The Institution of Structural Engineers

November 2025

# UK Net Zero Carbon Buildings Standard

## Guidance on Embodied Carbon

### Aligned with Pilot Version rev2

This guide covers the Pilot rev2 version of the Standard, and should therefore be treated as a Pilot Guide. It is the intention of the Institution to release an updated guide in Q1 2026, based on Version 1 of the Standard when it is released. Please send any feedback on the Pilot Guide to **ClimateEmergency@istructe.org** so the authors can consider this ahead of updating and launching Version 1.

IStructE Guide

UK Net Zero Carbon Buildings Standard

## Quality Information

**Prepared by:**

**Emma Francois**
Associate Director,
WSP

**Marika Gabbianelli**
Principal Decarbonisation Consultant,
WSP

**Orlando Gibbons**
Senior Consultant,
Arup

**Luke Vacara**
Structural Engineer,
Arup

**Reviewed by:**

**Will Arnold**
Head of Climate Action,
The Institution of Structural Engineers

**Louisa Bowles**
Head of Sustainability,
Hawkins\Brown

**Mike Cribb**
Associate Director,
Arup

**Stephen Hill**
Associate Director,
Arup

**Taylor Lunney**
Sustainability Consultant,
Elliott Wood

**Will Mihkelson**
Senior Sustainability Engineer,
WSP

**Tom Tang**
Senior Consultant,
AtkinsRéalis

Publication date: **14 November 2025**

# Table of Contents



This guide covers the Pilot rev2 version of the Standard, and should therefore be treated as a Pilot Guide. It is the intention of the Institution to release an updated guide in Q1 2026, based on Version 1 of the Standard when it is released. Please send any feedback on the Pilot Guide to **ClimateEmergency@istructe.org** so the authors can consider this ahead of updating and launching Version 1.

# 1 Overview of the Standard

## 1.1 Purpose of this guide

This guide is intended to be a practical "how-to" guide for anyone working on a building project for which there is an aspiration to track performance and/or achieve conformity and verification against the **UK Net Zero Carbon Buildings Standard (the Standard)**.

This guide focuses on the **embodied carbon** aspects of the Standard and condenses the information in the Standard into an easy-to-read format, providing diagrams, useful explanations, tips and tricks, and highlighting important considerations.

A step-by-step process for selecting embodied carbon limits is set out and guidance is provided for conducting the Life Cycle Embodied Carbon assessment and best practice embodied carbon management during design and construction to achieve low embodied carbon buildings.

**Users of this IStructE guidance should understand that they are solely responsible for statements made, opinions expressed, and accuracy of any content they produce either directly or indirectly as a result of reading this guide. The Standard shall take preference in instances where this guide is not aligned with it.**

**There is no implication that any content produced reflects the views of the Institution of Structural Engineers' Board, Council, committees, members or employees. No liability is accepted by such persons or by the Institution for any loss or damage, whether caused through reliance on any statement, opinion or omission (textual or otherwise) contained in this guidance.**

This guide covers the Pilot rev2 version of the Standard, and should therefore be treated as a Pilot Guide. It is the intention of the Institution to release an updated guide in Q1 2026, based on Version 1 of the Standard when it is released. Please send any feedback on the Pilot Guide to ClimateEmergency@istructe.org so the authors can consider this ahead of updating and launching Version 1.

## 1.2 What is the Standard?

To explain the Standard, it is first necessary to understand the definition of 'net zero'. A net zero carbon[1] building, in principle, is a building that:

- **Minimises whole life carbon emissions**, including both
  - **Operational emissions** - emissions associated with heating, cooling, lighting, water, and other building operations
  - **Embodied emissions** - emissions from the production, construction, maintenance, and disposal of building products
- **Offsets** any (minor) remaining emissions to get to zero.

What a net zero carbon building looks like in practice has been debated at length across industry due to the lack of clarity of what 'minimised emissions'

really means, and what types of emissions offsets should be used to balance out the whole life carbon emissions to reach 'net zero'.

To address this, as of September 2024, the **UK Net Zero Carbon Buildings Standard (the Standard)** – currently in its Pilot Version – provides an evidence-led and science-based framework to define 'Net Zero Carbon Aligned Buildings' within the UK. The term 'Net Zero Carbon Aligned' is used for buildings that comply with the Standard by meeting defined embodied carbon and operational energy-related limits and targets that align with a 1.5°C global warming trajectory to net zero.

As the Standard does not mandate offsets, a building that meets the Standard's limits and targets will not necessarily be 'net zero' as its emissions may not be offset to achieve net zero emissions, but it will be 'Net Zero Carbon Aligned' as it will align with the UK's emission reduction pathway to net zero in 2050.

The Standard is for anyone who wants to fund, procure, design, or specify a 'Net Zero Carbon Aligned' New Building or Existing Building, and anyone wanting to demonstrate that their building is 'Net Zero Carbon Aligned' in accordance with an industry-agreed standard. As a robust industry-backed initiative, the Standard may also be useful to policymakers looking to create policy to support a net zero carbon transition.

### 1.2.1 The Standard's Development

The Standard is the result of a collaborative initiative led by key industry bodies – including the IStructE, BBP, BRE, Carbon Trust, CIBSE, LETI, RIBA, RICS and UKGBC – supported by a wide network of stakeholders from across the built environment industry.

Following early-stage scoping in 2022, technical working groups developed the detailed methodologies and performance targets throughout 2023 and into 2024, guided by whole life carbon principles and aligned with the latest climate science. More than 300 volunteers contributed to this process, and more than 200 projects have since been formally testing the Pilot Version.

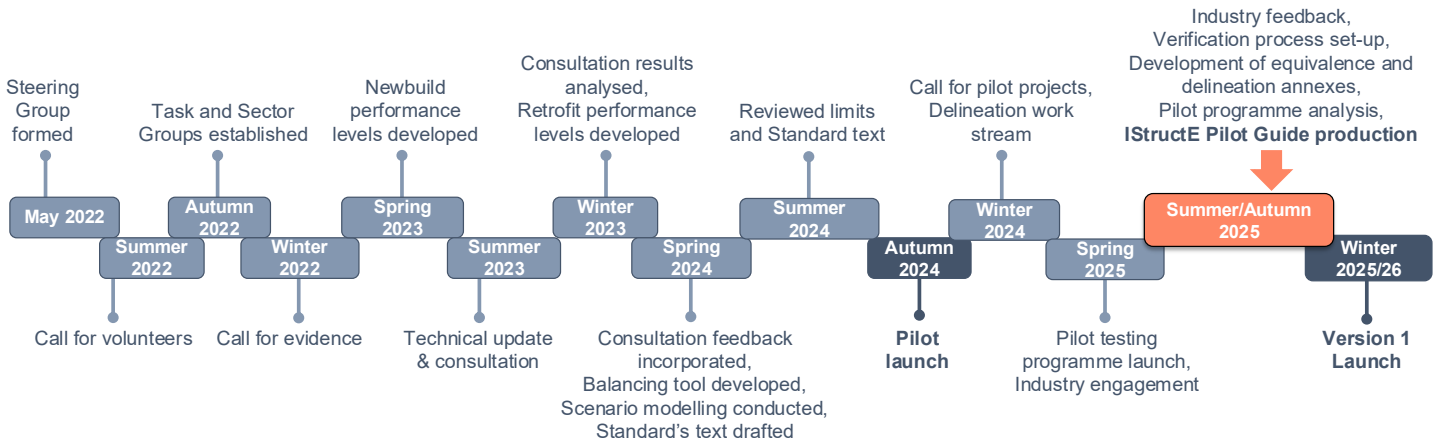



**Figure 1-1** Process of creating the Standard.
*Source: UK Net Zero Carbon Buildings Standard Overview Document.*

To define what the industry needs to do to help achieve a net zero carbon UK, the limit and target setting were informed by both:

- **Bottom-up emissions spend** - which considered real world performance and case studies
- **Top-down budgets** - which reference the relevant national carbon and energy 'budgets'

The bottom-up emissions and top-down budgets have been combined and balanced[2] to create 'Net Zero Carbon Aligned' limits and targets for the Standard. Further details on the process of limit and target setting for the Standard can be found on the UKNZCBS website. The Standard's limits for New Buildings represent best practice, i.e. feasible but ambitious, in order to limit energy demand on the grid, limit embodied carbon spend in early years and minimise the need for retrofit in the future. The Standard's limits for Existing Buildings represent what is expected to be required from the majority of the stock to reduce energy demand and move away from fossil fuels.

See UKNZCBS section 4.1

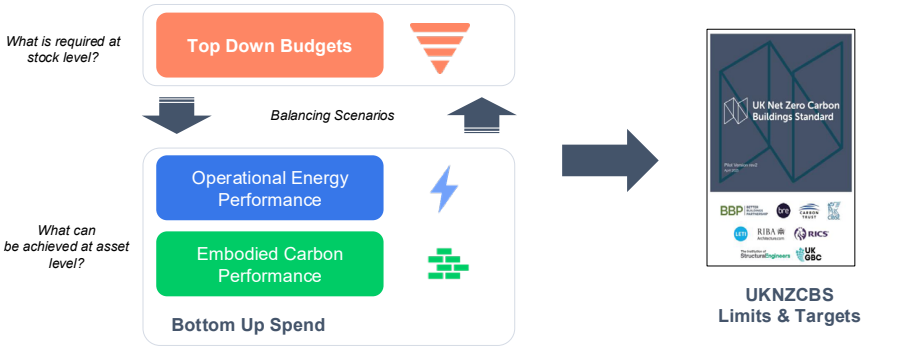



**Figure 1-2** The Standard's limit setting approach.
*Source: UK Net Zero Carbon Buildings Standard Overview Document.*

## 1.3 What is the Standard aiming to do?

The Standard's aim is to enable the industry to robustly verify whether UK buildings are 'Net Zero Carbon Aligned', in line with the UK's climate targets.

This provides a means to:

- Bring clear, consistent definitions and trajectories for 'Net Zero Carbon Aligned' buildings in the UK,
- Avoid greenwashing, by setting clear performance requirements for verification as a 'Net Zero Carbon Aligned' building,
- Align building-level actions with national and global carbon budgets,
- Support the industry in tracking and reducing both embodied and operational emissions over time,
- Close the performance gap by measuring as-built and in-use performance of buildings.

While verification against the Standard may be the goal for some projects, it may also be useful beyond verification, as it could be used to inform design decisions, procurement, local and national policies, and companies' internal sustainability targets and strategies.

## 1.4 Requirements

The Standard sets a number of sector-specific requirements:

- **Pass/fail metrics** – limits (maximum values which must not be exceeded) and targets (minimum values that must be met or surpassed), which are assessed on a pass/fail basis
- **Reporting metrics** – requirements which provide useful context and may be used to inform further development of the Standard

**All requirements must be satisfied**, based on as-built material, carbon, and in-use energy data, to satisfy the 'Net Zero Carbon Aligned Building' mandatory requirements. See Figure 1-3 for a summary of the Standard's requirements with the elements covered by this guide highlighted. The Submission Proforma required for verification requests additional project information that is described in section 6. See Figure 1-4 for a list of sectors covered by the Standard.

◀ See UKNZCBS Annex B

While this guide addresses the embodied carbon aspects of the Standard, it is critical to note that a building cannot be verified as 'Net Zero Carbon Aligned' based solely on embodied carbon performance, and all other aspects of the standard (such as operational energy and carbon) must also be considered, analysed, measured and reported (see the Standard for more details on the other aspects).

*Note: All limits, targets, and reporting requirements (Figure 1-3) must be met to achieve verification. Information must be based on as-built embodied carbon data and a minimum of one year of in-use, metered operational energy data.*

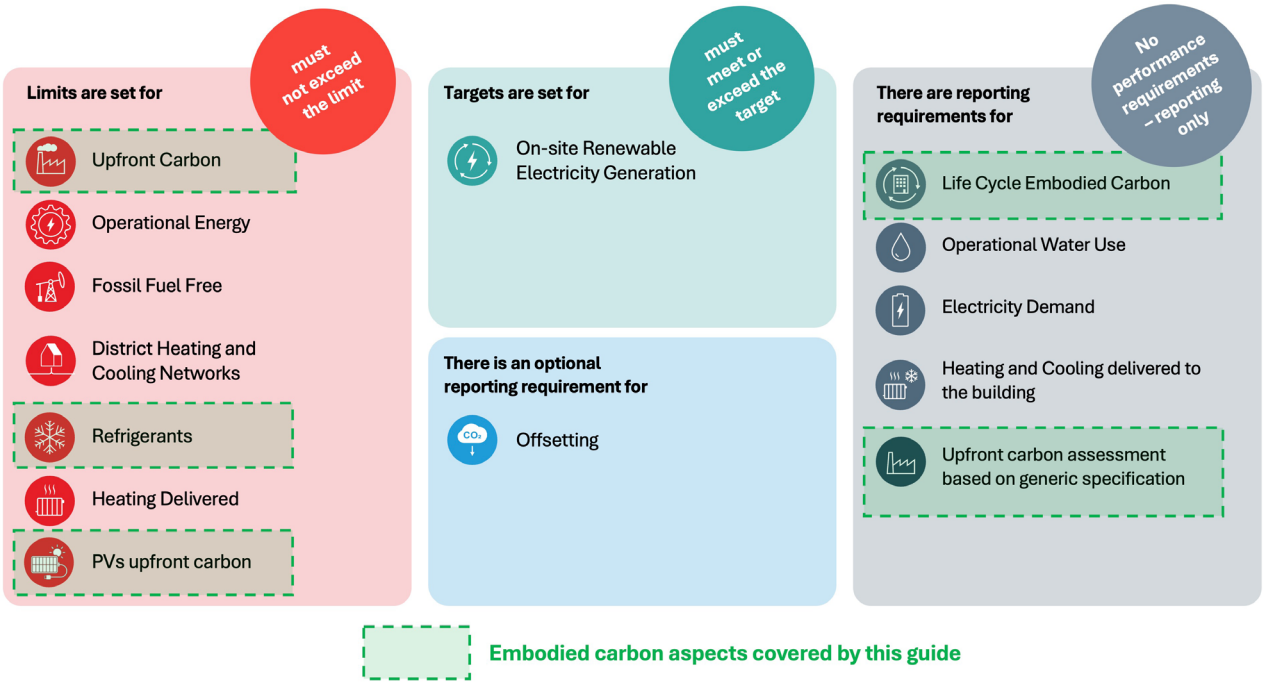



**Figure 1-3** The Standard's requirements

◀ See UKNZCBS Table 5.1.3

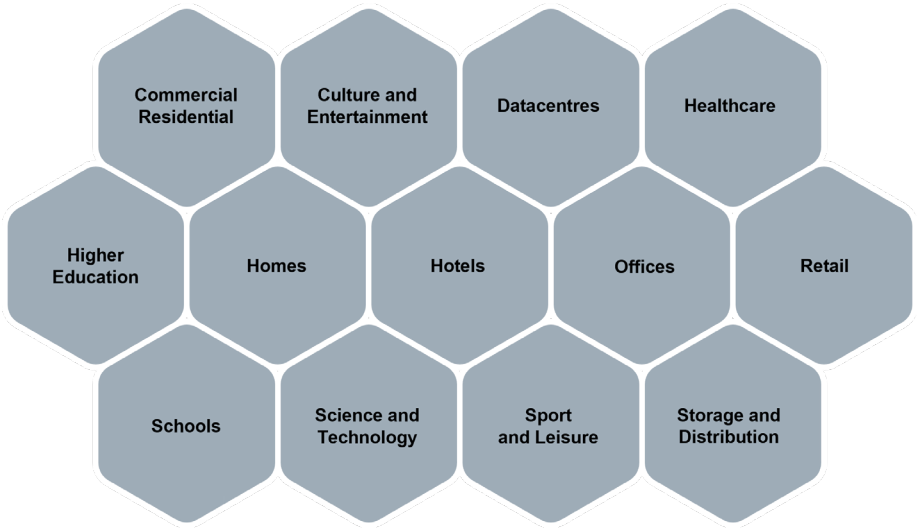



**Figure 1-4** Sectors covered by the Standard

See UKNZCBS section 3.1.3

### 1.4.1 Embodied carbon requirements

As noted above, the Standard differentiates between pass/fail metrics and reporting metrics. The pass/fail metrics related to embodied carbon are limits for:

- Building upfront carbon, in $kgCO_2e/m^2$ GIA *(see Annex A1 of the Standard)*
- Photovoltaics (PVs) upfront carbon, in $kgCO_2e/kWp$ *(see Annex A1 of the Standard)*
- Refrigerants GWP (global warming potential), in $kgCO_2e/kg$ *(see Annex A4 of the Standard)*

Upfront carbon is life cycle modules A0-A5, but as the Standard excludes module A0, only A1-A5 modules are included for comparison to limits

Reporting metrics are data required for submission to gain conformity against the Standard, but do not have a limit or target associated with them.

The reporting requirements and pass/fail metrics related to embodied carbon are summarised in Table 1-1.

See UKNZCBS section 5.1.3

The scope of these metrics – in terms of which building elements and life cycle modules are included – is defined in Section 5.2 of this guide.

*Note: The Standard provides a submission proforma which must be infilled and submitted to comply with the Standard's requirements (see section 6 of this guide).*

See UKNZCBS Annex B

**Table 1-1** Embodied carbon limits, targets, and reporting requirements

**Key:** ✓ Pass/fail Metric ⓘ Reporting Requirement

| | Metric (assume $kgCO_2e/m^2$ GIA unless stated) | | Where majority of area (>50% NIA) is Offices sector | Where majority of area (>50% NIA) is Storage and Distribution Sector | All other sectors |
|---|---|---|---|---|---|
| Pass / fail metrics | Upfront carbon limit | Whole building [G] | ✓ | ✓ | ✓ |
| | | Shell & core [G] | ✓ | | |
| | | Reportable Works [D] *($kgCO_2e/m^2$ GIA relevant to the reportable works)* | ✓ | | |
| | Refrigerant GWP limit (kgCO2e/kg) | | ✓ | ✓ | ✓ |
| | PVs upfront carbon limit (kgCO2e/kWp) | | ✓ | ✓ | ✓ |
| Reporting Metrics | Life cycle embodied carbon | total | ⓘ | ⓘ | ⓘ |
| | | new floor areas [A] *($kgCO_2e/m^2$ GIA new floor area)* | ⓘ | ⓘ | ⓘ |
| | | existing floor areas [A] *($kgCO_2e/m^2$ GIA existing floor area)* | ⓘ | ⓘ | ⓘ |
| | | per m3 internal building volume [B] *($kgCO_2e/m^3$)* | | ⓘ | |
| | | on-site renewable electricity generating equipment *($kgCO_2e$)* | ⓘ | ⓘ | ⓘ |
| | Upfront carbon | total, using generic material factors [F] | ⓘ | ⓘ | ⓘ |
| | | new floor areas [A] *($kgCO_2e/m^2$ GIA new floor area)* | ⓘ | ⓘ | ⓘ |
| | | existing floor areas [A] *($kgCO_2e/m^2$ GIA existing floor area)* | ⓘ | ⓘ | ⓘ |
| | | Reportable Works [D] *($kgCO_2e/m^2$ GIA relevant to the reportable works)* | | ⓘ | ⓘ |
| | | Cat A only | ⓘ | | |
| | | Cat B only | ⓘ | | |
| | | on-site renewable electricity generating equipment [E] *($kgCO_2e$)* | ⓘ | ⓘ | ⓘ |
| | Material quantities for key structural and façade materials [C] *(kg)* | | ⓘ | ⓘ | ⓘ |
| | PVs peak power *(kWp)* | | ⓘ | ⓘ | ⓘ |
| | Wind turbines and hydroelectric – reference power *(kW)* | | ⓘ | ⓘ | ⓘ |

[A] The reporting scope for this excludes external works (RICS Professional Standard Building Element Category 8). ◀ See UKNZCBS section 5.1.5.2

[B] If a building is mixed-use where the majority of area (NIA) is Storage and Distribution sector, the scope for both carbon and volume are limited to the spaces where floor area (NIA) is defined as storage and distribution. ◀ See UKNZCBS Table 8

[C] Material quantities are currently only required for: ◀ See UKNZCBS section 5.1.5.8

1) total kg of all concrete grades at least C16/20 or equivalent
2) total kg of all other cementitious materials including screeds
3) Total kg of all reinforcing steel ("rebar") including mesh
4) Total kg of all other steel including beams, columns, plate and connections
5) Total kg of all aluminium used within facades

[D] This only applies when treated as a separate assessment when clearly not associated with any New Works or Retrofit Works. ◀ See UKNZCBS section 5.1.2.3

[E] This metric is only applicable to: photovoltaics (PVs), on-site wind turbines and on-site hydroelectric turbines. Products/materials that are necessary for the functioning of the equipment can be included within the scope of the on-site renewable electricity generation assessment (apart from batteries), and are then excluded from the assessment for the whole building, to avoid double-counting. ◀ See UKNZCBS section 5.1.2.7

[F] See section 5.3.2 of this guide for use of generic material carbon factors.

[G] This only applies when the works type is New Works or Retrofit Works. See section 3.1.1 of this guide.

