

Whole life carbon assessments in the built environment

RICS Professional Standard, 2nd edition

Consultation questionnaire

Part 1: About you

1. Your Name
[Julie Godefroy](#)
2. Name of organisation
CIBSE
3. How many people work in your organisation?
 - 1
 - 2-10
 - 10-50
 - 50-100
 - 100-500
 - 500-1000
 - 1000+
4. What is your job title?
[Head of Net Zero Policy](#)
5. Are you:
 - An RICS member
 - A non-member
 - A student
 - An APC candidate
 - A retired RICS member
 - Please list any other relevant professional bodies you are a member of:
[CIBSE](#)
6. In which country/countries do you/does your organisation primarily operate?

[CIBSE members are in majority based in the UK but operate there, but there is also a large proportion of members who are based and/or operate abroad.](#)

Part B: Implementation of the standard

- ~~1. Do you intend to adopt this standard, either for undertaking or commissioning whole life carbon assessments?
a) Yes
b) Yes, but only if amendments are made (please provide details)
c) No (please explain your reasons)~~
- ~~2. Are there any parts of the standard that you would find difficult to implement or comply with in your country or region?~~
- ~~3. Do you think the use of the standard by RICS members should be:
a) mandatory in all territories
b) encouraged in all territories
c) mandatory in the UK, encouraged in other territories?~~
- ~~4. Are the mandatory requirements clear?~~
- ~~5. What support will you need from RICS to be able to apply the professional standard?~~
- ~~6. What products or services do you think RICS should provide for those undertaking whole life carbon assessments? Please describe any specific content you would like to see covered and the delivery methods you would find most useful.~~

Part C: Clarity and navigation of the document

1. Do you find the structure of the document easy to follow?

Generally yes, although there is quite a bit of repeat between Section 4 and the earlier ones – see details in answer to question 5.

For comprehension, Appendix I.1 would fit better after I.2.1, which explains what upstream emissions etc are.

- ~~2. Is there anything we can do to improve the navigation of the document?~~

3. Are the diagrams clear and easy to understand?

Generally yes, with more detailed points below.

Figure 1:

- explain RSP, which is only explained in later pages
- shouldn't it also show cradle to cradle, including module D?

Figure 3: title is missing and there is a text box over the graph which only partially covers the text underneath

Figure 4:

- explain BAU acronym
- I am not sure the figure illustrates the point described underneath it, because the scenarios show both reductions in embodied and operational carbon. A figure that included one scenario where one increases and the other decreases would be more useful (e.g. changing only electric heating to heat pump)

Figure 5: text is very small and difficult to read

Figure 14: I do not really understand this figure, and what the "corresponding adjustments" mentioned in the figure title are.

Appendix I.2.4: I don't think the diagrams really help understand how energy imported / exported is accounted for. They partially describe the text, but not quite how to then account for it in the WLCA.

Appendix I.2.7:

- the figure at the bottom of page 113 needs a title and is I think UK-specific, which should be made clear
- the tables on page 114-116 are not readable, they are much too small and blurry. I think maybe also there is a labelling error, as both show SET 1 in the top left corner, but the 2nd one is also labelled SET 2 underneath?

4. Is there anything in the standard that needs further clarity or any points that should be expanded on?

Important – throughout: it is not always clear where the guidance is specific to the UK or general for any application. For example:

- where the BECD and associated carbon data is referred to, it is not always as a UK-specific resource, but I think it should be (at least in the first phase of the BECD)
- Where DEFRA / BEIS data is mentioned, this should be as a resource specific to the UK.

A check needs to be done throughout the document, and in each instance the sentence should start with "In the UK...". Potentially it could even become a separate paragraph, and with a different coloured background, to be absolutely clear to readers what is UK-specific and what isn't.

Important – throughout - When referring to "following the TM65 method", it would be useful always to be specific about whether you mean intermediate or basic (and, for the avoidance of doubt, to state

that TM65 gives priority to EPDs and that its intermediate and basic methods are for use where there is no EPD). In one instance the text specifies which one is preferred, but in many it doesn't, which could make a big difference.

