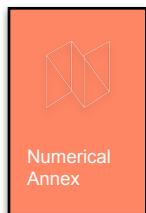
The UK NZCBS - Beta Test Version

Spring 2024

Beta Testing Issue for Public Consultation



The Standard itself
Draft version for 'beta Testing'



Numerical Annex to the Standard

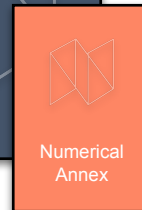
- Contains the limits and targets

UK NZCBS - Version 1 plus Guidance & Supporting Documents

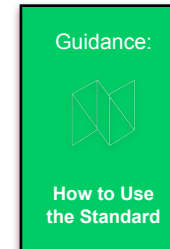
Late 2024



UK NZCBS Version 1
+ **Numerical Annex**

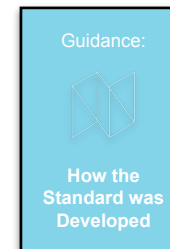


- **Verification & disclosure templates**
- **Reporting proformas**



Guidance - How to Use the Standard

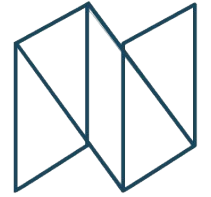
Aimed at anyone trying to use the standard to meet its requirements



Guidance - How the Standard was Developed

Background information on decision-making behind the standard

Verifying and Validating using the Standard



We are creating a 'Standard', not a scheme, or tool.

The Standard will provide a consistent approach to assessing whether a building can be defined as Net Zero Carbon (NZC).

It will be a verification Standard: a method to confirm the reliability of information declared in claims. Those wanting to describe their building as Net Zero Carbon will require **verification** of the building, in order to determine **conformity** with the Standard's requirements.

In-use energy performance data is a requirement for a building to be able to verify as NZC. However, we understand there is a desire to assess buildings at earlier stages, before this information is available. The Standard will allow **validation** to be carried out in these cases, as defined opposite.

The timeline for verification and validation is set out overleaf.

Definitions

Verification - A process for **evaluating a statement of historical data and information** to determine if the statement is materially correct and conforms to criteria. Verification to the Standard will involve a check that the methodology has been correctly followed. Importantly - there must be real data evidence

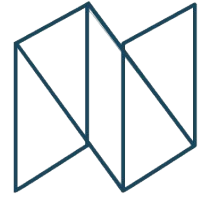
Validation - A process for **evaluating the reasonableness of the assumptions, limitations and methods** that support a statement about the outcome of future activities. Validation to the Standard will involve a check that the methodology has been correctly followed.

This can occur before real in-use data is available. **Validation in accordance with the Standard does not count as "meeting" the Standard**, but can provide assurance before full in-use information is available.

Conformity - means that the building has been verified as meeting the relevant requirements as set out within the Standard. Applicants will need to demonstrate that their building **conforms** to the Standard - this is what the verifier will be checking.

Our definitions are based on ISO Standards (ISO 14064-3).

NZCBS options at each project stage

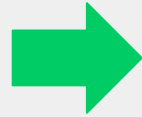


Voluntary - Not NZC Verified



Design Stage

- A project cannot be verified as Net Zero Carbon at this stage
- For any voluntary reporting requirements, it should follow the NZCBS design approach



Practical Completion

- A project cannot be verified as 'Net Zero Carbon' at this stage, as in-use operational energy data is required
- Operational modelling and Whole Life Carbon can be voluntarily **validated** against the Standard requirements
- We are reviewing further options to provide assurance that the building is on track to meet the Standard at Practical Completion



NZC Verifiable



Net Zero Carbon

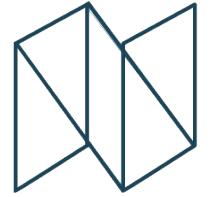


In-use (1 year of data*)

- A building can be verified as **Net Zero Carbon**
- All NZCBS limits and targets must be met, as well as reporting and disclosure requirements
- Third party verification will be required – **you can not self-verify**
- Verification will require renewal over time

* In order to verify operational energy, the building must have at least a year of metered energy use, and demonstrate that it was occupied during this period

Verification Building Categories



Buildings will be able to verify under the following broad categories:

New Build

Retrofit / Existing Building

- Buildings constructed before the launch of the Standard
- Buildings undergoing retrofit

A **retrofit** is defined as where more than 25% of the building envelope undergoes renovation, or a substantial replacement of building services* occurs.