# 2 Overall Process

Implementing the Standard on a project requires thought and forward planning, particularly when the project is aiming to achieve certification. This section sets out the overall project process leading to alignment with the Standard.

The process diagram in Figure 2-1 has been created for this guide to help developers, designers, contractors, and tenants identify the key steps that should be taken at each RIBA Stage to implement the embodied carbon requirements of the Standard. This can be used as a key summary for understanding the actions involved in the process leading to certification, as well as signposting key chapters included in this guide.

As can be seen in Figure 2-1, the ambition to comply with the Standard should be set out in the early stages of the project at the brief setting stage. This approach is aligned with the embodied carbon reduction graphic shown in Figure 2-2, which emphasises that early planning and brief setting stages have the biggest carbon reduction potential.

The proposed process in Figure 2-1 emphasises the importance of design collaboration, continuous data gathering and embodied carbon assessments to ensure adherence to the limits and targets is monitored as the design progresses through the RIBA Stages.

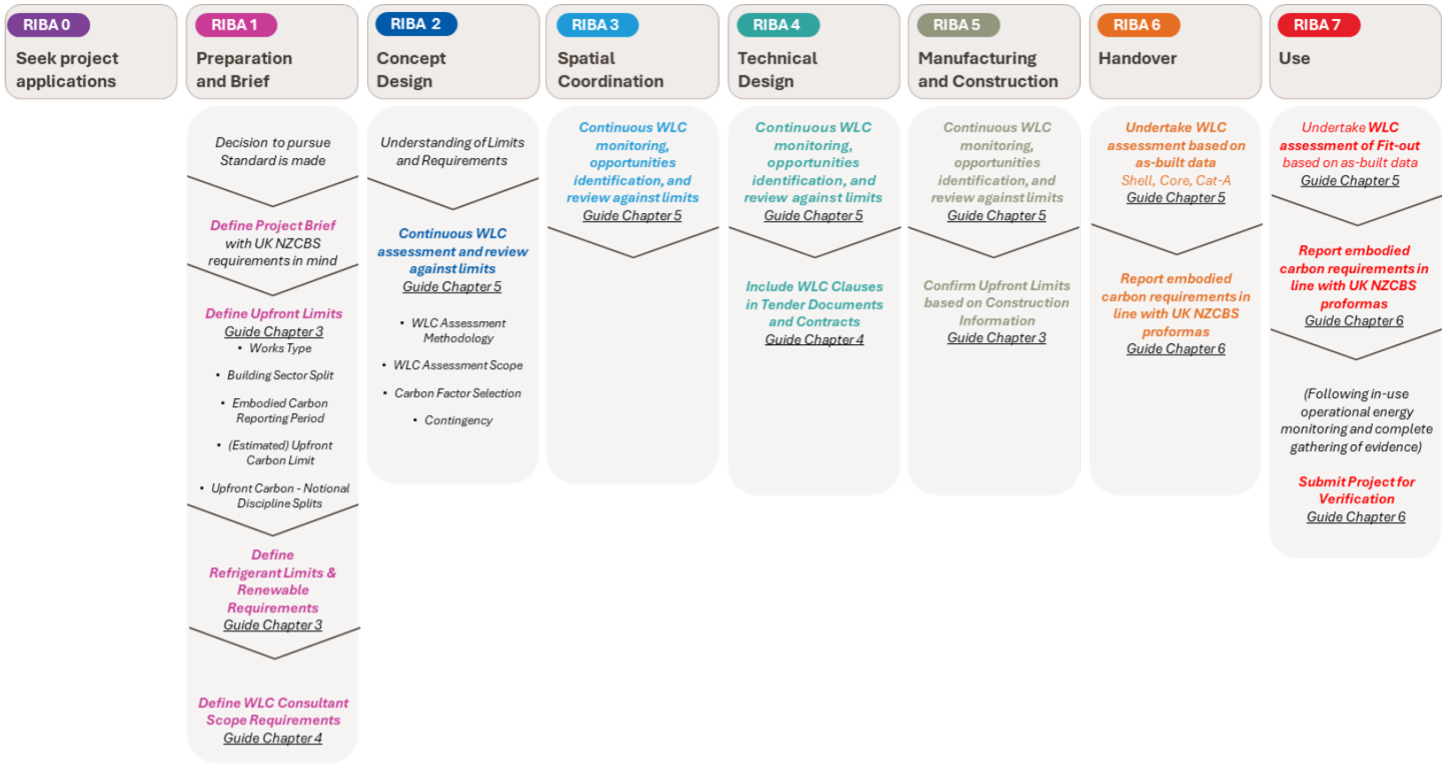



**Figure 2-1** Proposed project process to address embodied carbon in line with the Standard.

The project brief should encourage the investigation and proposal of low carbon design strategies to give the project the best chance of meeting the requirements of the Standard e.g. maximising building or material retention, rational and appropriate grids, material efficiency etc. using a carbon reduction framework like the one shown in Figure 2-2.

The upfront carbon limits should be derived for a project as early as possible, based on estimated Date of Commencement of works on site, sector(s) present in the building and the works type (see section 3.1), so that project objectives and carbon reduction strategies that align with the Standard can be set early on. Worked examples have been provided in section 7 that show how different types of projects can be assessed against the Standard.

Further detail is given in Section 4 on recommended project processes and strategies that aid managing, measuring and reducing embodied carbon to give the best opportunity to meet the Standard's limits.

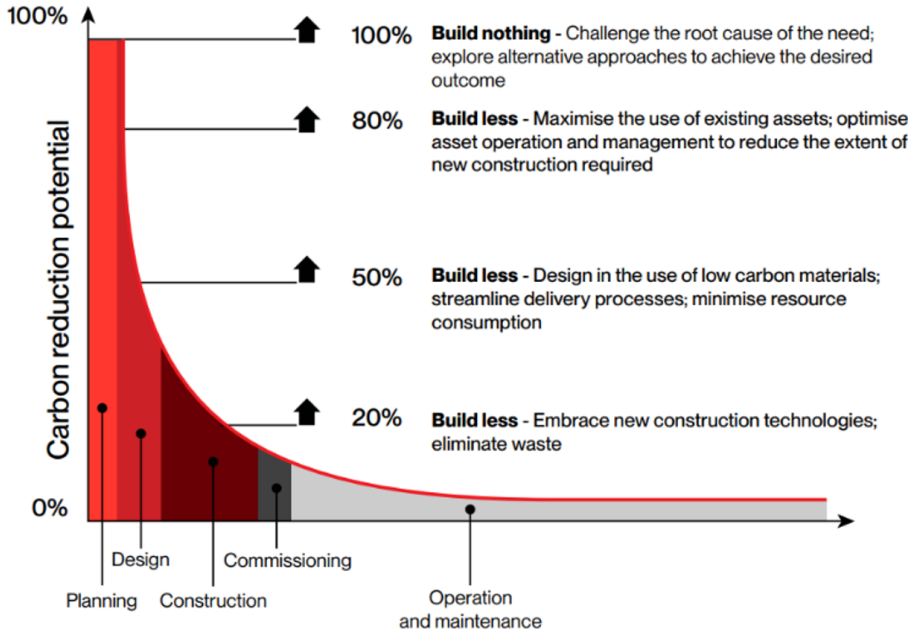
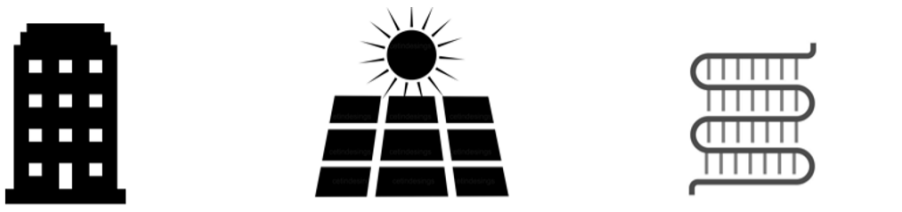



**Figure 2-2** Embodied carbon reduction potential at difference stages of a building project.
*Source: HM Treasury; Green Construction Board*

# 3 Defining the embodied carbon limits

There are three embodied carbon-related pass/fail metrics that **must be satisfied**, based on as-built data, to gain verification to the Standard:




How to define the limits for these pass/fail metrics for your project is described in this section. This process is also demonstrated in the worked examples in section 7 of this guide.

## 3.1 Defining the upfront carbon limit

This section guides users through a simple step-by-step process to determine the relevant upfront carbon limit for their project.

Upfront carbon limits for a project are calculated from the tables provided within Annex A1 of the Standard based on:

- Works type
- Year corresponding to the Date of Commencement works
- Sector(s) and subsector(s)

Where multiple works types or sectors are present, an area weighted calculation will be required to work out the overall project upfront carbon limit, described in section 3.1.5.


**Figure 3-1** Process for defining the upfront carbon limit for your building

It is important to note that the upfront carbon limits correspond to carbon assessments that align with the RICS Professional Standard *Whole Life Carbon Assessment for the Built Environment*, 2nd Edition[7] (RICS v2) upfront carbon scope **but with the several scope exclusions** that are set out in sections 5.2.2 and 5.2.3.

◀ See UKNZCBS section 5.1.2

Section 5.2 contains more details on the scope of the upfront carbon limits and embodied carbon assessment.

Once an upfront carbon limit for your project has been defined, to help track and manage progress against meeting that limit, you may wish to split up the limit by design discipline or building element. Guidance for doing this is provided in section 4.2.

### 3.1.1 Step 1 – Determine works type

The Standard defines assets with a '**building type**' and defines projects of work being completed with a '**works type**'.

See UKNZCBS section 4.2.1

The building type is used to determine limits and targets related to ongoing use of the building (such as the operational energy limit and on-site electricity generation target). The building type is therefore not considered further in this guide.

The works type is related to creation of new floor area, retrofitting of an existing building, or undertaking of works such as re-fitting out of an office space. This is used to determine the upfront carbon limit. The works type can be determined using the decision tree in Figure 3-2.

See UKNZCBS Table 5

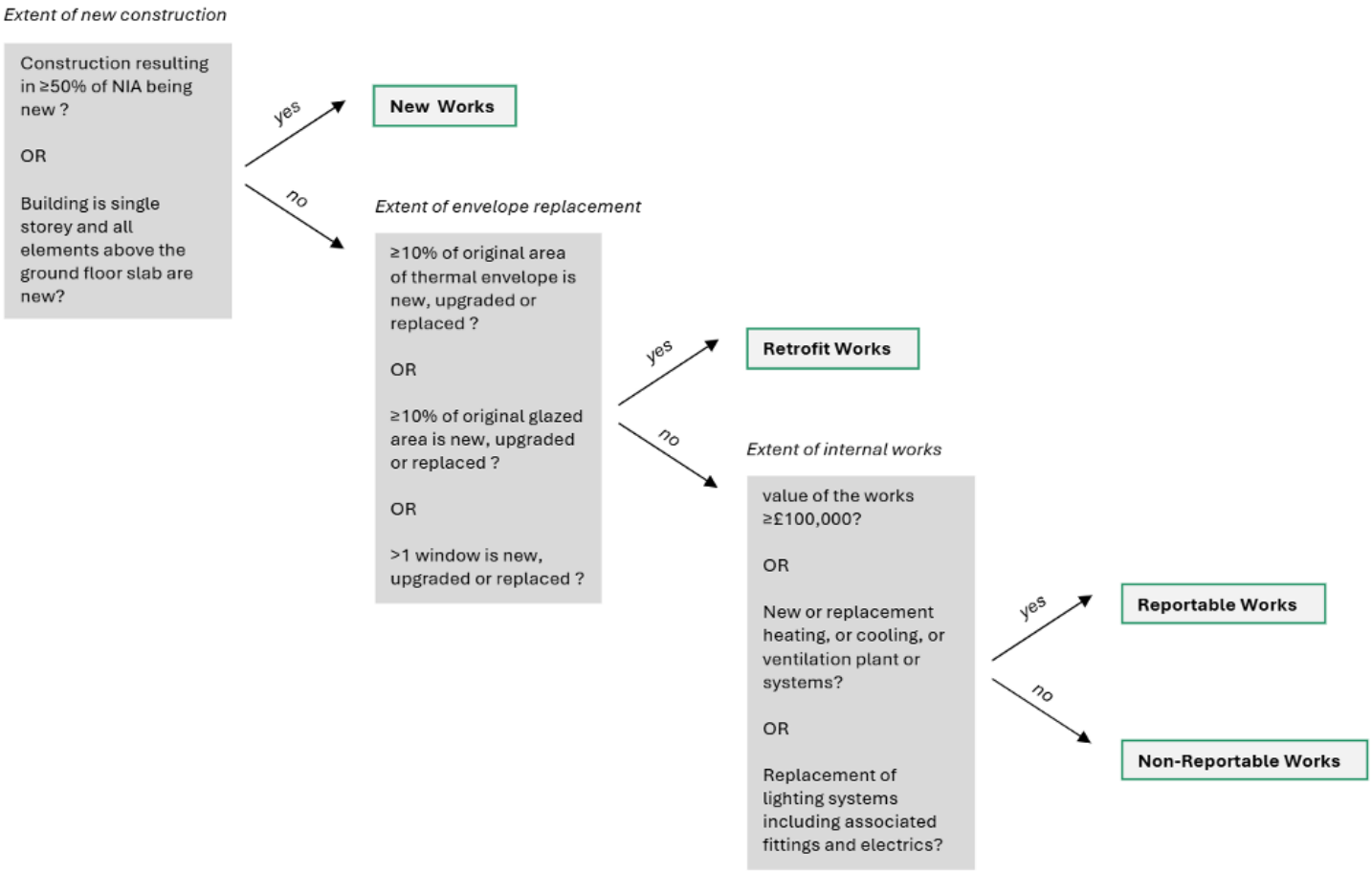



**Figure 3-2** Decision tree to determine works type for a project

'New NIA', also referred to in the Standard as 'New Area', is defined by the Standard as: "Areas of floor, measured in NIA, where construction of structure was completed within the five years prior to the Reporting Period End Point" (see section 5.2.1 of this guide for reporting periods).

Structure in this case refers to RICS PS building element categories 1.1 to 2.3, i.e. substructure and superstructure excluding stairs.

See UKNZCBS 3.1.4.9

***Tip: What is NIA?***

*NIA (Net Internal Area) is typically defined as the useable area in a building with typical exclusions such as common areas, toilets, lifts, structural elements and others as defined in section 3.0 of 'RICS Guidance Note, Code of measuring practise, 6th edition[4]'. Typically, the architect or quantity surveyor should provide the NIA, but if not, this could be measured by any member of the design team if required. Diagrams E to H of the 'RICS Guidance Note, Code of measuring practise, 6th edition' should be referred to if taking measurements yourself.*

In summary:

- **New Works** either has new structural works covering more than 50% of NIA, or for single storey buildings, everything above the ground floor slab is new.
- **Retrofit Works** can have some structural works (less than 50% NIA) but will **always** have some works related to the thermal envelope (façade and/or roof).
- **Reportable Works** are defined either by
  - Works value – greater than £100,000 including total material, labour and design cost excluding VAT
  - or new/replacement of MEP systems.

See UKNZCBS Table 4

If your project is classified as Retrofit Works *and* contains some New Area, note that the limit for your project will require an area-weighted calculation. This should weight the New Works limit and the Retrofit Works limit for each sector present by the respective portion of NIA that is New and Existing (see section 3.1.5 for details on the area-weighted calculation and worked examples). For example, works undertaken to an Office building that result in 40% New Area (NIA) and 60% Existing Area (NIA) will be identified as Retrofit Works, but will use an upfront carbon limit based on a 40:60 weighted average of the New Works and Retrofit Works limits presented in Annex A1 of the Standard.

For the Retrofit Works criteria, it is worth clarifying that 'original' thermal envelope refers to the thermal envelope area of the existing building. Note that replacement or addition of insulation, cladding, glazing, or any other elements of the existing thermal envelope build-up, would qualify as works to the thermal envelope.

The upfront carbon limit for Reportable Works is based on upfront carbon normalised by the GIA that the Reportable Works applies to, rather than the full building GIA. Reportable Works could include any works to internal fit-out, finishes, non-structural internal doors and walls, and building services (MEP systems), where not occurring as part of a project that is defined as New Works or Retrofit Works.

For buildings with multiple tenants, individual assessments against the Reportable Works limit shall be undertaken for works occurring in each area with a different tenant. Reportable Works would not need to be assessed against the Reportable Works limit if it covers an area less than 500m² NIA and is occupied by a single tenant who is not the building owner.

The 500m2 NIA threshold is intended to be reduced in future versions of the Standard, and delineation requirements will be included in Version 1 of the Standard, to differentiate between tenants and owners who do and do not meet the requirements of the Standard.

*Note: In the Pilot version of the Standard (2025), Reportable Works upfront carbon limits only exist for Offices. Reportable Works limits for other sectors will become available as more whole life carbon assessment data is shared.*

"Non-Reportable Works" do not have associated upfront carbon limits or embodied carbon reporting requirements.

See UKNZCBS section 5.1.2.1

### 3.1.2 Step 2 – Establish Date of Commencement year

The next part of the process to establish your upfront carbon limit is to determine the year corresponding to the **Date of Commencement** of works on site. The upfront carbon limits for each sector and subsector reduce every year, as illustrated in Figure 3-3.

See UKNZCBS section 4.2.6

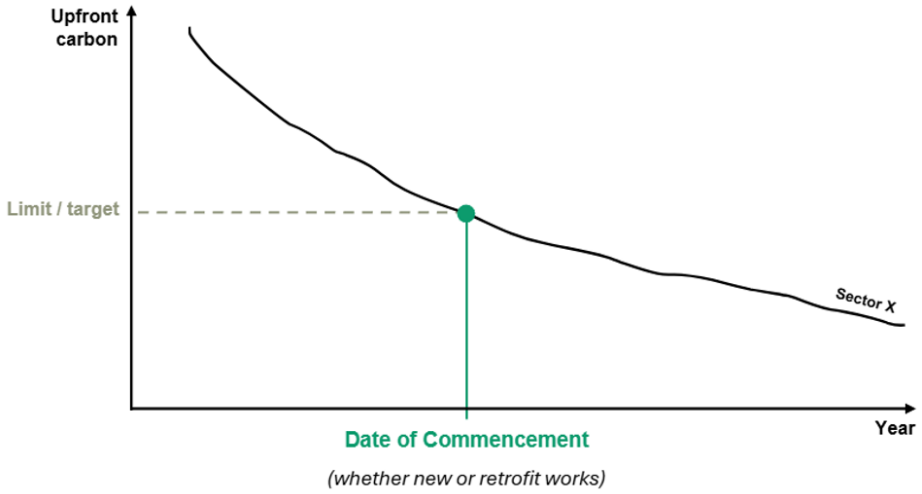



**Figure 3-3** Illustration of definition of limits based on year of Date of Commencement of works

The Date of Commencement is defined by when at least one of the activities defined in Table 3-1 starts. New Works and Retrofit Works have different lists of qualifying activities.

**Table 3-1** Activities that define Date of Commencement

| New Works | Retrofit works |
|---|---|
| • Excavation for strip or trench foundations or for pad footings;<br>• Digging out and preparation of ground for raft foundations;<br>• Vibroflotation (stone columns) piling, boring for piles, or pile driving;<br>• Ground stabilisation works;<br>• Drainage work specific to the building(s) concerned;<br>• Where New Works involves the retention of existing elements (e.g., walls or floors), the activities listed in section 4.2.6.2 shall also indicate that the works have commenced. | • Removal of permanent/fixed internal or external walls or windows;<br>• Removal of MEP services including heating, cooling or ventilation systems but excluding lighting;<br>• Demolition of structural framing or floors;<br>• Improvements to the thermal performance of the existing envelope;<br>• Modification of existing substructure. |

For Works with a Date of Commencement prior to the publication of the first version of the Standard, the upfront carbon limit does not need to be met for the building to be verified as a Net Zero Carbon Aligned. In this case, the upfront carbon limits become reporting metrics alongside the others in Table 1-1 that are required for submission to the Standard.

*Tip: As there may be some uncertainty as to the Date of Commencement of works on site, it is recommended that limit(s) are selected corresponding to the year after the planned Date of Commencement, in case the project programme becomes delayed during the design stages.*

The upfront carbon limits reduce by approximately 20-30 $kgCO_2e/m^2$GIA per year for new works, and 15-25 $kgCO_2e/m^2$ GIA reduction per year for retrofit works, varying by sector.

These reductions are reflective of the UK's materials industries' intended decarbonisation pathways, combined with estimated levels of material efficiency and material switching, between 2024 and 2050, informed by industry consultation[5]. Therefore, although the future limits may seem challenging at first glance, they have been developed based on what the industry and materials manufacturers deem to be ambitious but achievable.

See pages 27-29 of "The Analysis of Industry Data That Fed into the UKNZCBS Pilot Version Development", which details the basis of assumptions for material decarbonisation, material efficiency and material switching.

As meeting the upfront carbon limits relies on both material decarbonisation and design and procurement measures, it is important that:

- Project briefs are set to maximise carbon reduction opportunities and innovation,
- Project teams increasingly design for efficiency, select lower carbon material options, and show demand for supply chains to decarbonise,
- Materials manufacturers follow a 1.5°C warming-aligned decarbonisation pathway and keep innovating to bring lower carbon materials to market.