Important - §1.1, last paragraph, page 6. The PS states *“However, since the publication of the European standard on building-level environmental impacts, EN 15978 (adopted as a British Standard in the UK in 2011, update due 2024); EN 17472 (adopted as a UK Standard in 2022) on assessing infrastructure-level impacts; and the publication of the first edition of this standard (Whole-life carbon assessment for the built environment, RICS professional statement, 2017), this has started to change across the built environment sector, both in the UK and globally.”* European Standards are British Standards. It is a fact of the BSI relationship with CEN that any EN is a BS EN; when an EN is adopted BSI has to adopt it at the same time. There is no time lag, the two adoptions are simultaneous. It is really important to be clear in the terminology here. We recommend the following wording, for factual accuracy: *“However, with the publication of the British and European Standard on building-level environmental impacts, BS EN 15978:2011, which is currently being updated and BS EN 17472:2022 on assessing infrastructure-level impacts; and the publication of the first edition of this standard (Whole-life carbon assessment for the built environment, RICS professional statement, 2017), this has started to change across the built environment sector, both in the UK and globally.”*

§2.1 A0 activities for buildings could exist too, for example a test borehole to support the feasibility of ground source heat pumps, pre-retrofit surveys and associated tests (co-heating: needs heating the building). Probably minor, but maybe worth stating even if the default assumption of zero will be valid in most cases?

Important - §2.1 page 11, definition of B5: the language is a bit confusing, as if the WLCA was only done pre completion rather than (as implied in later pages) updated during the life of an asset: what about retrofit which is not planned at the outset: shouldn't it be reported too, when it happens (e.g. in the case of an existing asset with an existing WLCA, wouldn't the WLCA have to be updated to reflect this retrofit, just as it would be updated annually to reflect actual in-use carbon from the other in-use modules)?

§2.1 page 11 and §3.7 page 28 RSP:

- On page 11 it would be useful to state whether the RSP of 60 years aligns with EN standards (we understand it aligns with ISO standards) – this is mentioned later in section §3.7, but may be useful here instead.
- §3.7 states the RSP “must” be 60 years for buildings. For consistency with the rest of the PS, and to keep “must” for legal requirements only, shouldn't this say “shall” instead? In §2.1 the language is softer (the RSP “is taken as”) and implies 60 years only for the UK. I think it would be useful to have more consistent language, and maybe to only mention all of this once rather than in 2 locations: maybe move all the text from page 11 to §3.7, and refer to that section for details?

Important §2.2 first sentence: this checklist does not seem to be provided?

Important §2.3, page 14, last paragraph and top of page 15: “the predictions are called scenarios and are based on current practice” and “the replacement is assumed to be like for like I find this a little confusing. Can't some scenarios be looked at which involve changes in practice and products in the

future (especially as it is allowed for refrigerants, as stated on page 39)? I think later on in the document (page 38), the text seems to imply that “like for like” is required by the EN. If so, it would be useful to state it here, and to clarify whether alternatives can be looked at as part of scenario testing – is this what is meant by the scenarios in section 3.14.4? I think both sections need to be read side-by-side, and reworded for consistency.

Table 1, page 17: If I understand correctly Table 1 means that default service lives should always be used, even at PC when the actual products are known. Shouldn't the use of that product's service life be allowed, at least as part of a scenario, to reward products selected for their reduced servicing requirements?

Important – page 18-19 Table 3, and §3.14.1 – Biogenic carbon

- Table 3: “excluding sequestered biogenic carbon”: I think the use of the word “excluding” is confusing here. Do you mean “excluding the benefits of sequestered carbon”, or “having deducted sequestered carbon from the total embodied carbon”? This should be reworded clearly, to avoid any confusion or doubt.
- I think section §3.14.1 is **very confusing** to read and needs to be reworded for simplification, and to avoid potential abuse: currently the first half implies we should account for the benefits and sequestration, and then the 2nd half seems to imply we shouldn't, or should but separately. There are sentences that seem to contradict each other e.g. “biogenic carbon removals and emissions from modules A0-A5 must not be included (...). Biogenic carbon and LULUC carbon removals and emissions must be included (...).”: I think maybe the modules are missing from the 2nd sentence? Also, what does “biogenic carbon and LULUC must not be decarbonised “mean? (same comment in the next section on carbonation, last sentence). It would be better to just say what must be done, and to provide the rationale (perverse incentive, risk of looking “carbon negative etc”) in appendix. It would also be useful to include references for what is considered to be “sustainably sourced” biomass / timber, and to explain the acronym LULUC in that section. And also in this section: what is the “Technosphere”?
- I wonder whether this would sit better earlier on, in the definition of modules, as well as the *** note on page 19 about what embodied carbon includes. Or by reference to §3.14.1.