For intensive refurb projects, where more than 50% of the existing slab area is demolished, the building will be classed as a new build.

An **existing building** is any building that was in operation by the point the Standard was launched**.

Heritage buildings will have different requirements.

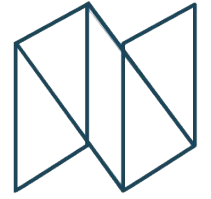
*To be defined

**We are reviewing whether a transitional period will apply

5. Technical Consultation Findings



Technical Requirements



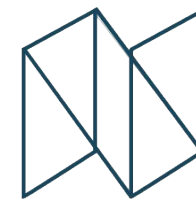
Contents

Overview of Metrics	Page 23
Proposed Requirements	Page 24
Embodied Carbon Limits	Page 25
Embodied Carbon Retrofit Limits	Page 28
Refit Embodied Carbon	Page 30
Operational Energy Limits	Page 32
Fossil Fuel Free	Page 34
Demand Management / Flexibility	Page 35
Onsite Renewables	Page 37
Refrigerant & Leakage	Page 40
District Heating & Cooling Networks	Page 41

The Consultation included questions on a range of technical requirements for the Standard.

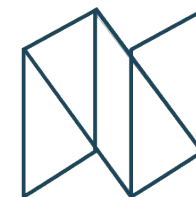
This section provides a brief summary of the feedback received from industry and the next steps

Summary of responses to technical requirements and next steps (1/4)



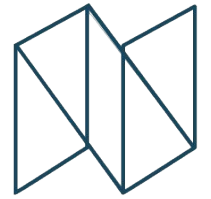
Topic	What we heard	Next Steps
Overall metrics	General good agreement, with clarifications sought on details e.g. floor area convention and consistency / alignment with existing industry metrics	Proceed with the metrics outlined in the Technical Update. Task Groups to review and consider which clarifications to be included in Standard documents in 2024.
Embodied carbon limits	General agreement on the approach to limit embodied carbon. Participants would like to see A - C limits in future but generally do not see limiting to A1-A5 affecting their support for Standard	Proceed as outlined in the Technical Update. Task Group 1B (Embodied Carbon) to define approach to limits for mixed-use buildings.
Embodied carbon retrofit limits	General agreement on the approach to limit via retrofit factors applied to new-build limits	Proceed as outlined in the Technical Update. Task Group 1B to define approach for extensions.
Refit embodied carbon	Strong support for refit limits A1-A5 in office sector, based on collected data.	Proceed as outlined in the Technical Update. Office Sector Group is collecting data for office works.

Summary of responses to technical requirements and next steps (2/4)



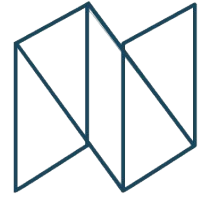
Topic	What we heard	Next Steps
Operational energy limits for new buildings	General agreement on the approach, with specific comments on benchmarks and/or levels in some sectors. Range of responses enabling us to group sectors into H / M / L confidence	Proceed with the approach outlined, with some refinements in some sectors. Task Group 1A (Operational Energy) and Sector Groups are continuing their work in December 2023 to agree final New Build Performance Levels
Operational energy limits for existing buildings	Responses to this question suggested mixed preferences	Task Group 1A will continue their work in January-February 2024 to refine the approach, working with the Sector Groups
Fossil Fuel Free	General agreement with exemptions raised, with some further examples provided	Task Group 1A will review the list of new suggested exemptions and make decision on including them in the guidance