### 3.1.3 Step 3 – Identify sectors in the building

The next step of the process is to consider the sectors present within the building.

Sectors and subsectors for which there are upfront carbon limits are shown below:

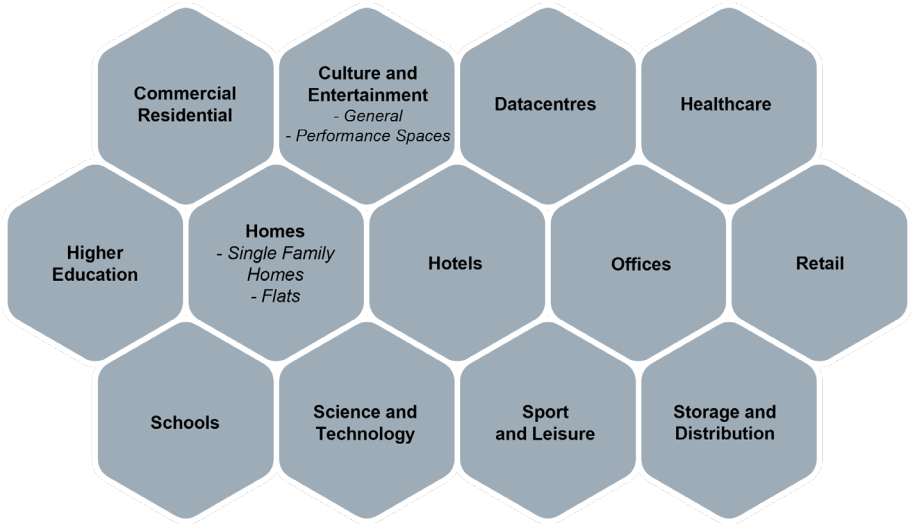



**Figure 3-4** Sectors and subsectors related to embodied carbon

◀ See UKNZCBS Table 6

The only sectors for which there are subsectors, differentiated by function or typology, with upfront carbon limits are currently:

- Homes
- Culture and Entertainment.

Where the building has a single function throughout, classifiable as a single sector, it shall be classified as that sector. Where a building has several areas classified as different sectors, each of which are ≥10% of the NIA of the building, then the building shall be classified as Mixed-Use.

If you are in doubt as to which sector(s) or subsector(s) apply to your building, see section 3.1.3 of the Standard for definitions.

◀ See UKNZCBS section 3.1.3

The decision tree in Figure 3-5 below provides steps to aid the process of determining which limits are relevant, based on the sectors and subsectors present in your project.

#### What if a building's sector is not covered by the Standard?

If ≥70% of the NIA of the building isn't classifiable to any of the sectors within the Standard, you **cannot** formally verify your building against the Standard.

Net Zero Carbon Buildings Standard Ltd has the ambition of expanding the scope of the Standard in the future, possibly to other sectors, but cannot do this without data that would allow limits to be set for those sectors. As such, it

would be best practice to submit the assessment metrics as defined in section 1.4.1 via the Submission Proforma, and to the BECD[6], clearly stating the sector, to support the future implementation of the Standard, and its expansion to more sectors and subsectors.

The limits in the Standard could be used as proxy targets for your project, if appropriate, to encourage the implementation of low carbon measures on your project.

For example, transport hubs are not defined within Table 6 of the Standard but users could consider using the 'Storage and Distribution' sector limits as a proxy. Using the scope and reporting approach of the Standard – even with different limits – helps the industry increase consistency and improve its approach to decarbonisation.

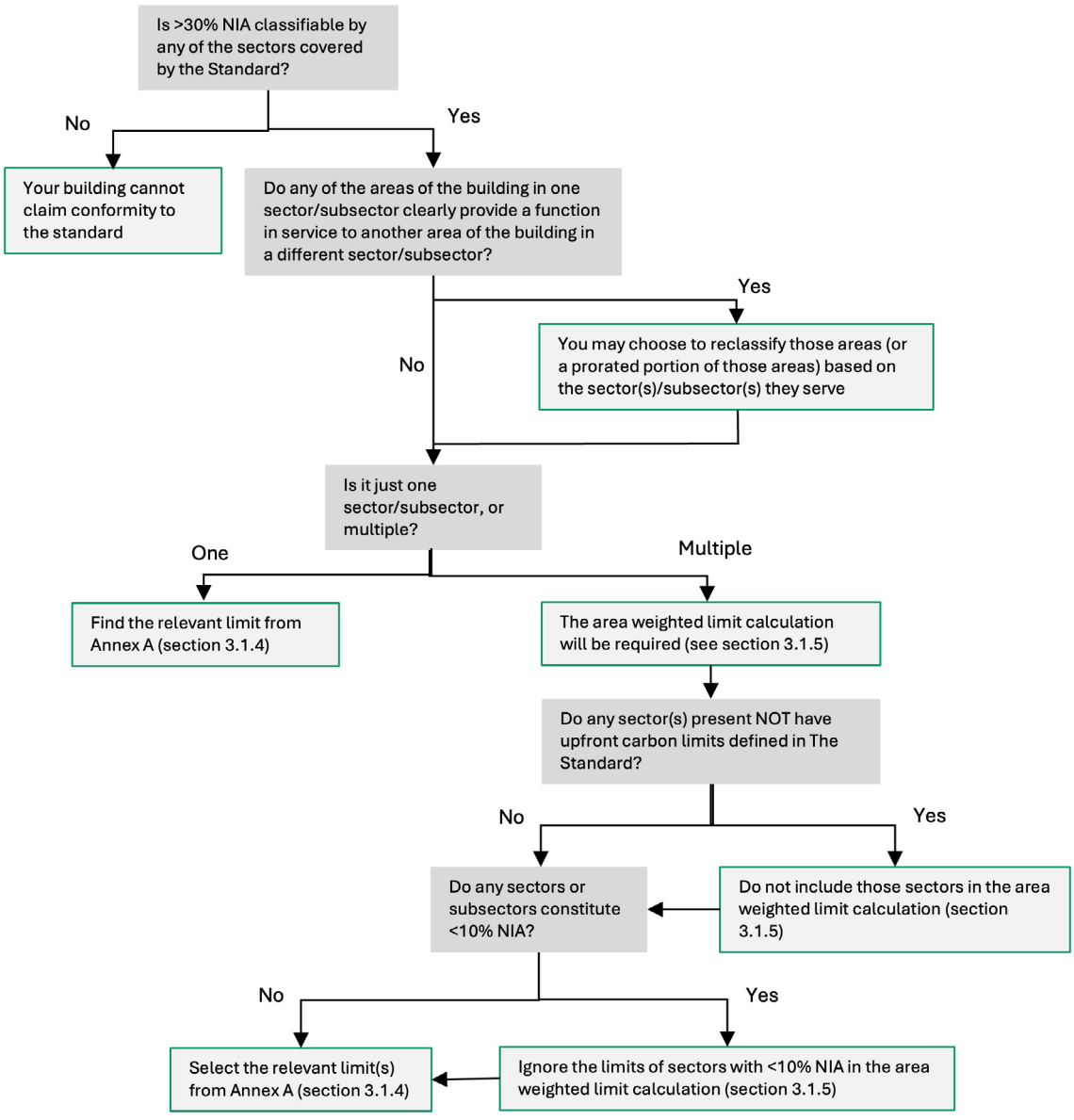



**Figure 3-5** Decision tree to determine which sector/subsector limits apply to a project

### 3.1.4 Step 4 – Select limit(s) from Annex A1

The relevant upfront carbon limit(s) can be extracted from Tables EC-1 (New Works), EC-2 (Retrofit Works) or EC-3 (Reportable Works) in Annex A1 of the Standard, once you have established the:

See UKNZCBS Annex A

- Works type
- Year corresponding to the Date of Commencement of the works
- Sector(s) and subsectors(s) assigned to areas within the building

*Note: For Offices, both the 'Shell and core' **and** 'Whole building' limits need to be met (See Table 1-1 in section 1.4.1) in the Pilot Version of the Standard.*

Figure 3-6 illustrates how the relevant limit(s) would be extracted from one of the upfront carbon limit tables in Annex A1 of the Standard, based on sector(s) and Date of Commencement. The example in Figure 3-6 shows the case where a Mixed Use building containing both Offices and Science & Technology sectors has a Date of Commencement in 2028.

In this case the Office areas don't 'serve' the Science & Technology areas, and so have been included as separate sectors.

These limits can be taken into the next section (3.1.5) to conduct the area-weighted calculation to define the upfront carbon limit for the building as a whole.

| ← Date of Commencement on site | Commercial Residential | Culture, Worship & Entertainment | | Data Centres | Healthcare | Higher Education | Homes | | Hotels | Offices | | Retail | School | Science & Technology | Sport & Leisure | Storage & Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | - | General | Performance spaces | - | - | - | Single family homes | Flats | - | Whole building | Shell and core | - | - | - | - | - |
| | kgCO$_2$e/m$^2$GIA | | | | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | | | | | |
| 2026 | | | | | | | | | | | | | | | | |
| 2027 | | | | | | | | | | | | | | | | |
| 2028 | | | | | | | | | | XXX | XXX | | | XXX | | |
| 2029 | | | | | | | | | | | | | | | | |
| 2030 | | | | | | | | | | | | | | | | |
| 2031 | | | | | | | | | | | | | | | | |
| 2032 | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | |

**Figure 3-6** Illustration of determining relevant upfront carbon limit(s) for a project from Annex A1 of the Standard

### 3.1.5 Step 5 – Area-weighted limit calculation (if necessary)

If any of the three following statements are true for your project, an area-weighted limit for your project will need to be calculated:

(1) The building is mixed-use with multiple sectors
(2) The building has multiple subsectors of a sector.
   - Only applicable for where the Standard has different upfront carbon limits for those subsectors.
(3) Your project is identified as 'Retrofit Works' and results in ≥10% and <50% of NIA being new.
   - In this case the Retrofit Works limit is applied to the portion of NIA that is existing and the New Works limit is applied to the portion of NIA that is new, for each subsector, or sector within the building (examples illustrating this are shown in Figure 3-7)

It is worth noting that there are more subsectors than those with upfront carbon limits defined in the standard (See UKNZCBS Table 6), however these are only relevant to other metrics (such as operational energy limits), which aren't covered by this guide.

'New NIA' is defined for NIA where construction of structure (RICS PS building element categories 1.1 to 2.3, i.e. substructure and superstructure excluding stairs) was completed within the five years prior to the Reporting Period End Point (see section 5.2.1 of this guide for information on the Reporting Period End Point)

If your project is identified as New Works and only has one sector the area-weighted limit calculation does not apply. The equation for the area weighted calculation is shown below:

See UKNZCBS section 4.2.5.2

*Equation 1 Area-weighted pass/fail metric adjustment*

$$M_A = \frac{(M_1 \times A_1) + (M_2 \times A_2) + (M_3 \times A_3) + (M_{etc} \times A_{etc})}{A_1 + A_2 + A_3 + A_{etc}}$$

Where:

• $M_A$ = Adjusted limit/target value;

• $M_{1,2,3,etc}$ = The limit/target value applicable to the combination of sector, subsector, area, building, works types etc;

• $A_{1,2,3,etc}$ = The total NIA of the combination of sector, subsector, area, building, works types etc;

The total of $A_1 + A_2 + A_{etc}$ shall equal the NIA of the building, minus any areas excluded due to being <10% of the NIA, or due to being an AUA.

In this way, information on the split of different sectors and subsectors, works types and split of new and existing NIA for each sector or subsector can be used to calculate the upfront carbon limit for a project.

*Note: Although the NIA associated with sectors whose NIA is less than 10% are excluded from the area-weighted limit equation, the calculated limit still applies to the full building.*

Figure 3-7 below shows different examples of how the area weighted limit calculation is applied.

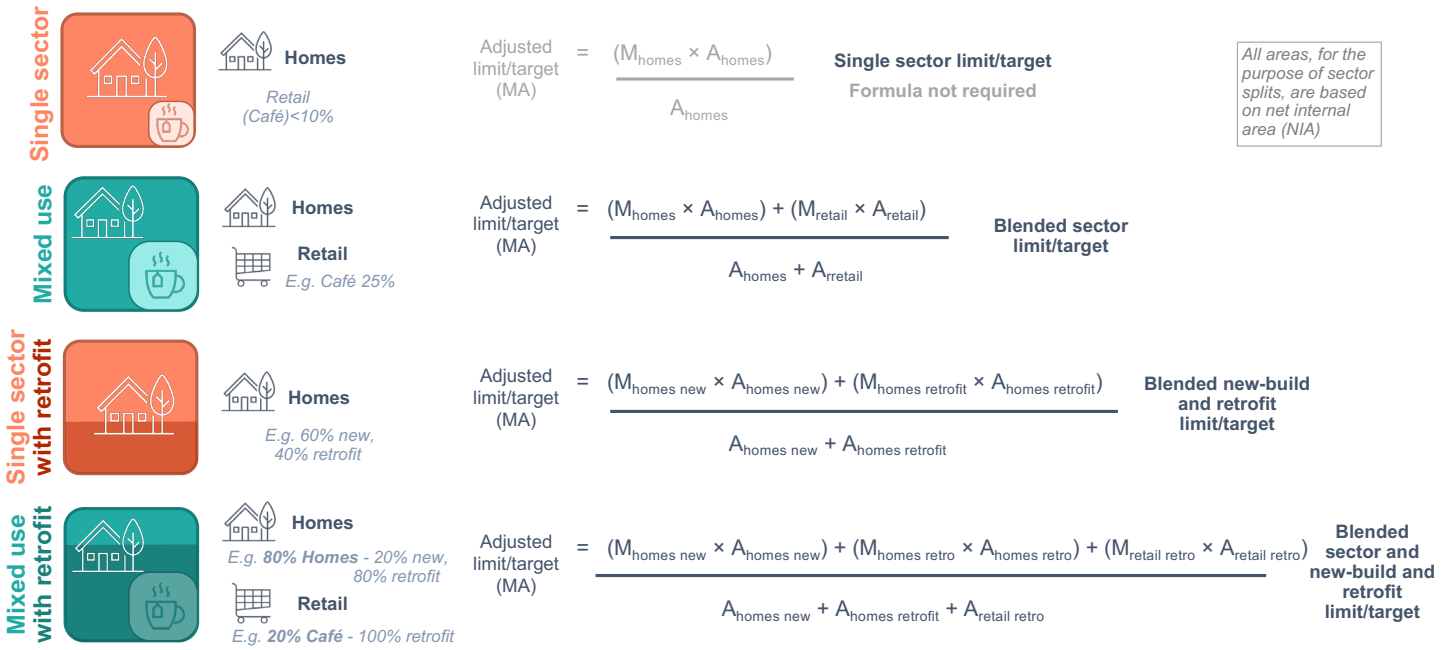



**Figure 3-7** Examples of application of the area-weighted limit calculation
*Source: UK Net Zero Carbon Buildings Standard Ltd*

## 3.2 Photovoltaics (PVs) upfront carbon limit

The Standard has embodied carbon **reporting requirements** for photovoltaics (PVs), on-site wind turbines, and on-site hydroelectric turbines, but it only has an **upfront carbon limit for PVs**, which is currently set at **750kg$CO_2$e/kWp** (kW peak) for all projects.

◀ See UKNZCBS Annex A1

The Standard does not mandate that other products/materials installed to support the function of the PVs are to be included in the PVs upfront carbon assessment scope, but these can be included in the PV scope rather than main building scope if desired. The important thing is that they're only included in one or the other, never both.

*Tip: It is strongly recommended that PV panels, support structure, inverters, cabling and other necessary electrical equipment for the functioning of PVs are included in the PVs upfront carbon assessment.*

The Standard states that batteries are to be excluded from the PVs upfront carbon assessment. Figure 3-8 summarises what should be included and excluded from the PVs upfront carbon assessment.

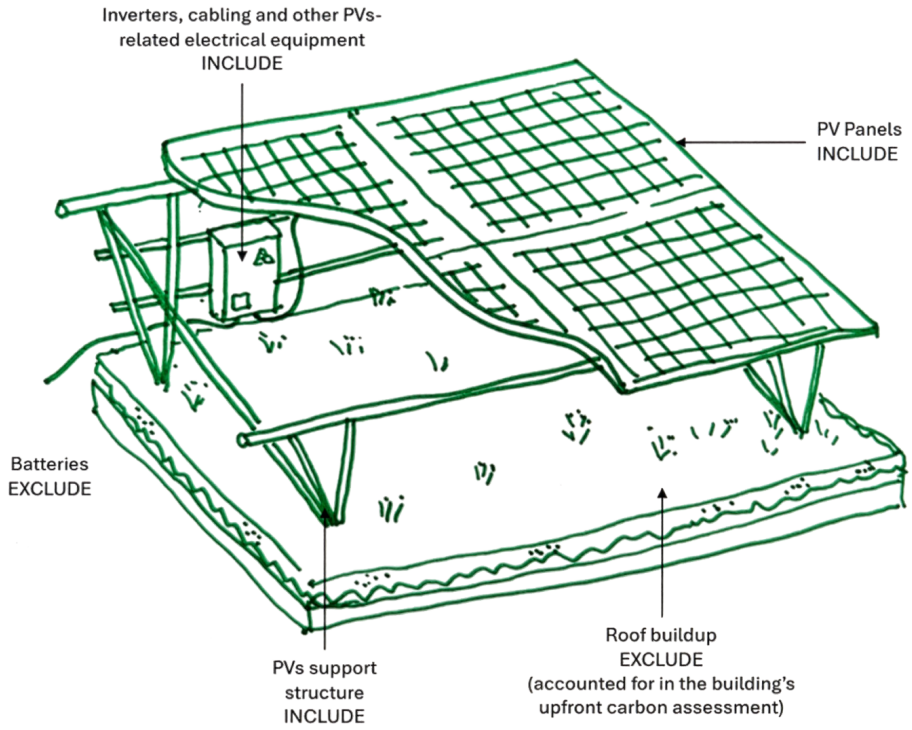



**Figure 3-8** Items recommended to be included in or excluded from the PVs upfront carbon assessment

*Tip: Make sure there is no double counting of PV related items in the PVs upfront carbon assessment and building upfront carbon assessment.*

The upfront carbon of PV panels can vary significantly depending on manufacturer and country of manufacturer. It is recommended that the source of the PVs is considered in relation to their upfront carbon. While payback periods will vary, it is important to also consider the benefits of 'additionality' – as on-site renewables on developments will be adding renewable capacity to the grid rather than merely displacing existing energy supply.

In addition to meeting the upfront carbon limits for PVs, there are targets for the amount of renewable energy that must be generated on-site (not covered by this guide).

## 3.3 Refrigerant GWP limit

The global warming potential (GWP) limit for refrigerants is currently set at **677 $kgCO_2e/kg$**. This value is set to match the current GWP of refrigerant R32.

◀ See UKNZCBS Annex A4

To claim conformity to the Standard, **all refrigerants** used on the project must have a GWP below this value.

*Note: The refrigerant limits do not need to be met if the Reporting Period End Point (see section 5.2.1) occurs prior to 1st January 2030, the refrigeration systems were installed before the release of the Standard, and no works on the refrigeration systems have been carried out since.*

In addition, where in-scope systems within the building collectively contain refrigerant equivalent to 3,000 $kgCO_2e$ or more, the carbon impact of refrigerant leakage must be assessed and reported.

◀ See UKNZCBS section 5.9.1.2

## 3.4 Future development of the limits

At present the Standard only provides embodied carbon limits for

- Building upfront carbon, as defined in Annex A of the Standard, in $kgCO_2e/m^2$ GIA
- PVs upfront carbon in $kgCO_2e/kWp$
- Refrigerants GWP (Global warming potential) in $kgCO_2e/kg$

Other limits, targets and pass/fail metrics (such as operational energy) are summarized in Figure 1-3.

This includes the total life cycle embodied carbon (A-C) which should be submitted as a reporting metric.

It is intended for life cycle embodied carbon (A-C) limits to be included in future revisions of the Standard. This will be possible once sufficient and accurate whole life carbon assessment data has been collected by UK Net Zero Carbon Buildings Standard Ltd.

Projects applying for certification with the Standard must undertake a full life cycle embodied carbon assessment (see section 5) to the RICS PS v2[7], with no scope exclusions with the aim to generate the data required to create life cycle embodied carbon limits in future.

◀ See UKNZCBS section 5.1.2.2

# 4 Whole life carbon in design and construction – best practice

Achieving the ambitious 'Net Zero Carbon Aligned' building limits defined in the Standard requires a robust low-carbon strategy which must be coordinated from the early design team decisions through to construction. Carbon saving strategies have the most impact at earlier design stages and so design team members should influence early decision making to prioritise carbon saving measures.

Uncertainty should not be a deterrent from undertaking embodied carbon calculations at early stages of design. Instead, the sources of uncertainty and the open reporting of data should be noted in reports and calculations to help reduce it (see Section 5.2.4 for further details).

Although it is recommended to appoint a sustainability consultant and/or whole life carbon (WLC) consultant at early-design stages, this is not possible on many projects. In any case, each discipline should be aware of the carbon impacts of their designs, and proactively use carbon calculations to inform and influence decision making. In the absence of a WLC consultant, the lead designer and/or client should take ownership in coordinating, compiling and interrogating the embodied carbon measured by the different disciplines and the decisions that have led to the results.

The onus is on design teams to identify and implement the opportunities for reducing carbon emissions in each discipline through collaboration and communication. Keeping a carbon opportunities register throughout the design stages is a good way of enabling this.

The ensuing recommendations for whole life carbon best practice are framed for sustainability consultants but can, and should, be used by any members of the design team. Further guidance on low carbon design and industry best practice can be found in the IStructE's *Design for Zero* guide[8] and LETI's *Embodied Carbon Primer*[9].

## 4.1 Whole life carbon consultant's scope of works

Tracking upfront and life cycle embodied carbon throughout design and construction is integral to effectively achieving the Standard's embodied carbon requirements.

A recommended minimum scope for a whole life carbon consultant has been proposed for each RIBA stage in Figure 4-1. This is a high-level guide to the key aspects and actions needed to measure and manage embodied carbon in a multi-disciplinary project and should be adapted as needed for the requirements of individual projects.

Note that embodied carbon is often assessed along with operational carbon as part of a whole life carbon assessment, but only the aspects related to embodied carbon are shown in Figure 4-1.

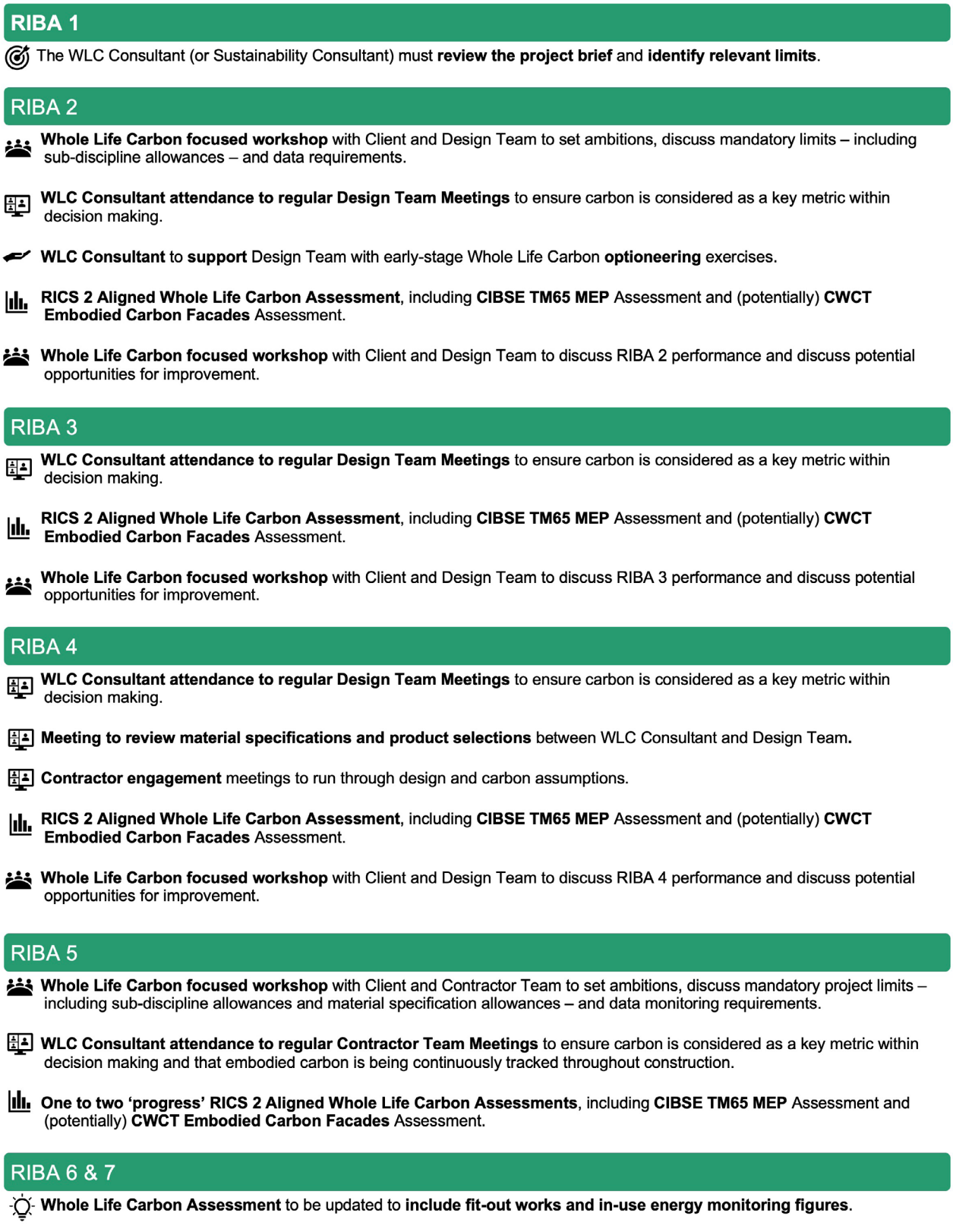



**Figure 4-1** Whole Life Carbon Assessment Minimum Scope of Works

## 4.2 Notional split of the limits

To enable good monitoring and management of the building's upfront carbon, it may be useful to provide the different project team disciplines with their own upfront carbon limits to track their designs against.

This can help teams to indicate whether the project is on track to meet the Standard's upfront carbon limits, and on which disciplines upfront carbon reduction efforts should be focused. It is recommended to split the full building upfront carbon limit by the RICS v2 building element categories, as they map well onto typical design responsibilities for different disciplines.

Various sources exist for approximating how the upfront carbon limit for your building can be broken down by building element category. Using a combination of the embodied carbon data collected to inform the Standard's upfront carbon limits and the GLA Benchmarks, notional ranges of percentage splits for different building elements for New Works for several sectors have been derived and are shown in Figure 4-2. Although the typical ranges of splits could change in the future depending on relative decarbonisation rates of different construction products and changes in design and construction practice, for now it can be assumed that they apply to any Date of Commencement.

Currently (in 2025), freely-accessible data for building elements splits for different building types in the UK can be found in the LETI (Low Energy Transformation Initiative) Embodied Carbon Primer and GLA (Greater London Authority) WLC Guidance. As there have been significant changes to WLC guidance and increased WLC data collection since the LETI publication, it is not recommended that these splits are used. The GLA benchmarks are more up to date and cover Offices, Residential, Educational (schools, universities, etc.) and Retail buildings, and are more commonly used in current WLCA practice to guide early design stage estimations.

As there has been a rapid evolution of LCA of MEP systems since the LETI data and GLA benchmarks and splits were published, it is now understood that they underestimate the embodied carbon contribution of MEP systems for most buildings.

The notional splits are provided as typical ranges because upfront carbon splits by building element should vary from project to project, responding to project specific requirements and constraints. For example, a building with a deep basement is likely to require a higher substructure upfront carbon allowance than a building with no-basement.

*Tip: If splitting the full building limit by discipline, the splits should consider the specific context of your project, site constraints and conditions, the client brief, extent of retrofit, etc. The ranges in Figure 4-2 can be used as a guide.*

The project team should collaboratively determine their own split at the start of the design and monitor its appropriateness throughout the design process. If changes are required to the splits as the design progresses, the whole life carbon consultant (or a dedicated member of the project team) should manage this process and clearly communicate changes to all disciplines.

Individual disciplines must not be siloed. While it is useful to calculate the discipline splits, the only pass/fail metric that is assessed by the Standard is the whole building upfront carbon limit. It is therefore essential that disciplines coordinate embodied carbon performance and carbon saving strategies to deliver holistic engineering solutions.

If whole life embodied carbon or upfront carbon data is readily available for a building that is very similar to your project, this could also provide a good starting point for defining limit splits by building element.

*Note: Whatever building element splits are used for your project, they must add up to 100% of the relevant upfront carbon limit*

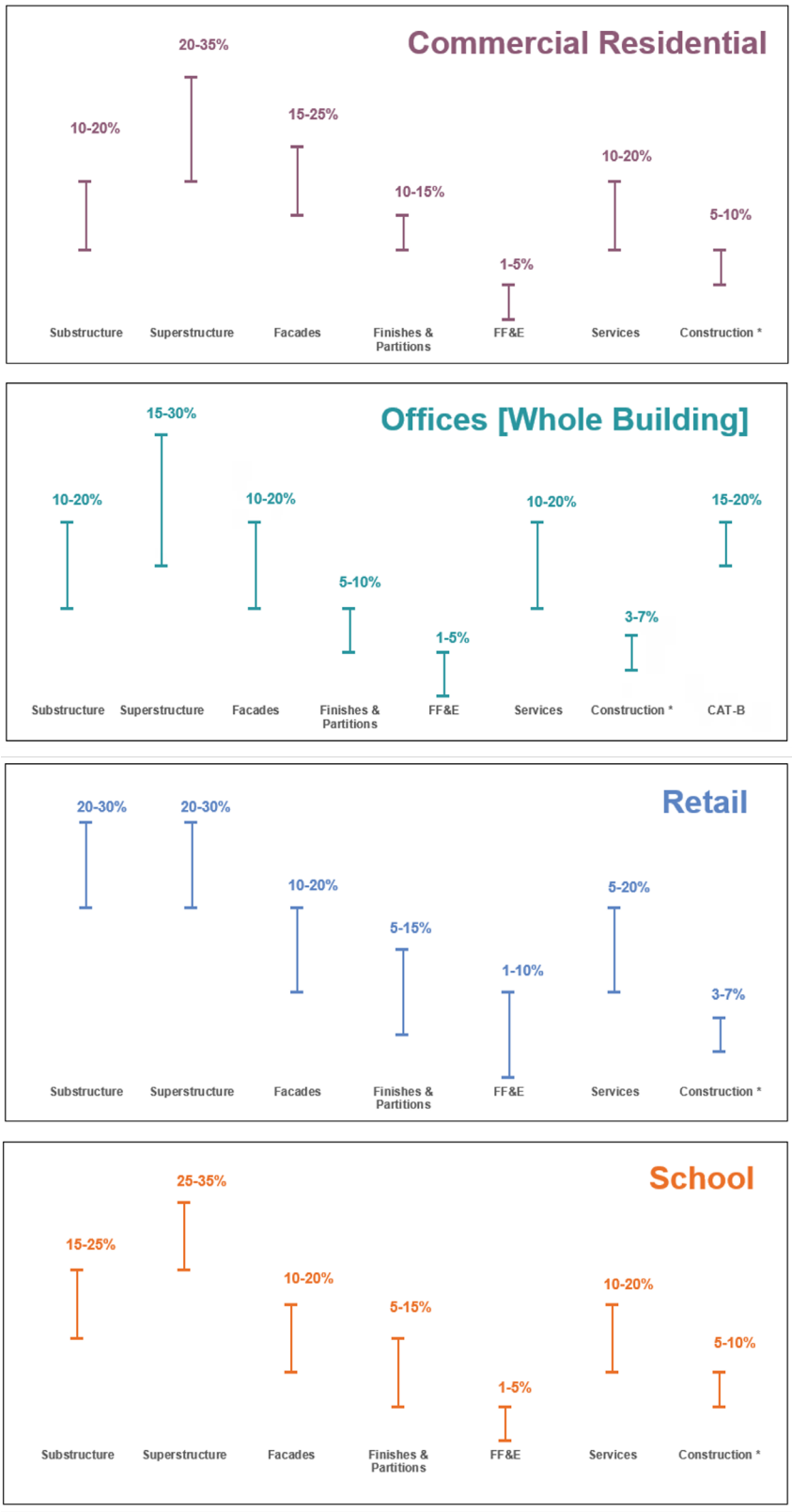



**Figure 4-2** Notional upfront carbon discipline limit split ranges for different sectors for new works

The splits provided are aligned to the RICS PS building element categories, but with internal walls and doors (RICS v2 building element categories 2.7-2.8) combining with finishes (RICS v2 category 3).*Although ranges have been shown for construction activities emissions (life cycle module A5.2) in the notional splits, RICS v2 recommends using a default emissions rate of 40kgCO2e/m2 GIA constructed.

## 4.3 Specifications, Tenders, and Contracts

While not an explicit requirement of the UK Net Zero Carbon Buildings Standard, the inclusion of carbon-focused specification requirements, tender requirements, and contract clauses are critical mechanisms for ensuring that design-stage embodied carbon ambitions are carried through from early-stage design into construction. This can be done by:

- Ensuring carbon associated with products and materials aligns with Design Team assumptions and ambitions,
- Requiring necessary data to be tracked and monitored throughout construction,
- Clearly mandating carbon limits, including limits for fit-out works where required,
- Ensuring that contractors have understood and bought into the sustainability aspects of the brief, which will encourage the incorporation of carbon into any change management systems.

### 4.3.1 Specifications

Upon handing over the design to the contractor, designers are encouraged to include A1-A3 carbon emission limits within their material specifications to help manage carbon emissions through to construction.

Similarly, A1-A3 carbon performance requirements should be set by the contractor when working with subcontractor teams.

*Tip: Carbon requirements should be set based on achievable, procurable products and technical requirements.*

Setting artificially low carbon requirements within specifications, knowing specified levels of carbon performance cannot be realistically achieved, will not be effective in regulating the building's carbon performance during construction. Care should be taken not to rely on high quantities of constrained resources such as GGBS[10] or scrap steel[11] to achieve carbon targets, if not required to meet technical performance criteria.

Even though a project may specify low carbon steel, aluminium, and concrete products, the Standard requires a version of the embodied carbon assessment using generic material specifications for these materials to be conducted and reported. This has been outlined in Section 5.3.2 of this guide.

### 4.3.2 Contractor Engagement and Monitoring

Due to value engineering exercises, increased detail, and specification and design changes – the construction stage is often subject to considerable changes in embodied carbon (often increases) compared to design estimates.

Engaging contractors early and integrating their knowledge of supply chains, construction methods, and practical constraints is critical to ensuring that embodied carbon reductions proposed at design stages can be realised throughout construction.

Effective carbon management throughout construction is critical to ensuring upfront carbon limits are not exceeded. In addition to integrating carbon related requirements within tender and contract documents, the clear expectations must be set with regards to;

- Construction site waste, energy, and water use monitoring and reporting;
- Systematic reporting of material quantities and transport information;
- Collection of Environmental Product Declarations (EPDs);
- Change tracking and frequency of embodied carbon monitoring against RIBA 4 baselines.

#### 4.3.2.1 Tenders and Contracts

The whole life carbon and/or sustainability consultant is strongly encouraged to coordinate with the client's project manager, legal team, and procurement team to ensure that effective sustainability clauses are incorporated within the tender requirements and subsequent appointment contracts.

Suggested tender requirements, for consideration at RIBA Stages 3 and 4, are set out in Table 4-1.

---

*Note: As noted in Section 1.1, users of this guidance should understand that they are solely responsible for statements made, opinions expressed, and accuracy of any content they produce either directly or indirectly as a result of reading this guide.*

*All tender requirements shall be subject to review and approval by the client's procurement and legal teams prior to issue.*

---

**Table 4-1** Suggested tender requirements

| Topic | Responsible Party | Suggested Tender Requirements |
|---|---|---|
| **Site Energy** | Demolition Contractor, Main Contractor | The contractor shall monitor and report on-site energy consumption of electricity, gas and fuel. Energy consumption shall be reported on a monthly basis. |
| **Site Water** | Demolition Contractor, Main Contractor | The contractor shall monitor and report on-site operational water. Water consumption shall be reported on a monthly basis. |
| **Site Waste** | Demolition Contractor, Main Contractor | Throughout RIBA 5, the contractor shall provide a breakdown of all construction site waste, broken down by material/waste type/waste stream. Site waste shall be reported monthly. |
| **Materials – Quantity Data** | Main Contractor | To undertake or support the undertaking of the RIBA 5/6 WLCA, the contractor shall provide a full RIBA 5 cost plan, based on as constructed quantity and product data ensuring suppliers and products are clearly defined. |
| **Materials – Carbon Data** | Main Contractor | Throughout RIBA 5, the contractor shall provide monthly updates on measured quantity data for (minimum) 95% of materials delivered to site by mass or value.<br><br>Data shall include relevant element category, quantities, specification details (incl. EPDs). Where possible, details shall be provided regarding transport mode and distance from manufacturing facility to site. |
| **Embodied Carbon Limits** | Main Contractor | The contractor shall ensure that the proposed works meet the following maximum performance limits:<br><br>• Upfront embodied carbon: not to exceed XXX $kgCO_2e/m^2$ GIA<br>• Refrigerant GWP impact: not to exceed 677 $kgCO_2e/kg$.<br><br>All carbon assessments shall be undertaken in accordance with RICS Whole Life Carbon Assessment for the Built Environment, 2nd Edition (RICS v2) and shall follow the scope and reporting requirements set out in the UK Net Zero Carbon Buildings Standard Section 5. |

### 4.3.3 Tenants engagement

Tenant's fit out choices will affect the embodied carbon of the project. Therefore, fit-out related decisions should be made in alignment with the limits of the Standard.

It is recommended that all building owners adopt leases that require the reporting of embodied carbon data, or at least the reporting of information needed to facilitate an embodied carbon calculation (product quantities and specification) by all tenants. The topics of requirements set out in Table 4-1 could form the basis of reporting requirements in leases.

*Tip: Additional contractual requirements could be set at the point of handover, to ensure tenants are aware of their upfront carbon budget remaining within the Retrofit or New Works limit for their fit out (if it is the first fit out of that space in the building), or the Reportable Works upfront carbon limits (if it is not the first fit out of that area in the building) and life cycle embodied carbon reporting requirement.*

# 5 Undertaking the life cycle embodied carbon assessment

While it is critical to track carbon performance by undertaking embodied carbon assessments throughout design, a post-completion life cycle embodied carbon assessment is required to be submitted as part of the final submission to the verifier for the Standard. This will form the basis of evidence for the embodied carbon related pass/fail and reporting metrics as defined in Section 1.

As shown in Figure 5-1, the metrics are intentionally defined as a subset of the RICS v2 life cycle embodied carbon scope.

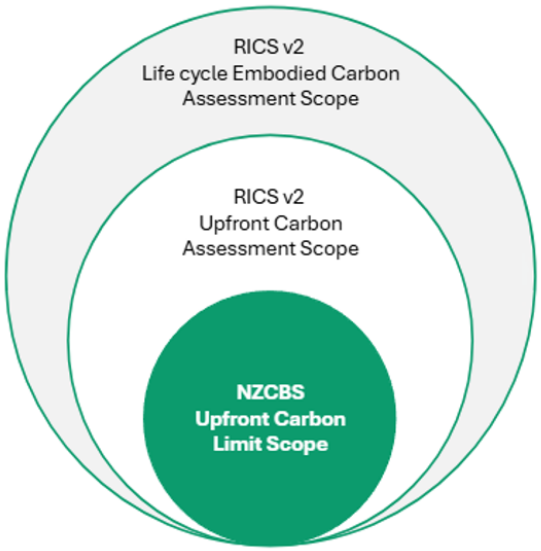



**Figure 5-1** The Standard's Upfront carbon scope in relation to RICS v2

To understand the balance between operational and embodied carbon, it is recommended that the whole life carbon (including both embodied and operational carbon) is calculated based on the information submitted to the Standard for the embodied carbon and operational energy intensity. To do this, operational energy based on Energy Use Intensity (EUI) figures can be converted into operational carbon.

Recommendations for completing the life cycle embodied carbon assessment are defined below with specific reference to scope and data sources.

The life cycle embodied carbon assessment may be completed by an experienced sustainability or WLC consultant, or by an experienced building designer who has experience in embodied carbon calculations and has access to the right carbon calculation tools and industry methodologies set out in section 5.1.

## 5.1 Doing your life cycle embodied carbon assessment

The Standard requires the life cycle embodied carbon assessment to align to the RICS Whole Life Carbon for the Built Environment 2nd Edition (RICS v2).

Additionally, there is a wide range of industry guidance available on measuring and managing embodied carbon for to use for discipline-specific guidance and to support the wider process.

Some useful examples have been noted below:

- Brief Setting (RIBA 0/1)
  - RICS Whole life carbon assessments: A guide for clients[12]
  - UKGBC Embodied Carbon – Developing a Client Brief[13]

- Design Guidance (RIBA 1-5)
  - LETI Embodied Carbon Primer[14]

- Embodied Carbon Calculation Methodologies (RIBA 2-6)
  - How to Calculate Embodied Carbon, IStructE.[15]
  - CIBSE TM65 Embodied carbon in building services: A calculation methodology. *Note the CIBSE* TM65 guide *is cited as a requirement within RICS V2*.
  - CWCT methodology for embodied carbon in facades.

Note in all these methodologies, the use of product-specific EPDs should be prioritised over more generic types of carbon data at the point of final assessment. Further detail is given in 5.3.1 of this guide.

An example of how these methodologies can be used to form a combined whole life carbon assessment can be seen in Figure 5-2. It is best practice for this to be reviewed by a third-party.