Summary of responses to technical requirements and next steps (3/4)



Topic	What we heard	Next Steps
Demand management / flexibility	Majority of respondents agreed or strongly agreed with proposed approach	Proceed as outlined
Onsite renewables	Strong agreement with requirement for onsite renewables on new builds. Agreement with metric and target ranges	Proceed as outlined
Refrigerant and leakage	Majority of respondents agreed or strongly agreed with proposed approach	Proceed as outlined. Task Group 2 (Carbon accounting) are developing the methodology for measuring carbon impact in use

Summary of responses to technical requirements and next steps (4/4)

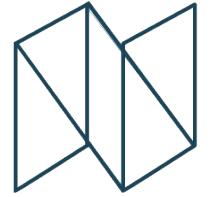


Topic	What we heard	Next Steps
District heating and cooling networks	Significant range of opinions identified	Further work on this topic with a TG1a sub group will be initiated in January 2024
Carbon Accounting	Majority of respondents agreed or strongly agreed with proposed approach	Proceed as outlined. Task Group 2 (Carbon accounting) are developing the threshold for reporting in-use embodied carbon
Stock model, budgets and downscaling	General agreement with methodology outlined	Proceed as outlined

6. Next Steps



Next Steps



We are working to prepare the Beta Test version of the Standard for issue in Spring. Our key activities are as follows:

6. Next Steps

Consider and incorporate the consultation feedback throughout the Standard

Use the Tool (developed to feed into limit-setting) to create carbon budget pathways and limits

Complete work on the retrofit and existing building Performance Levels*

Continue refining the method and details of how to Verify against the Standard

Continue to engage industry stakeholders as the Standard develops

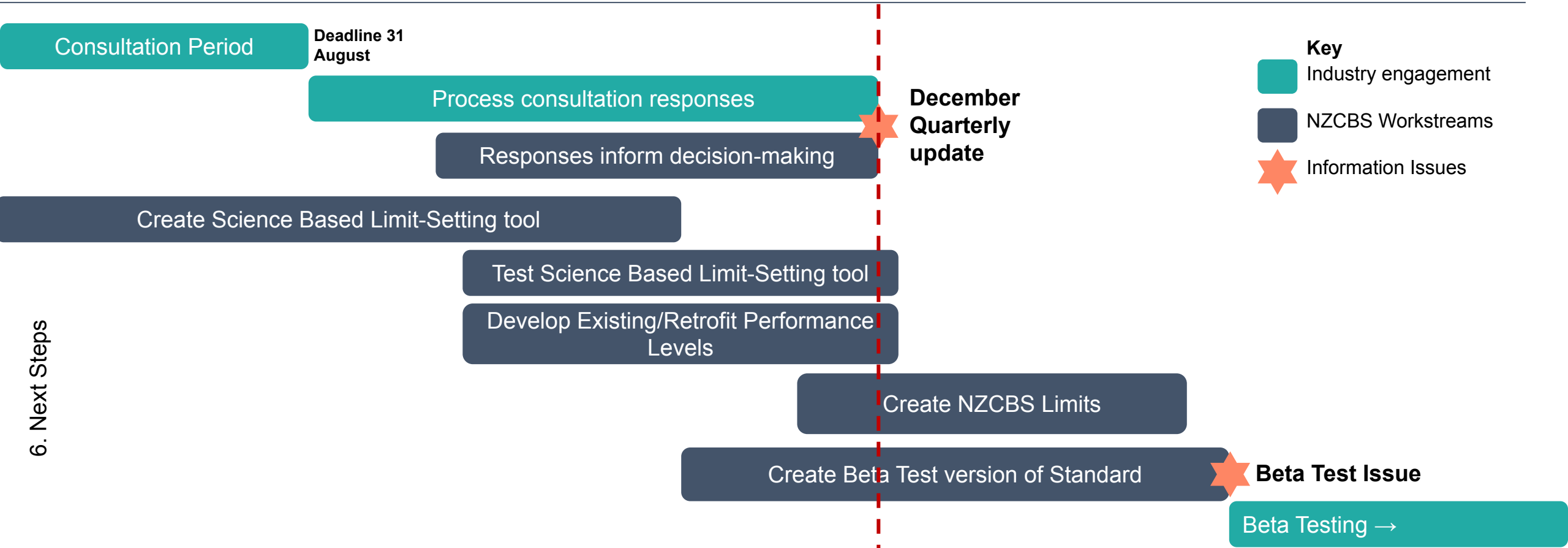
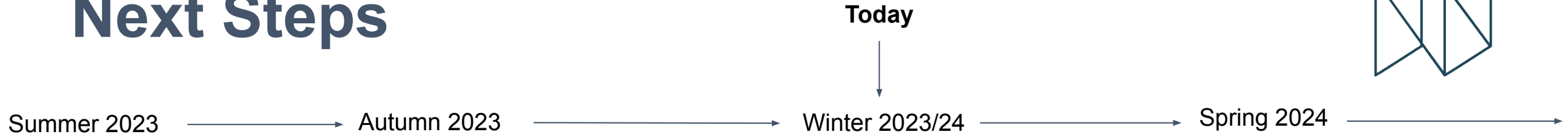
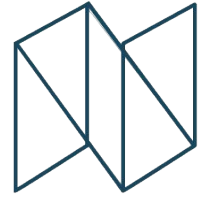
Plan the Beta Testing programme and delivery of the Final Standard