In the case of MEP products, for any items costing >1% of the cost of the building, the 'Mid-level Calculation' given in 'TM65 Embodied carbon of building services: a calculation methodology including 2022 addendum' must be used. For other items, the TM65 'Basic Calculation' can be used. For further details see section 5.1.4.3 of the Standard

In the case of nonMEP products, for any items costing >1% of the cost of the building, the 'Full Approach' given in 'How to calculate the embodied carbon of facades: A methodology' must be used. For other items, the CWCT 'Simplified Approach' can be used. For further details see section 5.1.4.3 of the Standard

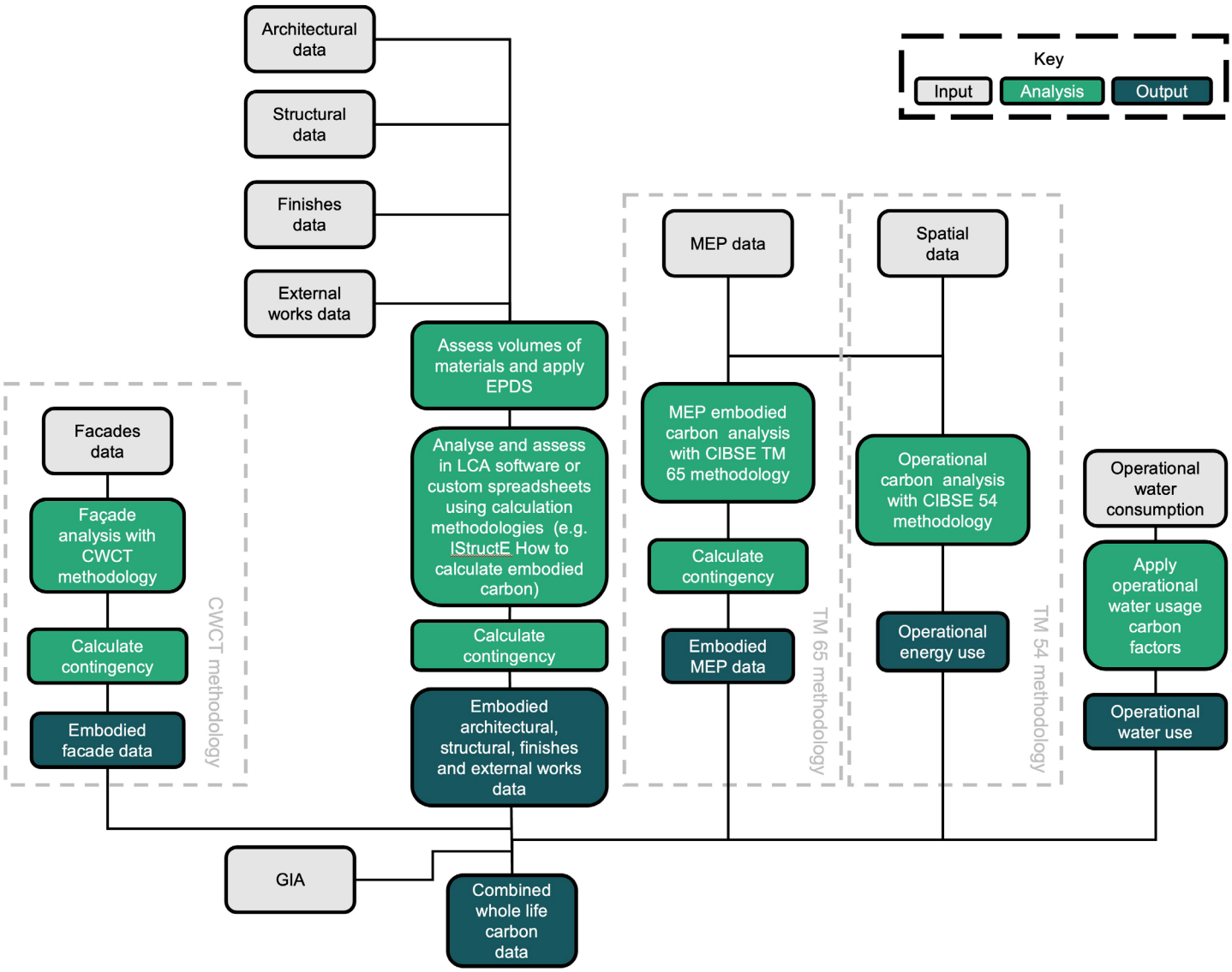



**Figure 5-2** Example of how industry methodologies can be used to form a combined whole life carbon assessment

## 5.2 Scope

### 5.2.1 Reporting periods: Determining what works should be assessed

To claim that a building is Net Zero Carbon Aligned, any embodied carbon assessment and operational energy data from works conducted within a defined time period, referred to as 'Reporting Periods' in the Standard, must be submitted. The Reporting Periods are different for embodied carbon and other metrics (such as operational energy), but as with the rest of this guide, the following section only discusses the Embodied Reporting Period (ERP). Figure 5-3 is a simplified diagram demonstrating how to establish the ERP with further detail for the specific steps described below:

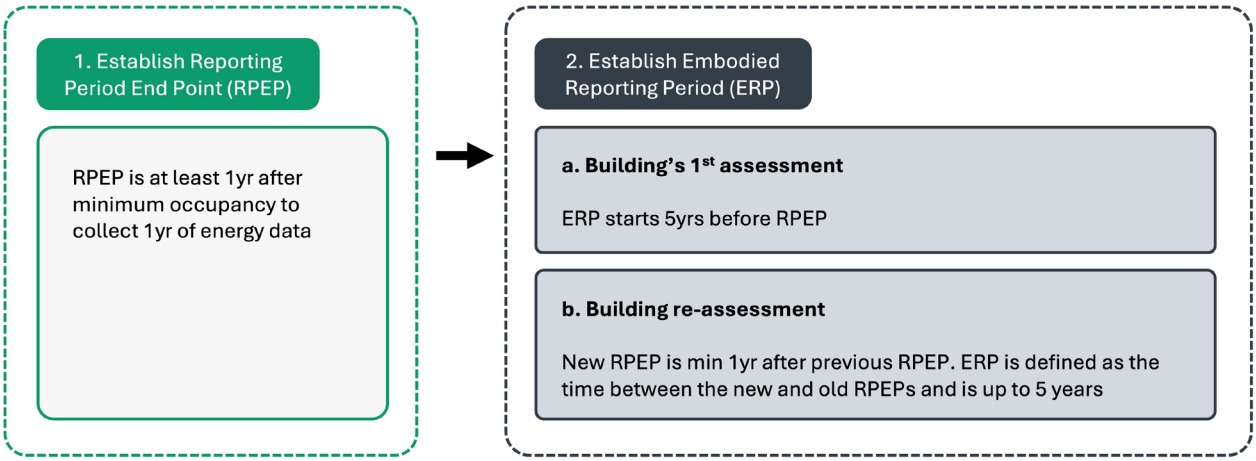



**Figure 5-3** Overview for Establishing the Embodied Reporting Period (ERP).

**1. Determine the Reporting Period End Point (RPEP).**

The end of the reporting period is referred to as the Reporting Period End Point (RPEP). The RPEP is set by the team assessing against the Standard and must be at least one year after the building has reached minimum occupancy*, so that at least one full year of operational data can be collected.

See UKNZCBS section 5.2.4.1

This period of operational energy data collection is referred to as the operational reporting period (ORP). The ORP can start after the period of minimum occupancy, but it must last for one year, with the end of the ORP set at the RPEP. For example, for a building that has been in continual use for the last 20 years, the RPEP could be set with today's date, and the ORP would be for the previous year. This is demonstrated in Figure 5-4 below.

See UKNZCBS section 4.2.4.2

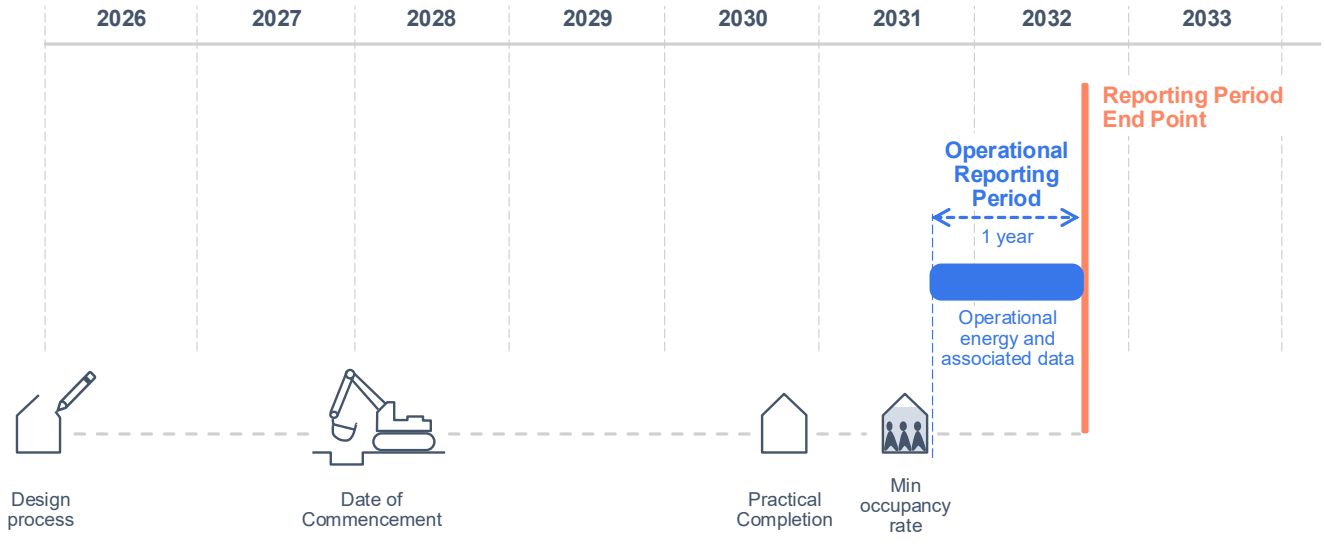



**Figure 5-4** Determining the Reporting Period End Point (RPEP)
*Source: UK Net Zero Carbon Buildings Standard Ltd*

*Hint: There may be some uncertainty about when the minimum occupancy rate is reached, and therefore the RPEP may end up being later than expected.*

**2. Determine the start of the Embodied Reporting Period (ERP).**
This differs based on whether a building has previously been verified against the Standard or not.

a. **For a building's first assessment**, the ERP starts 5 years prior to the RPEP. Any works which achieved Practical Completion within the ERP must be fully included in the submission.

For example, Figure 5-5 shows works which commenced before the ERP start point but were completed within the ERP and as such should be included – in their entirety – in the submitted embodied carbon assessment. If no works complete within the ERP, then no embodied carbon emissions need to be assessed or reported.

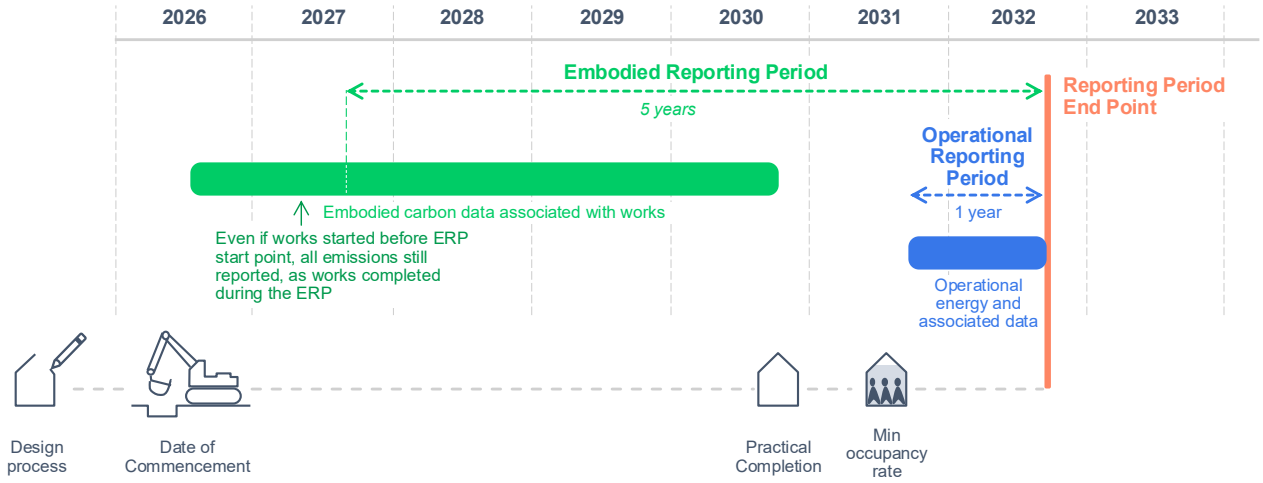



**Figure 5-5** Determining the Embodied Reporting Period (Buildings 1st Assessment)
*Source: UK Net Zero Carbon Buildings Standard Ltd*

b. **For a building that is being re-assessed**, which is required for a building to continue to be verified as Net Zero Carbon Aligned, the new RPEP must be at least 1 year after the previous RPEP (to avoid overlapping works and double counting).

If the previous RPEP is within five years of the new RPEP, then the ERP is shortened - starting the day after the previous RPEP. Note that the ORP is always one year in length, starting 1 year before the new RPEP. This is shown in Figure 5-6 below.

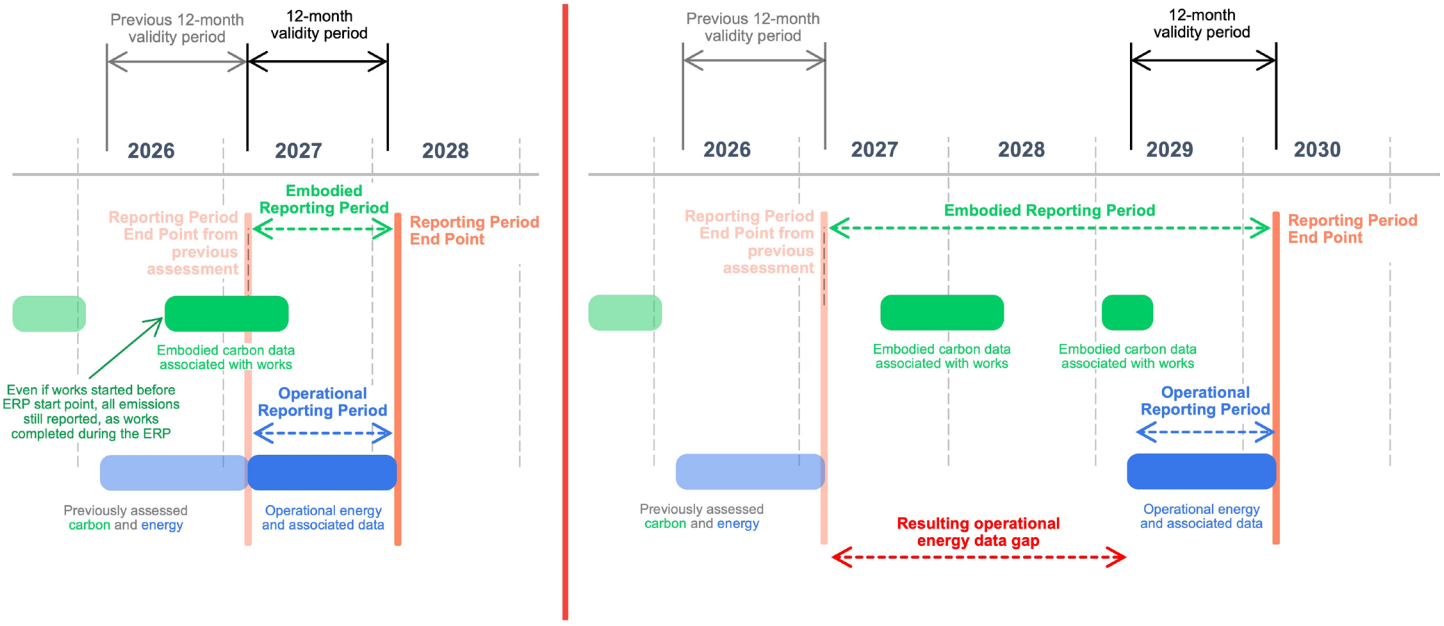



**Figure 5-6** Determining the Embodied Reporting Period (Buildings Re-assessment)
*Source: UK Net Zero Carbon Buildings Standard Ltd*

It is worth noting that it is the intention of the Standard for users to submit operational energy and associated data every year to ensure continuous conformity to the Standard, with respective submissions of embodied carbon works, if this has occurred. It is possible (but not recommended) that there could be a gap in the operational energy and associated data submission as shown in Figure 5-6.

*Hint: All claims of conformity to the Standard will clearly include dates of validity. If there is a gap in operational energy data submission due to a period of time where the minimum occupancy is not reached or operational energy data is not submitted, there will also be a gap in 'Net Zero Carbon Aligned' claim validity for the building, even if the embodied carbon related limits have been met.*

### What if the works have a Date of Commencement prior to the launch of the Version 1 of the Standard (early 2026)?

If this is the case, the usual pass/fail metrics (including the upfront carbon limit) do not apply - instead it is only required for embodied carbon to be reported. Figure 5-7 demonstrates multiple embodied carbon works, where both works finish within the ERP and therefore must be reported. However, the earlier works commenced before the launch of Version 1 of the Standard and so the data submitted as part of these works will be considered as reporting metrics.

◀ See UKNZCBS section 5.1.6

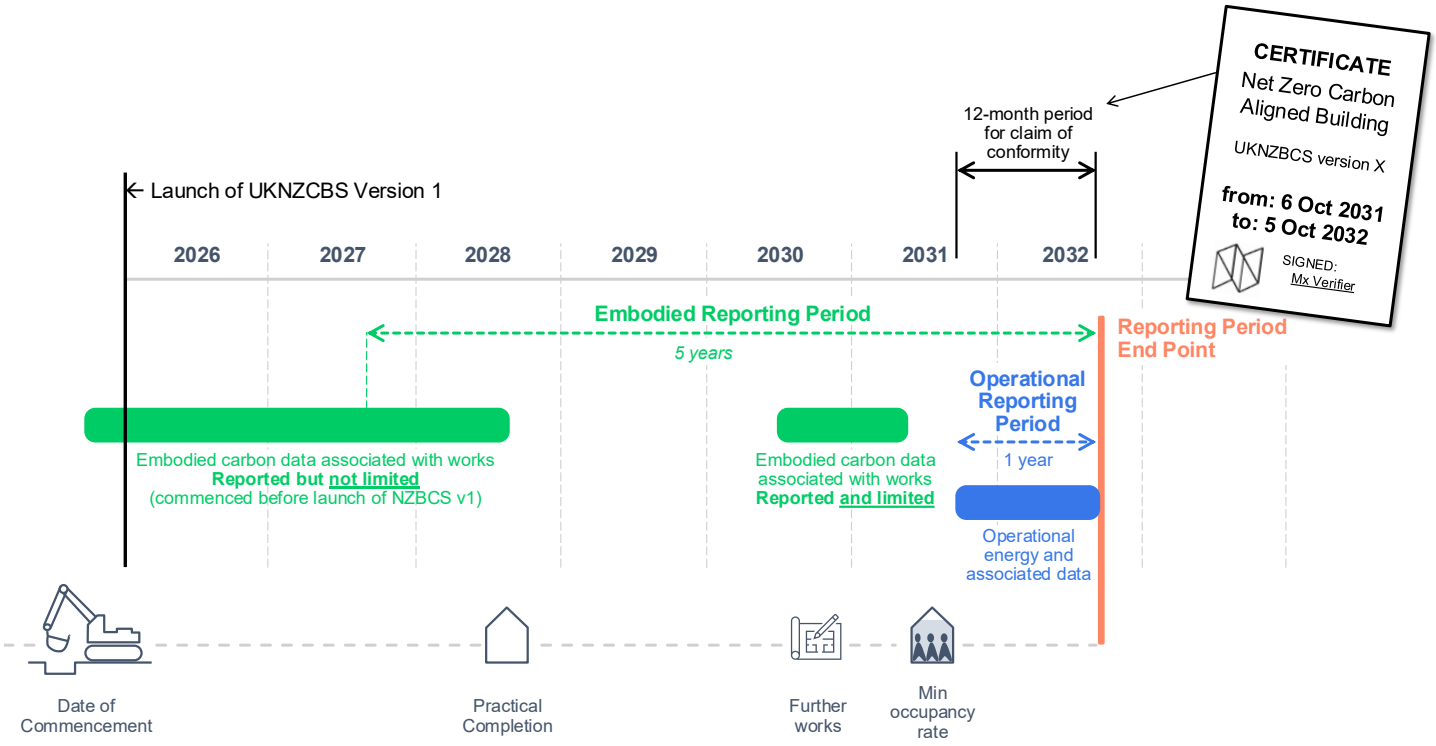



**Figure 5-7** Embodied Reporting Period (ERP) Reportable Works Scope
*Source: UK Net Zero Carbon Buildings Standard Ltd*

### What if multiple works occur in the same ERP?

Multiple embodied carbon works can occur in the same ERP and in some instances the different works form part of the same assessment and in others, they require separate assessments. An assessment in this case can be thought of as an individual 'project', which is not clearly defined in the Standard, but is shown here as works requiring a separate life cycle embodied carbon assessment. Each project must individually follow the steps as defined in section 3.

Recommendations are provided by the authors, but it should be noted that this process is currently at the discretion of the verifiers.

Figure 5-8 below displays different scenarios, with brief examples provided, for multiple works within a single ERP.

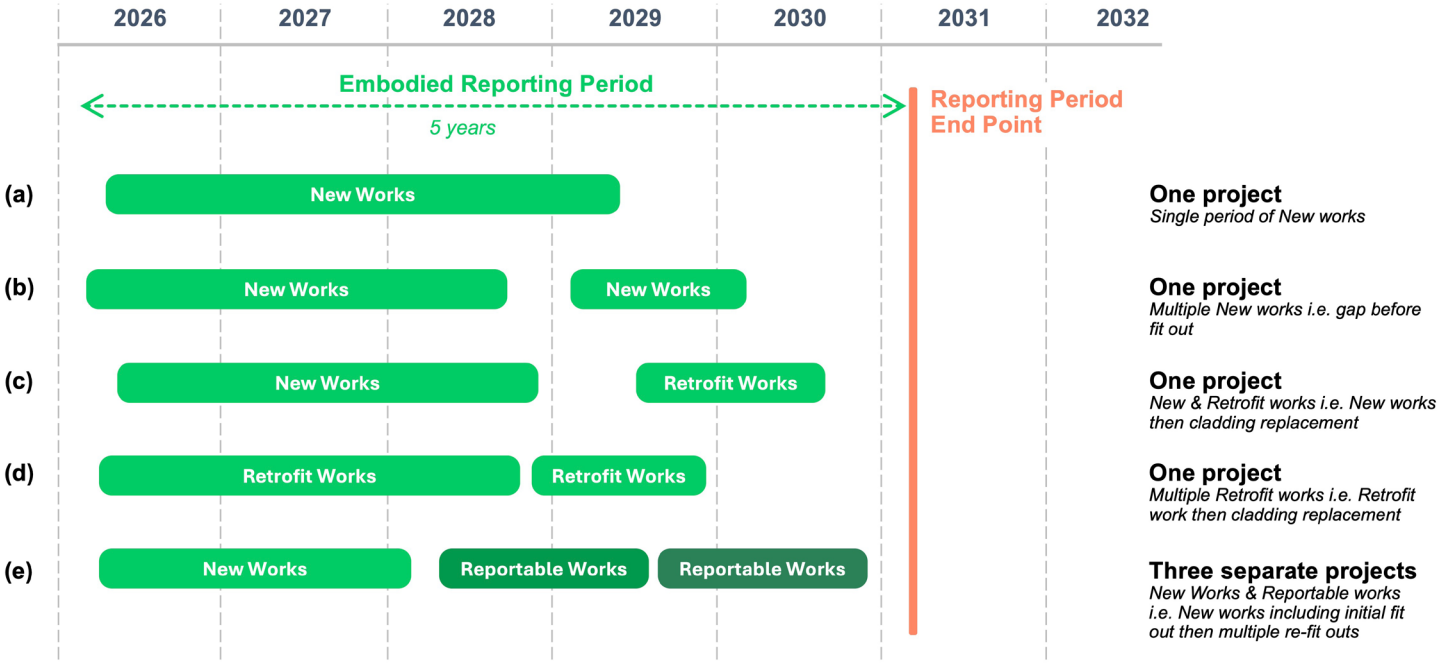



**Figure 5-8** Recommendations by authors of this guide, for defining a project of works

Special care should be given to cases similar to scenario (e), where, in this instance, the Reportable Works are re-fit outs, not the original fit out. While fit out works could be treated as a separate Reportable Works, the Standard is clear that Reportable Works are only treated as a separate assessment when clearly not associated with any New Works or Retrofit Works.

◀ See UKNZCBS section 5.1.2.3

### 5.2.2 Life cycle stages scope

The following table outlines the life cycle stages, as defined by RICS v2, which must be considered within the upfront carbon limit scope and within the full, life cycle embodied carbon assessment scope. As stated earlier in this section, it is the intention of the Standard that the metrics required for conformity can be extracted from a full life cycle embodied carbon assessment with the scope aligned to RICS v2.

*Tip: The upfront carbon limit scope and the WLCA scope should be reported separately at each design stage.*

**Table 5-1:** Life-cycle Stage Scope Table

| Life-cycle Stage | | Upfront Carbon Limit * | Life cycle Embodied Carbon Reporting |
|---|---|---|---|
| A0 Preconstruction | Nonphysical process before construction, preliminary studies, tests and design | ✗ | ✓ |
| A1-A3 Product | A1 Raw material Supply | ✓ | ✓ |
| | A2 Transport (to manufacturing facility) | ✓ | ✓ |
| | A3 Manufacturing | ✓ | ✓ |
| A4-A5 Construction | A4 Transport (to site) | ✓ | ✓ |
| | A5.1 Preconstruction Demolition | ✓ | ✓ |
| | A5.2 Construction activities | ✓ | ✓ |
| | A5.3 Waste and waste management | ✓ | ✓ |
| | A5.4 Worker transport | ✓ | ✓ |
| B1-B5 In-use Embodied | B1.1 Material emissions and removals | ✗ | ✓ |
| | B1.2 Fugitive emissions (Refrigerants) | ✗ | ✓ |
| | B2 Maintenance | ✗ | ✓ |
| | B3 Repair | ✗ | ✓ |
| | B4.1 Replacement of construction products, components and systems | ✗ | ✓ |
| | B4.2 Replacement of industrial systems | ✗ | ✓ |
| | B5 Refurbishment | ✗ | ✗** |
| B6-B7 Operational Carbon *** | B6 Operational Energy | ✗ | ✗ |
| | B7 Operational Water | ✗ | ✗ |
| B8 User Carbon | B8 User Carbon | ✗ | ✗ |
| C1-C4 End of Life | C1 Deconstruction and demolition | ✗ | ✓ |
| | C2 Transport (to waste facility) | ✗ | ✓ |
| | C3 Waste processing | ✗ | ✓ |
| | C4 Disposal | ✗ | ✓ |
| Module D Beyond the life cycle | D1 Net output flows from reuse, recycling, energy recovery, other recovery | ✗ | ✓ |
| | D2 Exported utilities e.g. electric energy thermal energy potable water | ✗ | ✓ |

* Upfront Carbon Limit Scope excludes biogenic (sequestered) carbon.

** Although Module B5 is part of the scope of a life cycle embodied carbon assessment, as it is assumed to be zero, it is not requested for reporting in the Standard's submission proforma.

*** Although operational carbon should be calculated as part of a whole life carbon assessment, based on operational energy modelling, it is not in scope for a life cycle embodied carbon assessment.

◀ See UKNZCBS section 5.1.2.2 and Annex B

**Key:**
✓ Included modules – mandatory requirement, must be included
✓ Optional modules – optional reporting
✗ Excluded modules – must not be included

### 5.2.3 Building elements scope

The following table outlines the building element categories, as defined by RICS v2, which must be considered within the shell and core upfront carbon limit scope (only relevant to Offices at this time), the Whole Building upfront carbon limit scope, and the life cycle embodied carbon assessment reporting scope.

*Note: As highlighted in previous sections, for sectors where both 'shell and core' and 'whole building' upfront carbon limits apply (currently only offices) – both upfront carbon limits must be successfully met to satisfy the Standard's requirements.*

**Table 5-2:** Building Element Scope Table

| Element Category | | Shell and Core upfront carbon limit *** | Whole Building upfront carbon limit | Whole building Life-cycle embodied reporting |
|---|---|---|---|---|
| 0.1 Demolition works and facilitating works | 0.1.1 Toxic/ contaminated material treatment | ✗ | ✗ | ✓ |
| | 0.1.2 Facilitating works | ✓ | ✓ | ✓ |
| 1 Substructure | 1.1 Foundations and piling | ✓ | ✓ | ✓ |
| | 1.2 Basement retaining walls and lowest slab | ✓ | ✓ | ✓ |
| 2.1-2.4 Superstructure (Structural) | 2.1 Frame | ✓ | ✓ | ✓ |
| | 2.2 Upper Floors | ✓ | ✓ | ✓ |
| | 2.3 Roof | ✓ | ✓ | ✓ |
| | 2.4 Stairs, ramps and safety guarding | ✓ | ✓ | ✓ |
| 2.5-2.6 Superstructure (Façade) | 2.5 External envelope including roof finishes | ✓ | ✓ | ✓ |
| | 2.6 Windows and external doors | ✓ | ✓ | ✓ |
| 2.7-2.8 Superstructure (Non-Structural) | 2.7 Internal walls | ✓** | ✓ | ✓ |
| | 2.8 Internal doors | ✓** | ✓ | ✓ |
| 3 Finishes | 3.1 Wall finishes | ✓** | ✓ | ✓ |
| | 3.2 Floor finishes | ✓** | ✓ | ✓ |
| | 3.3 Ceiling finishes | ✓** | ✓ | ✓ |
| 4 FF&E | 4.1 General FF&E | ✗ | ✓ | ✓ |
| | 4.2 Kitchen equipment | ✗ | ✓ | ✓ |
| | 4.3 Specialist FF&E | ✗ | ✓ | ✓ |
| | 4.4 Loose FF&E | ✗ | ✗* | ✓ |
| | 4.5 IT | ✗ | ✗* | ✓ |
| | 4.6 Audio and visual | ✗ | ✗* | ✓ |

| | | | | |
|---|---|---|---|---|
| **5 Services (MEP)** | 5.1 Public Health | ✔** | ✔ | ✔ |
| | 5.2 Heating, Ventilation and Cooling (HVAC) | ✔** | ✔ | ✔ |
| | 5.3 Electrical Installations | ✔** | ✔ | ✔ |
| | 5.4 On site renewable energy generation | ✖ | ✖ | ✔ |
| | 5.5 Systems including Life safety, Fuel installations, Lift and conveyor installations, Services equipment, Disposal installations, Specialist installations | ✔** | ✔ | ✔ |
| **6 Pre-fabricated buildings and building units** | | ✔ | ✔ | ✔ |
| **7 Works to existing buildings** | | ✔ | ✔ | ✔ |
| **8 External works (within the project boundary)** | | ✖ | ✖ | ✔ |
| **8 External works (outside the project boundary)** | | ✖ | ✖ | ✖ |

* Loose FF&E (Categories 4.4-4.6) should be included for Office Sectors. Performance seating, stage extensions, tension wire grids, winches, bars, and flying systems, integrated performance equipment (cinema screens, AV/sound/lighting infrastructure), shelving and racking must be included for Culture and Entertainment Sector.
** For the Shell & Core Upfront carbon limit, which currently only applies to the offices sector, see section 5.2.6 for guidance on which parts of these building elements should be included in the shell & core assessment scope.
*** In the current version of the Standard, this only applies to the office sector – see Table 1-1.

**Key:**
✔ Included elements – mandatory requirement, must be included
✔ Optional elements – optional reporting
✖ Excluded elements – must not be included

### 5.2.4 Uncertainty Factor

To reduce the differences between embodied carbon estimated during the design phases and embodied carbon based on as-built information, the inclusion of uncertainty factors in line with RICS v2 should be applied.

Additionally, when specific elements that could have a significant impact of the whole life embodied carbon are not yet included in design/cost plans due to lack of information, it is suggested that additional allowances are included within the WLCA. This may be done through estimation or use of benchmarks.

It should be noted that the CWCT's *How to Calculate Embodied Carbon for Facades and CIBSE's TM65 Embodied Carbon in Building Services* have specific suggestions for uncertainty factor figures for facades and MEP respectively. These figures are typically higher than RICS v2 suggested figures. Therefore, to take a conservative approach, at early-stages it may be particularly helpful to define uncertainties in line with these discipline specific methodologies.

A project-specific uncertainty factor should be calculated in line with RICS v2 at each design stage, but approximate values for each stage are shown as a guide in Table 5-3.

**Table 5-3:** Approximate uncertainty factors

| RIBA Stage | Approximate uncertainty factor |
|---|---|
| 2 | 15% |
| 3-4 | 10% |
| 5-6 | 5% |

Any uncertainty factors calculated and/or applied at a discipline level should be clearly communicated with the rest of the team and whole life carbon assessor to prevent double counting in the whole building assessment (as indicated in Figure 5-2).

### 5.2.5 Loose FF&E exclusions & inclusions

Loose FF&E (Furniture, Fixtures and Equipment) is in-scope for the upfront carbon assessments for Office only, and some elements of loose FF&E are in-scope for assessments for Culture and Entertainment buildings. For all other sectors, loose FF&E is excluded from the upfront carbon assessment, as shown in Table 5-2.

In terms of RICS v2 building element categories, Loose FF&E covers:

- **4.4 Loose FF&E**. Loose (usually client supply) fittings, furniture and equipment (that would fall out of the building if turned upside down), including:
  - Bins, chairs, tables, desks, mobile units, storage, rugs, lamps, towel/ storage rails, hung mirrors, wayfinding signage.
  - Whiteboards/ pinboards, loose firefighting equipment like blankets/ extinguishers/hand operated appliances.
  - Any decorative or artwork that is not built into the building fabric. Planting that is not part of the building fabric.
  - Vending machines.
  - Specialist non-fixed equipment not covered by 4.1, 4.5 or 4.6

- **4.5 IT**. Loose IT items, excluding cabling but including:
  - Computers CRAH units.
  - Telephones and Wi-Fi.

- **4.6 Audio Visual**. Audio/visual equipment including:
  - Screens, mics, speakers, projection systems.

For the **Culture & Entertainment sector**, the following elements must be included in the upfront carbon assessment:

- All performance seating
- All stage extensions or alternative stage formats stored on site
- All tension wire grids, winches, bars and flying systems;
- All integrated performance equipment, including cinema screens, speakers, AV/sound/lighting infrastructure and dimmer racks;
- Shelving and racking in archive areas

### 5.2.6 Offices embodied carbon assessment

As noted in Table 5-2 and section 5.2.5, for buildings containing Offices sector, loose FF&E must be included in the whole building assessment.

There are several upfront carbon limits and reporting requirements specific to the Office sector (see Table 1-1) that must be met to achieve certification to the Standard. These are as follows:

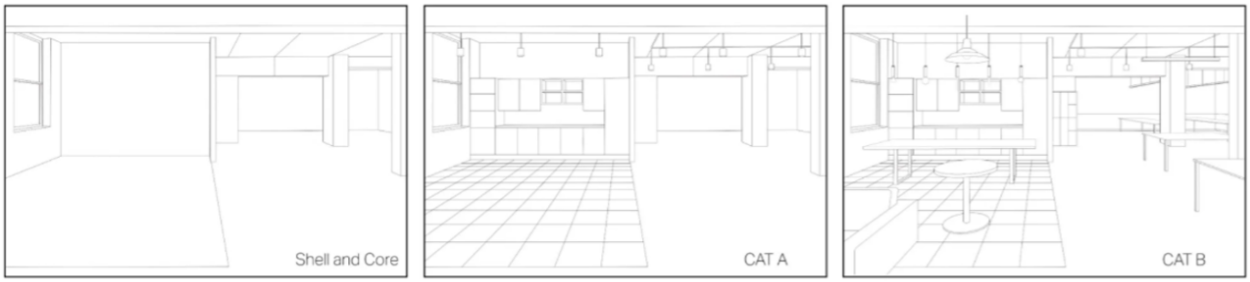
- Upfront carbon limits
  - Whole building (for New Works and Retrofit Works)
  - Shell & Core (for New Works and Retrofit Works)
  - Reportable Works (only if not associated with Retrofit Works or New Works)

- Upfront carbon reporting
  - Category A works (Cat A)
  - Category B works (Cat B)

As the upfront carbon assessment must be broken down by Shell & Core, Cat A and Cat B for reporting purposes:

◀ See UKNZCBS sections 3.1.4.12 to 3.1.4.14

- The scope of each of these metrics must be clearly understood, to enable consistent reporting. Figure 5-9 provides clarity on the likely scopes of Shell & Core, Cat A and Cat B.
- The collection of quantities that feeds into the upfront carbon calculation should be broken down or tagged in a way that allows easy interrogation of the upfront carbon assessment results for each of these metrics.




| Shell and Core | CAT A | CAT B |
|---|---|---|
| Covers the essentials of the building, with the outside looking complete but the inside looking like an empty shell.<br><br>This may include:<br>• Facilitating works<br>• Structure (superstructure & substructure)<br>• Envelope (facade and roof)<br>• Central/building-related plant<br>• Core life safety equipment<br>• The finishes and FF&E of central and/or shared areas, which could include<br>  • Circulation and escape cores<br>  • Amenities<br>  • Doors & ironmongery<br>  • Entrances,<br>  • Servicing/delivery zones,<br>  • Centralised catering<br>  • Centralised WCs / sanitary facilities<br>  • External works | Usually undertaken by landlord or building owner, either to remediate anything left by a previous occupant, and to prepare the space for market.<br><br>This may include:<br>• Facilitating works to modify the Shell & core build or previous Cat A fit-out (this could include structural work)<br>• Finishes in tenanted areas / outside of Shell & core scope<br>  • Raised access floors<br>  • Floor coverings<br>  • Ceilings with integrated lighting,<br>  • decoration to perimeter walls<br>• Modifications to shared areas<br>• MEP services not included in Shell & Core to a minimal level (e.g. On-floor distribution and equipment, integrated lighting)<br>• Life safety elements incl. fire detection and security systems<br>• Fixed FF&E in tenanted areas / outside of Shell & core scope | Covers works required to the Cat A works to convert the space to meet the specific requirements and spatial layout of the occupier.<br><br>This may include:<br>• Loose FF&E (Furniture, fixtures and equipment)<br>• Final finishes or specialist linings (e.g. floors, blinds, custom joinery, signage, ceilings)<br>• Information, communication and technology / audio-visual (ICT/AV) equipment.<br>• Dedicated serviced areas such as kitchens, showers or changing rooms<br>• Moving or adding on-floor MEP services to suit the occupier's needs (e.g. cellularisation of spaces, addition of meeting room spaces)<br>• Feature lighting<br>• Partitioning, glazing & internal joinery<br>• Storage walls and lockers |

See RICS PS v2 Appendix P for detailed guidance of which building elements to include in Shell & Core, Cat A and Cat B.

**Figure 5-9** Description of what constitutes Shell & Core, Cat A and Cat B, with an illustrative diagram.

*Note: The scope of Shell & Core, Cat A and Cat B varies from project to project, so it is recommended that the scope is clarified early on.*

### 5.2.6.1 Delineation – S&C, Cat A & Cat B for Offices

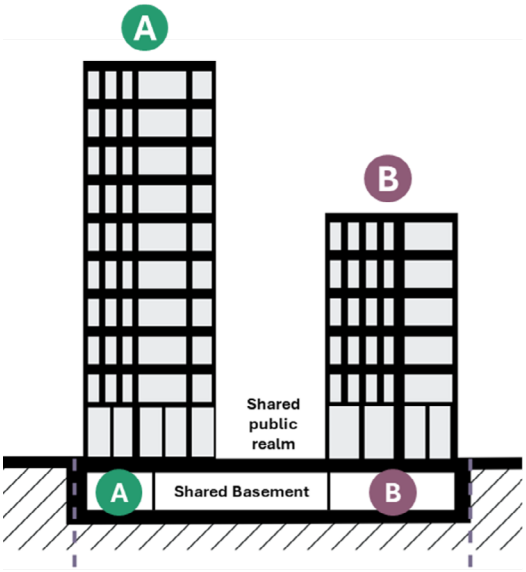
Version 1 of the Standard is expected to include new Annexes enabling a delineated approach for assessment, reporting and verification. This will likely include one Annex that can be followed by a landlord (regardless of whether their tenants wish to conform to the Standard), and another that can be followed by a tenant (regardless of other tenants and the landlord). This guide will be updated following publication of Version 1 of the Standard.

### 5.2.7 Projects with multiple buildings or shared areas

For multiple buildings sharing external works and/or basements, it is the choice of the client as to whether they are assessed separately or all in one assessment. If chosen to report the building separately, the external works and basement must be apportioned in accordance with the following rules:

- Where areas of external works and/or underground areas clearly serve the building being assessed, those areas shall be allocated to the building as part of this apportioning.
- Elsewhere, areas are to be apportioned based on relative floor areas (GIA) of the above-ground structures of each building.

An example of apportioning embodied carbon between multiple buildings is shown in Figure 5-10.




- Basement A apportioned to building A.
- Basement B apportioned to building B.
- Shared basement apportioned to buildings A and B based on their relative GIAs.
- Shared public realm apportioned to buildings A and B based on their relative GIAs.

**Figure 5-10** Example of apportionment of works between two buildings on one site

## 5.3 Data sources

### 5.3.1 Quantities and Carbon Factors

The Standard requires the life cycle embodied carbon assessment submitted for verification to refer to measured, as-built quantity data and product-specific Environmental Product Declarations (EPDs).