Work with our Technical Write to create the written content for the Beta Test Standard

The high-level programme overleaf illustrates our timeline.

**Glossary: Performance levels: These levels provide the technical evidence on what can be achieved by the individual sectors, based on benchmarking, case studies and modelling. They are not limits or targets, but will be used to inform the NZC limits and targets in the next stage of work.*

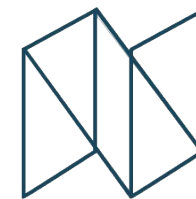
Next Steps



6. Next Steps

With Thanks

From the UK Net Zero Carbon Buildings Standard



Governance Board

Related Argent - David Partridge (**Chair**)

Founding Members

BBP - Sarah Ratcliffe

BRE - Jonathan Rickard –

CIBSE - Fiona Cousins & Hywel Davies

IStructE - Patrick Hayes

LETI - Chris Twinn

RIBA - Duncan Baker-Brown

RICS - Charlotte Neal & Amit Patel

UKGBC - Smith Mordak

Observer members

David Porter – **ICE**

Bill Hughes – **PIA**

RIAS - Angel Morales-Aguilar & Chris Stewart

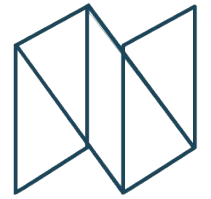
Technical Steering Group

- Katie Clemence-Jackson - **QODA Consulting**
- Adam Baranowski - **BBP**
- Christine Pout - **BRE**
- Clara Bagenal George - **LETI (Introba)**
- Fabrizio Varriale - **RICS**
- Jane Anderson - **WLCN**
- Jess Hrivnak - **RIBA**
- Julie Godefroy - **CIBSE**
- Nektarios Gkanis - **The Carbon Trust**
- Tom Wigg - **UKGBC**
- Will Arnold - **IStructE**

Supported by

- Annika Buser - **BBP**
- Ciara Durkin - **Laing O'Rourke**
- Daniel Doran - **Lifecycle Sustainability**
- Ellie Burkill - **XCO2**
- Issy Budd - **Wasps Studios**
- Jack Poulton - **SimpsonHaugh Architects**
- Jessica Connan – **Related Argent**
- Matt Broad - **Arup**
- Mina Hasman, Julia Skeete & James Woodall – **SOM**
- Rosie Bard – **Orms**

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6. Next Steps

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