For selecting the most accurate carbon factor data, the flowchart in Figure 5-11 can be used as a guide. It indicates the stages of design and construction within which each type of carbon factor data is typically used, although this varies by product, discipline and data availability.

RICS v2 requires all items within Cost Plans and Bill of Quantities at early stages, and within as-built models post-constriction, to be included. Quantity information shall be gathered from the following sources, as per the 'Post-completion phase – actual quantities' row in Table 6 of RICS v2:

- As-built BIM model
- As-built cost record of material quantities procured
- Cross-reference with as-built records where practical, including material delivery records, concrete pours, etc.

If these sources do not include information at the necessary level of detail for a specific item, other project sources or reasonable assumptions may be used for that item. Where as-built information is not available, the assessor should record assumptions used for quantity estimations.

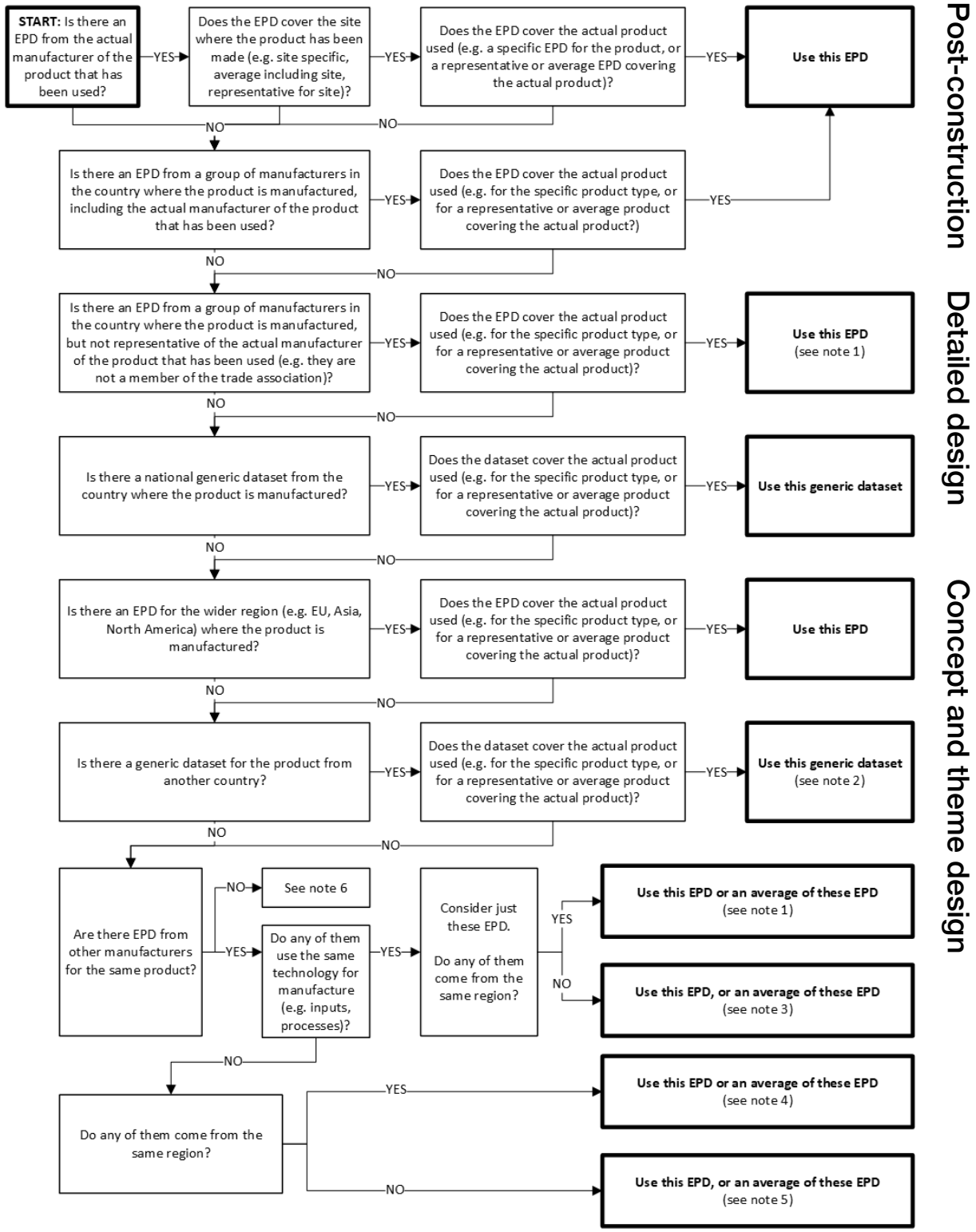



**Figure 5-11** Carbon data selection flowchart – construction products/materials and systems life cycle. Adapted from Figure 6 of the Standard.

The most up-to-date and accurate information should be used at each RIBA Stage. Figure 5-12 shows an indicative simplified material quantity and carbon data hierarchy diagram to show how the flowchart in Figure 5-11 often transposes into different data sources at different stages of design.

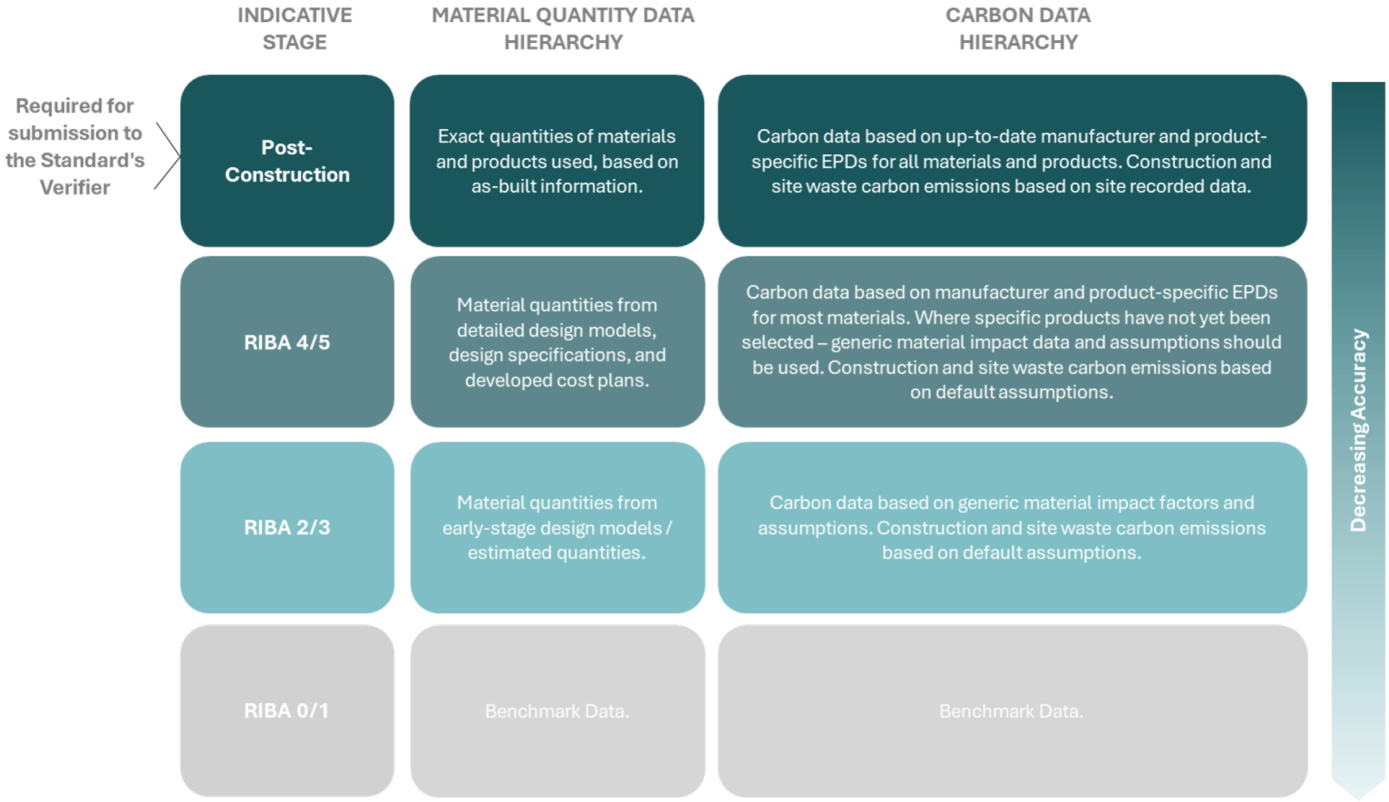



**Figure 5-12** Simplified carbon data selection flowchart at different RIBA stages

*Tip: Taking a conservative approach to material specification (such as referring to national average material carbon factors) at early stages is advised and encouraged. This is to ensure that early stage embodied carbon figures are not deceivingly low, when a secure supply chain cannot yet be confirmed.*

Throughout RIBA 5, ensure material quantity and EPD/specification data is being collected and segregated in a way that will facilitate post-processing for the post-completion WLCA. This may look like keeping separate folders and spreadsheets for each individual RICS (Level 2) category.

### 5.3.2 Generic material specification assessment

To understand how an assessment is impacted by material specifications, the Standard requires an additional upfront carbon assessment to be undertaken using generic material specifications.

The element scope and life-cycle scope of the assessment remains aligned with that defined for the Upfront Carbon Limit Scope (See Section 5.2).

However, the A1-A3 carbon factors for all concrete products, structural steel products, rebar, facade aluminium and structural aluminium must reference the default (national average) values given in the IStructE *How to Calculate Embodied Carbon* guide.

The generic material specification upfront carbon assessment is a reporting requirement; therefore, the results do not need to meet any specific limits or targets.

*Tip: A detailed material take-off spreadsheet should be produced as part of the post-completion WLCA, as concrete, cementitious materials, steel, and aluminium quantity data will be submitted as evidence to the Verifier.*

# 6 Submission to the verifier

## 6.1 Filling out the submission proforma

To demonstrate conformity, the life cycle embodied carbon assessment data for your project (see section 5), should be inputted into the 'Submission proforma', which is a spreadsheet template provided on the UK Net Zero Carbon Buildings Standard website. The details provided in this section are in reference to the May 2025 version of the submission proforma.

*Note: For the embodied carbon section, the results are requested as 'raw' data without uncertainty factors applied. The proforma has a section where you input the RICS v2 Uncertainty factor*[16]*.*

The Standard has mandatory requirements for embodied carbon related limits to be met and metrics to be reported, as defined in Section 1.4, but the submission proforma requests additional information, such as:

- General building information
  - Building details, including name owner and description
  - Building sector
  - Location and Chronology, including building listed status and original construction date

- Submission information
  - Submission details, including reporting period dates
  - Project size, including GIA, NIA and sector specific information
  - Materials and systems used for different building elements
  - Details of works to retained products/materials and elements

The cover tab of the proforma defines the requested information as mandatory or optional. The specific information is required to allow the verifiers to contextualise each respective assessment.

*The process of submission will be confirmed once Version 1 of the Standard is released in 2026.*

# 7 Appendices

## 7.1 Worked examples

To illustrate the process of defining embodied carbon limits, undertaking embodied carbon assessments on projects, and comparing performance to the limits, two worked examples have been provided showing how different types of projects can be assessed against the Standard. The two examples provided within this section are based on projects that are piloting the Standard.

In addition to the two examples provided in this section, Buttress Architects, Max Fordham and Price & Myers have published a study on evaluating a residential project against the Standard's embodied carbon limits, which can be used as a third example and is freely available to download[17].

### 7.1.1 Example 1 – Mixed-Use New Works (design-stage)

#### Project context

**This example project is a new build purpose-built student accommodation. The accommodation of 962 bedrooms is a mix of Cluster Flats and Townhouses split across 8 blocks of accommodation. Certain blocks have some retail space at ground floor.**

To achieve the title 'Net Zero Carbon Aligned Building', one year of operational energy and associated data is required from the point of minimum occupancy date (See section 5.2.1). This worked example is for a project in the early design stages and as such it is harder to determine the minimum occupancy date. Other early-stage assumptions are made.

#### Key project information

| | |
|---|---|
| **Date of data collection** | August 2025 |
| **RIBA Stage** | 3 |
| **Overall GIA ($m^2$)** | 25,954 |
| **Overall NIA ($m^2$)** | 19,466 |
| **GIA that is listed grade I, II* or II** | N/A |
| **UK County** | Somerset |
| **Estimated Reporting Period End Point (RPEP)** | 01/10/2029 |
| **Start of Embodied Reporting Period (ERP)** | 01/10/2024 |

The overall GIA and NIA numbers were provided by the project architect.

The RPEP was calculated assuming a Date of Commencement in early 2027. It is assumed that construction will last roughly 18 months and tenants (students) will arrive in late September/early October ready for that year's term. A full year of operational data is required which takes the RPEP to 01/10/2029. The ERP is 5 years before the RPEP and only has one project of works with associated embodied carbon data (the main build).

#### 7.1.1.1 Defining the upfront carbon limit

**Step 1 – Determine works type (section 3.1.1)**

Following the decision tree in Figure 3-2:

| Metric | Project value | % of total | Threshold |
|---|---|---|---|
| **New NIA** | **19,466 m²** | **100 %** | **>50%** |
| **Is building single storey and all elements above the ground floor slab are new?** | **N/A** | **-** | **N/A** |
| **New Works?** | **Yes** | | |
| Area of original thermal envelope that is new, upgraded or replaced | ___ m² | ___ % | >10% |
| Area of original glazed area that is new, upgraded or replaced | ___ | ___ % | >10% |
| Number of windows that are new, upgraded or replaced | ___ | - | >1 |
| **Retrofit Works?** | **No** | | |
| Value of works | £ ___,___ | - | >£100,000 |
| New or replacement heating, cooling or ventilation plant or systems? | Yes / No | - | Yes |
| Replacement of lighting systems incl. associated fittings and electrics? | Yes / No | - | Yes |
| **Reportable Works?** | **No** | | |

**Step 2 – Likely year of commencement of works on site (section 3.1.2)**

| | | |
|---|---|---|
| **Estimated year of Date of Commencement** | 2027 | Based on latest programme |
| **Year to assume for the purpose of selecting limits** | 2027 | |

The programmed Date of Commencement is quite early in 2027 and the project is low-risk. As such, even though this guide suggests typically allowing for a one-year programme delay, 2027 has been assumed here for the purpose of selecting limits.

**Step 3 – Identify sectors in the building (section 3.1.3)**

| Sector | Subsector | NIA [m²] | NIA % total |
|---|---|---|---|
| Commercial Residential | N/A | 16,935 | 87% |
| Retail (Food & Beverage) | N/A | 2,531 | 13% |

This information was provided by the project architect.

Following the decision tree in Figure 3-5:

| | |
|---|---|
| **Is >30% NIA defined by the Standard?** | Yes |
| **Do areas of one sector/subsector provide a function in service to an area of the building with a different sector/subsector?** | No |
| **Does the building have multiple sectors?** | Yes |
| **Do any sectors present NOT have upfront carbon limits defined in the Standard?** | No |
| **Do any sectors constitute <10% NIA** | No |
| **Which sector(s) do the relevant limits need to be selected for?** | Commercial Residential, Retail |
| **Is an area-weighted limit calculation required?** | Yes |

Therefore, an area weighted limit for commercial residential and retail is required.

**Step 4 – Pick your limit(s) from Annex A1 (section 3.1.4)**

Select limits for the Commercial Residential and Retail sectors for a Date of Commencement in 2027, as shown below.

# Annex A: Limits and targets

## A1 Embodied carbon limits

*Table EC-1: Upfront carbon limits, New Works*

| ← Date of Commencement on site | Commercial Residential | Culture, Worship & Entertainment | | Data Centres | Healthcare | Higher Education | Homes | | Hotels | Offices | | Retail | School | Science & Technology | Sport & Leisure | Storage & Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | - | General | Performance Spaces | - | - | - | Single family homes | Flats | - | Whole building | Shell and core | - | - | - | - | - |
| | kgCO$_2$e/m$^2$GIA | | | | | | | | | | | | | | | |
| **2025** | 580 | 570 | 855 | 745 | 790 | 640 | 430 | 565 | 670 | 735 | 475 | 715 | 530 | 755 | 820 | 635 |
| **2026** | 550 | 540 | 810 | 705 | 750 | 610 | 400 | 525 | 635 | 700 | 450 | 680 | 505 | 715 | 780 | 605 |
| **2027** | 525 | 515 | 770 | 670 | 710 | 575 | 375 | 490 | 605 | 660 | 425 | 645 | 480 | 680 | 740 | 570 |
| **2028** | 495 | 485 | 725 | 635 | 670 | 545 | 345 | 450 | 570 | 625 | 400 | 610 | 450 | 640 | 695 | 540 |
| **2029** | 465 | 460 | 685 | 600 | 635 | 515 | 320 | 420 | 540 | 590 | 380 | 575 | 425 | 605 | 660 | 510 |
| **2030** | 435 | 425 | 640 | 555 | 590 | 480 | 290 | 380 | 500 | 550 | 355 | 535 | 395 | 565 | 610 | 475 |
| **2031** | 405 | 400 | 595 | 520 | 550 | 445 | 270 | 355 | 470 | 515 | 330 | 500 | 370 | 525 | 575 | 445 |
| **2032** | 380 | 375 | 560 | 490 | 515 | 420 | 255 | 335 | 440 | 480 | 310 | 470 | 350 | 495 | 535 | 415 |
| **2033** | 350 | 340 | 510 | 445 | 475 | 385 | 235 | 305 | 400 | 440 | 285 | 430 | 320 | 450 | 490 | 380 |
| **2034** | 315 | 310 | 465 | 405 | 430 | 350 | 210 | 280 | 365 | 400 | 255 | 390 | 290 | 410 | 445 | 345 |
| **2035** | 285 | 280 | 420 | 365 | 390 | 315 | 190 | 250 | 330 | 360 | 230 | 350 | 260 | 370 | 405 | 315 |

### Step 5 – Area-weighted limit calculation (section 3.1.5)

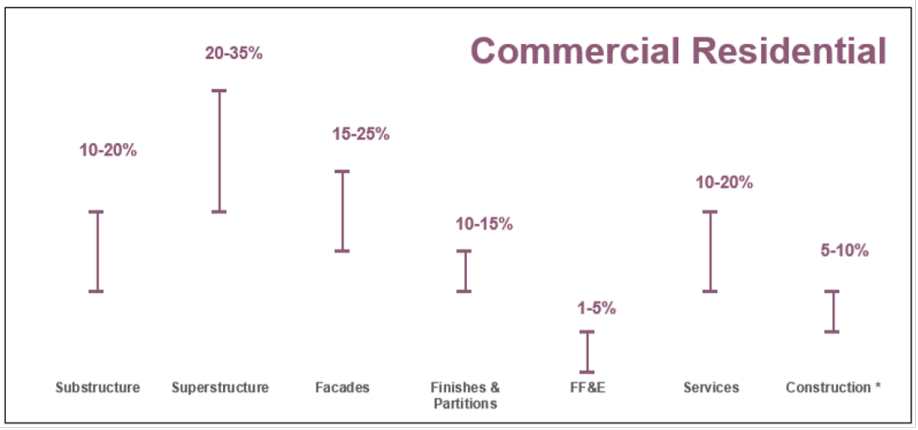
| Works type | Sector / subsector | For projects classified as 'New Works' | | For projects classified as 'Retrofit Works' | | |
|---|---|---|---|---|---|---|
| | | NIA [$m^2$] | New Works Limit [$kgCO_2e/m^2$ GIA] | NIA new [$m^2$] | NIA existing [$m^2$] | Retrofit Works Limit [$kgCO_2e/m^2$ GIA] |
| New works | Commercial Residential | 16,935 | 525 | N/A | N/A | N/A |
| New works | Retail | 2,531 | 645 | N/A | N/A | N/A |

$$M_A = \frac{(M_1 \times A_1) + (M_2 \times A_2)}{(A_1 + A_2)} = \frac{(525 \times 16{,}935) + (645 \times 2{,}531)}{(16{,}935 + 2{,}531)}$$

Area weighted limit = 541 $kgCO_2e/m^2$

### Notional split of the limits (section 4.2)

On this project, the limit was split up into the RICS categories to provide the different design disciplines with an upfront carbon budget to work towards. As presented in section 4.2, there are different notional splits for both Commercial Residential and Retail. Where there are multiple building sectors present as part of the same works, a combination of engineering judgement and/or a similar area weighted calculation to the one presented in the previous section can be used to determine the appropriate splits. In this case, the Commercial Residential notional splits were used to inform the split of the limit, as it is the prevalent sector in this building.




In this example, the project team decided to assign 45% of the overall limit to the combined substructure + superstructure, and so the structural team worked to design a structure with upfront carbon (including contingency) below 243kg$CO_2$e/m$^2$ – a SCORS C rating[18].

#### 7.1.1.2 PVs upfront carbon limit

The limit is **750kg$CO_2$e/kWp** (peak) for all projects. PVs are part of the works of this project but are not yet designed & assessed.

#### 7.1.1.3 Refrigerants GWP limit

The limit is **677kg$CO_2$e/kg** for all projects. This value is set to match the current GWP of refrigerant R32. If it changes in future, the GWP limit for refrigerants will change to match it.

#### 7.1.1.4 Building performance against the requirements

The below table shows the performance against the embodied carbon pass/fail and reporting metrics, based on Table 1-1. It should be noted that, as the project is currently in RIBA Stage 3, an uncertainty factor of 11% (carbon factor data uncertainty factor of 7% and quantities uncertainty factor of 4%), based on RICS v2 guidance, has been applied to all embodied carbon results.

| | Metric (assume $kgCO_2e/m^2$ GIA unless stated) | | Limit value | Project value | Pass/fail ? |
|---|---|---|---|---|---|
| Pass / fail metrics | Upfront carbon limit | Whole building | 541 | 364 | ✓ |
| | | Shell & core | | N/A | |
| | | Reportable Works [D] ($kgCO_2e/m^2$ GIA relevant to the reportable works) | | N/A | |
| | | Refrigerant GWP limit ($kgCO_2e/kg$) | 677 | 156 | ✓ |
| | | PVs Upfront carbon limit ($kgCO_2e/kWp$) | | N/A | |
| Reporting Metrics | Life cycle embodied carbon | Total | - | 763 | - |
| | | New floor areas [A] *($kgCO_2e/m^2$ GIA new floor area)* | - | N/A | - |
| | | Existing floor areas [A] *($kgCO_2e/m^2$ GIA existing floor area)* | - | N/A | - |
| | | per m3 internal building volume [B] *($kgCO_2e/m^3$)* | - | N/A | - |
| | | On-site renewable electricity generating equipment *($kgCO_2e$)* | - | N/A | - |
| | Upfront carbon | - Total, generic materials | - | 290 | - |
| | | New floor areas [A] *($kgCO_2e/m^2$ GIA new floor area)* | - | N/A | - |
| | | Existing floor areas [A] *($kgCO_2e/m^2$ GIA existing floor area)* | - | N/A | - |
| | | Reportable Works [D] *($kgCO_2e/m^2$ GIA relevant to the reportable works)* | - | N/A | - |
| | | Cat A only | - | N/A | - |
| | | Cat B only | - | N/A | - |
| | | per m3 internal building volumeB *($kgCO_2e/m^2$)* | - | N/A | - |
| | | On-site renewable electricity generating equipment [E] *($kgCO_2e$)* | - | N/A | - |
| | Material quantities for key structural and façade materials [C] *(kg)* | | - | (1) 35,526,862<br>(2) 88,20<br>(3) 1,974,844<br>(4) N/A<br>(5) N/A | - |
| | PVs peak power *(kWp)* | | - | N/A | |
| | Wind turbines and hydroelectric – reference power *(kW)* | | - | N/A | - |

[A] The reporting scope for this excludes external works (RICS Professional Standard Building Element Category 8).

◀ See UKNZCBS section 5.1.5.2

[B] If a building is mixed-use where the majority of area (NIA) is Storage and Distribution sector, the scope for both carbon and volume are limited to the spaces where floor area (NIA) is defined as storage and distribution.

[C] Material quantities are currently only required for:

1) total kg of all concrete grades at least C16/20 or equivalent
2) total kg of all other cementitious materials including screeds
3) Total kg of all reinforcing steel ("rebar") including mesh
4) Total kg of all other steel including beams, columns, plate and connections
5) Total kg of all aluminium used within facades

◀ See UKNZCBS section 5.1.5.8

[E] The only types of renewable electricity generating equipment this metric is applicable to are Photovoltaics (PVs), on-site wind turbines and on-site hydroelectric turbines, including products/materials that are necessary for the functioning of the equipment, but excluding batteries.

◀ See UKNZCBS section 5.1.2.7

Where N/A has been entered into the table above, it is because the reporting or pass/fail metric is not applicable to the sector(s) in question. PVs are part of the works but are not yet designed & assessed so are not presented.

#### 7.1.1.5 Summary of compliance with the Standard

In summary, the project is on track to meet its embodied carbon related pass/fail metrics, though this is only an internal assessment, rather than something fully verified against the Standard at this stage.

This will be confirmed once construction is complete (including fit-out) through a full life cycle embodied carbon assessment based on as-built quantities and carbon factors, and submitted to the verifier for review.

Assuming the remaining limits, targets, and reporting requirements noted within the Standard – including operational energy requirements – are also met, the project is on track for compliance with the NZCBS.

### 7.1.2 Example 2 – Commercial retrofit and extension (design-stage)

**Project context**

**The proposed scheme consists of the refurbishment and extension of an existing office building in central London. The works will include an additional three storeys on the main structure, replacement of the facades, creation of terraces and balconies, retail at ground and lower ground levels and all plant, disabled parking, cycle parking and associated works including landscaping of the external area.**

To achieve the title 'Net Zero Carbon Aligned Building', one year of operational energy and associated data is required from the point of minimum occupancy date as defined in Section 5.2.1. This worked example is for a project in the early design stages and as such it is harder to determine the minimum occupancy date. Other early-stage assumptions are made.

**Key project information**

| | |
|---|---|
| **Date of data collection** | July 2025 |
| **RIBA Stage** | 3 |
| **Overall GIA (m²)** | 24,426 |
| **Overall NIA (m²)** | 17,010 |
| **GIA that is listed grade I, II* or II** | N/A |
| **UK County** | Greater London |
| **Estimated Reporting Period End Point (RPEP)** | 30/08/2029 |
| **Start of Embodied Reporting Period (ERP)** | 30/08/2024 |

The overall GIA and NIA numbers were provided by the project architect.

The RPEP was calculated assuming a Date of Commencement in early 2027.

It is assumed that construction will last roughly 18 months. A full year of operational data is required which takes the RPEP to August 2029. The ERP is 5 years before the RPEP and only has one project of works with associated embodied carbon data.

#### 7.1.2.1 Defining the upfront carbon limit

**Step 1 – Determine works type (section 3.1.1)**

Following the decision tree in Figure 3-2:

| Metric | Project value | % of total | Threshold |
|---|---|---|---|
| New NIA | 4,252 m² | 25 % | >50% |
| Is building single storey and all elements above the ground floor slab are new? | No | | |
| New Works? | No | | |
| Area of original thermal envelope that is new, upgraded or replaced | 5,094 m² | 100 % | >10% |
| Area of original glazed area that is new, upgraded or replaced | 3,396 m² | 100 % | >10% |
| Number of windows that are new, upgraded or replaced | N/A | | >1 |
| Retrofit Works? | Yes | | |
| Value of works | N/A | | >£100,000 |
| New or replacement heating, cooling or ventilation plant or systems? | N/A | | Yes |
| Replacement of lighting systems incl. associated fittings and electrics? | N/A | | Yes |
| Reportable Works? | No | | |

**Step 2 – Likely year of commencement of works on site (section 3.1.2)**

| | | |
|---|---|---|
| Estimated year of Date of Commencement | 2027 | Based on Stage 3 programme |
| Year to assume for the purpose of selecting limits | 2027 | |

The programmed Date of Commencement is mid-year and includes sufficient 'delay' contingency. As such, even though this guide suggests typically allowing for a one-year programme delay, 2027 has been assumed here for the purpose of selecting limits.

**Step 3 – Identify sectors in the building (section 3.1.3)**

| Sector | Subsector | NIA [m²] | NIA % total |
|---|---|---|---|
| Offices | N/A | 16,789 | 98.7% |
| Retail | N/A | 221 | 1.3% |

This information was provided by the project architect.

Following the decision tree in Figure 3-5:

| | |
|---|---|
| **Is >30% NIA classifiable any of the sectors covered by the Standard?** | Yes |
| **Do areas of one sector/subsector provide a function in service to an area of the building with a different sector/subsector?** | No |
| **Does the building have multiple sectors?** | Yes |
| **Do any sectors constitute <10% NIA** | Yes – small area of Retail to be ignored when determining overall limits |
| **Which sector(s) do the relevant limits need to be selected for?** | **Office** |
| **Is an area-weighted limit calculation required?** | Yes – an area weighted calculation is required as the project is classed as Retrofit works and contains new area. |

An area weighted limit calculation is required, which will consider the existing and new NIAs of the office sector areas within the building.

### Step 4 – Pick your limit(s) from Annex A1 (section 3.1.4)

Note that if your project is classified as Retrofit works, for the sectors that have some new NIA and some existing NIA, you need select the limits from New Works for that sector as well as the limits from Retrofit works.

Both New Works and Retrofit Works limits for the Office sector for a Date of Commencement in 2027 are shown below.

*Table EC-1: Upfront carbon limits, New Works*

| ← Date of Commencement on site | Commercial Residential | Culture, Worship & Entertainment | | Data Centres | Healthcare | Higher Education | Homes | | Hotels | Offices | | Retail | School | Science & Technology | Sport & Leisure | Storage & Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | - | General | Performance Spaces | - | - | - | Single family homes | Flats | - | Whole building | Shell and core | - | - | - | - | - |
| | kgCO$_2$e/m$^2$GIA | | | | | | | | | | | | | | | |
| **2025** | 580 | 570 | 855 | 745 | 790 | 640 | 430 | 565 | 670 | 735 | 475 | 715 | 530 | 755 | 820 | 635 |
| **2026** | 550 | 540 | 810 | 705 | 750 | 610 | 400 | 525 | 635 | 700 | 450 | 680 | 505 | 715 | 780 | 605 |
| **2027** | 525 | 515 | 770 | 670 | 710 | 575 | 375 | 490 | 605 | 660 | 425 | 645 | 480 | 680 | 740 | 570 |
| **2028** | 495 | 485 | 725 | 635 | 670 | 545 | 345 | 450 | 570 | 625 | 400 | 610 | 450 | 640 | 695 | 540 |
| **2029** | 465 | 460 | 685 | 600 | 635 | 515 | 320 | 420 | 540 | 590 | 380 | 575 | 425 | 605 | 660 | 510 |

*Table EC-2: Upfront carbon limits, Retrofit works*

| ↓ Date of Commencement on site | Commercial Residential | Culture, Worship & Entertainment | | Data Centres | Healthcare | Higher Education | Homes | | Hotels | Offices | | Retail | School | Science & Technology | Sport & Leisure | Storage & Distribution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | - | General | Performance Spaces | - | - | - | Single family homes | Flats | - | Whole building | Shell and core | - | - | - | - | - |
| | kgCO$_2$e/m$^2$GIA | | | | | | | | | | | | | | | |
| **2025** | 460 | 450 | 605 | 525 | 615 | 475 | 270 | 425 | 520 | 600 | | 500 | 380 | 605 | 655 | 310 |
| **2026** | 435 | 425 | 570 | 495 | 585 | 455 | 255 | 395 | 490 | 575 | | 475 | 365 | 575 | 620 | 295 |
| **2027** | 415 | 405 | 545 | 475 | 555 | 425 | 235 | 370 | 470 | 540 | | 450 | 345 | 545 | 590 | 275 |
| **2028** | 390 | 385 | 510 | 450 | 525 | 405 | 220 | 340 | 440 | 510 | | 425 | 325 | 515 | 555 | 265 |

### Step 5 – Area-weighted limit calculation (section 3.1.5)

| Works type | Sector / subsector | For projects classified as 'New Works' | | For projects classified as 'Retrofit Works' | | |
|---|---|---|---|---|---|---|
| | | NIA [m$^2$] | New Works Limit [kgCO$_2$e/m$^2$ GIA] | NIA new [m$^2$] | NIA existing [m$^2$] | Retrofit Works Limit [kgCO$_2$e/m$^2$ GIA] |
| Offices | N/A | N/A | 660 | 4,252 | 12,758 | 540 |

$$M_A = \frac{(M_1 \times A_1) + (M_2 \times A_2)}{(A_1 + A_2)} = \frac{(660 \times 4{,}252) + (540 \times 12{,}758)}{(4{,}252 + 12{,}758)}$$

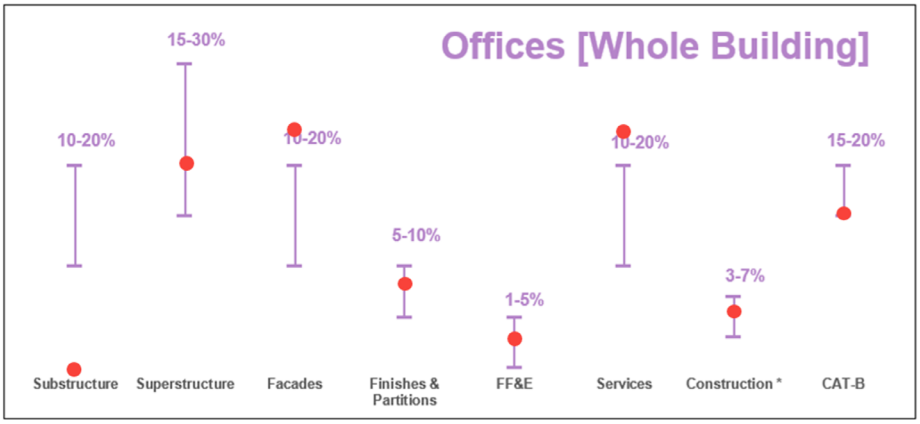
Area weighted limit, for Office Whole Building = 570 kgCO$_2$e/m$^2$

As there is no Office Shell and Core limit for retrofit works, the shell and core upfront carbon does not need to be compared with anything.

### Notional split of the limits (section 4.2)

It is noted that the notional limit splits, which have been provided in this guide to estimate high-level discipline allocation, are based on New works. For this reason, the Office Notional splits shown below (by the red dots) were adjusted to;

- Remove the substructure allowance, as no substructure works are taking place,
- Reduce the superstructure allowance to account for strengthening and extension works rather than full new build works,
- And finally – ensure sufficient allowances were given for the complex full façade, services, finishes, fixed FF&E (Cat A) and Cat B works.




#### 7.1.2.2 PVs upfront carbon limit

The limit is **750kg$CO_2$e/kWp** (peak) for all projects. In this example, the project team decided to include the PV support structure, PV panels, inverters, and cabling within the scope of the PVs upfront carbon assessment, excluding those items from the main building assessment. Batteries – as always – remained within the main building assessment.

#### 7.1.2.3 Refrigerants GWP limit

The limit is **677 kg$CO_2$e/kg** for all projects. This value is set to match the current GWP of refrigerant R32. If it changes in future, the GWP limit for refrigerants will change to match it.

#### 7.1.2.4 Building performance against the requirements

The below table shows the performance against the embodied carbon pass/fail and reporting metrics, based on Table 11:

| | Metric (assume $kgCO_2e/m^2$ GIA unless stated) | | Limit value | Project value | Pass? |
|---|---|---|---|---|---|
| Pass / fail metrics | Upfront carbon limit | Whole building | 570 | 520 | ✓ |
| | | Shell & core | N/A | 420 | ✓ |
| | | Reportable Works [D] ($kgCO_2e/m^2$ GIA relevant to the reportable works) | | N/A | |
| | | Refrigerant GWP limit ($kgCO_2e/kg$) | 677 | 573 | ✓ |
| | | PVs Upfront carbon limit ($kgCO_2e/kWp$) | 750 | 700 | ✓ |
| Reporting Metrics | Life cycle embodied carbon | Total | - | 860 | - |
| | | New floor areas [A] *($kgCO_2e/m^2$ GIA new floor area)* | - | 1220 | - |
| | | Existing floor areas [A] *($kgCO_2e/m^2$ GIA existing floor area)* | - | 740 | - |
| | | per m3 internal building volume [B] *($kgCO_2e/m^3$)* | - | TBC | - |
| | | On-site renewable electricity generating equipment *($kgCO_2e$)* | - | 22,400 | - |
| | Upfront carbon | - Total, generic materials | - | 600 | - |
| | | New floor areas [A] *($kgCO_2e/m^2$ GIA new floor area)* | - | 730 | - |
| | | Existing floor areas [A] *($kgCO_2e/m^2$ GIA existing floor area)* | - | 450 | - |
| | | Reportable Works [D] *($kgCO_2e/m^2$ GIA relevant to the reportable works)* | - | N/A | - |
| | | Cat A only | - | 35 | - |
| | | Cat B only | - | 100 | - |
| | | per m3 internal building volumeB *($kgCO_2e/m^2$)* | - | TBC | - |
| | | On-site renewable electricity generating equipment [E] *($kgCO_2e$)* | - | TBC | - |
| | Material quantities for key structural and façade materials [C] *(kg)* | | - | (1) 28,452,763<br>(2) 1,728,135<br>(3) 441,140<br>(4) 2,466,047<br>(5) 247,229 | - |
| | PVs peak power *(kWp)* | | - | 32 | - |
| | Wind turbines and hydroelectric – reference power *(kW)* | | - | N/A | - |

**A** The reporting scope for this excludes external works (RICS Professional Standard Building Element Category 8). ◀ See UKNZCBS section 5.1.5.2
**B** If a building is mixed-use where the majority of area (NIA) is Storage and Distribution sector, the scope for both carbon and volume are limited to the spaces where floor area (NIA) is defined as storage and distribution.
**C** Material quantities are currently only required for: ◀ See UKNZCBS section 5.1.5.8

1) total kg of all concrete grades at least C16/20 or equivalent
2) total kg of all other cementitious materials including screeds
3) Total kg of all reinforcing steel ("rebar") including mesh
4) Total kg of all other steel including beams, columns, plate and connections
5) Total kg of all aluminium used within facades

**D** This only applies when treated as a separate assessment when clearly not associated with any New Works or Retrofit Works (see Section 5.1.2.3. of the Standard).
**E** The only types of renewable electricity generating equipment this metric is applicable to are Photovoltaics (PVs), on-site wind turbines and on-site hydroelectric turbines, including products/materials that are necessary for the functioning of the equipment, but excluding batteries. ◀ See UKNZCBS section 5.1.2.7

#### 7.1.2.5 Summary of compliance with the Standard

In summary, the project is on track to meet its embodied carbon related pass/fail metrics, though this is only an internal assessment, rather than something fully verified against the Standard at this stage.

This will be confirmed once construction is complete (including fit-out) through a full life cycle embodied carbon assessment based on as-built quantities and carbon factors, and submitted to the verifier for review.

Assuming the remaining limits, targets, and reporting requirements noted within the Standard – including operational requirements – are also met, this project is on track for compliance with the NZCBS.

## 7.2 Glossary

See section 3 of the Standard for a full list of terms, definitions and abbreviations used in the Standard and in this guide.

# Endnotes

1 Improving Consistency in Whole Life Carbon Assessment and Reporting, 2023 https://www.leti.uk/_files/ugd/252d09_04f3e91a9a1a431b8dbaf35a0a1a81f3.pdf
2 Balancing the Uk Stock Against a Net Zero Trajectory to Derive the Pilot Version Limits, UK Net Zero Carbon Buildings Standard, May 2025
3 https://www.nzcbuildings.co.uk/pilotversion
4 https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/real-estate-standards/code-of-measuring-practice
5 "The Analysis of Industry Data That Fed into the UKNZCBS Pilot Version Development". May 2025 (https://www.nzcbuildings.co.uk/_files/ugd/6ea7ba_ef13b56b2dca4f59aa4ce4a2500fad24.pdf)
6 Built Environment Carbon Database. www.becd.co.uk
7 RICS Professional Standard Whole Life Carbon Assessment for the Built Environment, 2023: https://www.rics.org/content/dam/ricsglobal/documents/standards/Whole_life_carbon_assessment_PS_Sept23.pdf
8 https://www.istructe.org/resources/guidance/design-for-zero/
9 https://www.leti.uk/ecp
10 The efficient use of GGBS in reducing global emissions, IStructE, https://www.istructe.org/resources/guidance/efficient-use-of-ggbs-in-reducing-global-emissions/
11 The role of scrap in steel decarbonisation, IStructE https://www.istructe.org/resources/guidance/the-role-of-scrap-in-steel-decarbonisation/
12 rics.org/content/dam/ricsglobal/documents/standards/WLCA-client-guide.pdf
13 ukgbc.org/wp-content/uploads/2017/09/UK-GBC-EC-Developing-Client-Brief.pdf
14 https://www.leti.uk/ecp
15 https://www.istructe.org/resources/guidance/how-to-calculate-embodied-carbon/
16 The RICS v2 Contingency factor (note this is different to the RICS v2 Uncertainty factor) is assumed to be 0% as the submission proforma is used for as-built results.
17 https://buttress.net/journal/2025/08/28/uk-net-zero-carbon-building-standard-evolving-best-practice
18 SCORS at four: what can we learn from the Structural Awards? https://www.istructe.org/sitefiles/handlers/downloadfile.ashx?productid=10651

IStructE

UK Net Zero Carbon Buildings Standard

This guide covers the Pilot rev2 version of the Standard, and should therefore be treated as a Pilot Guide. It is the intention of the Institution to release an updated guide in Q1 2026, based on Version 1 of the Standard when it is released. Please send any feedback on the Pilot Guide to **ClimateEmergency@istructe.org** so the authors can consider this ahead of updating and launching Version 1.



**Institution of Structural Engineers**

47–58 Bastwick Street,
London EC1V 3PS, UK

**T** +44 (0)20 7235 4535
**E** membership@istructe.org

**www.istructe.org**

Registered with the Charity Commission for England and Wales **No. 233392** and in Scotland No. **SC038263**