Important – §3.4 page 21 Optioneering / partial WLCA: CIBSE support the encouragement to carry out partial WLCA, to inform design options. This is a useful point to include in the PS.

Important §3.14.3 I think there should be more guidance on where grid decarbonization must be taken into account, rather than “depending on the purpose, it may be important”. Isn't it what Table 6 in section 3.13 already does?

§3.4 page 22 The option of retrofitting should also be considered at strategic design; in many cases the client is likely to have made their decision by concept design, and set the scopes and appointments on that basis.

§3.5.5 Guidance would be useful on how to report emissions of a single building used for different uses, for example if different tenants wanted a figure for their space: how to apportion embodied carbon? Some is easy (e.g. that for the partitions in their space), but for shared elements such as lifts, sub-structure: is it apportioned per floor area?

§3.6.1: “building type”: do you mean building use? If so, it may be useful to refer to standard categories, to help benchmarking

Important: Page 32: products to include for confidence score: rather than “10 most impactful / expensive / heavy”, which is a bit arbitrary and could in practice have quite different impacts across different projects, could it be “the most impactful / expensive/ heavy products, totaling over 50% of the upfront embodied carbon / cost / weight”?

Important: §3.12.3 scenarios for the in-use stage: it would be useful to refer to CIBSE TM54 here, for operational energy use. It has specific guidance on scenarios to consider.

Important: Carbon factors (sections 3.13 and 4.3.8, and appendix I2):

- Appendix I.2.7: I have not been able to comment as the tables in Appendix are not readable, but I have concerns about the complexity of the recommended method, for a number of reasons:
 - In most countries, NZ-compatible energy targets will not be available. Even in the UK, they are not yet.
 - Defining what is “for design decisions” and “for reporting” is a very useful distinction to point to readers, but in practice could be subject to debate and loopholes.

I see the point, and to some extent I agree with the intent, but I think this adds a lot of complexity and opens the method to a lot of debate. I would strongly recommend offering a more basic option as “must”, and propose the current, more complex, method as additional guidance.

§3.14.4 Table 7: what is the basis for the 1.66 factor?

Important §4.3, top of page 55

- What about process-based energy use and associated emissions (e.g. refrigeration, swimming pool, sauna, industrial processes, fume cupboards in labs ...): should they be included? If a distinction needs to be made, some principles for this have been drafted for the UK Net Zero Carbon Buildings Standard.
- (minor point) Best say “vertical transportation” to include escalators as well as lifts, and “catering” rather than “cooking” to include all associated energy uses.

Important §4.3.1

- CIBSE very much support the proposed change, to require energy performance modelling. This was a significant flaw in the previous version, which risked missing design opportunities and significantly under-estimating operational carbon.
- TM54 can apply to any country. I think maybe the text sounds as if it was UK-only. It is also a general methodology, and encompasses NABERS and PHPP.
- In the last paragraph, it would be useful to specifically state that TM54 provides guidance on scenarios to test.
- Before the sentence starting with “in the UK, under no circumstances ...” I think you could add: “generally speaking, regulatory methods in most countries in the world use set assumptions for inputs such as occupancy, and only cover some energy uses. They must therefore not be used, unless in this particular country the regulatory method does represent performance modelling”

– I think Clara identified some countries where this is the case, as part of the SAP11 scoping review?

Important §4.3.2 and Appendix I.5 Metering

- These 2 sections are at odds with the others as they give guidance (e.g. on metering, on controls), while the rest of the document doesn't, and the guidance is quite partial on the sources for the performance gap. I think it would be better to shorten it and to just say that "beyond its crucial role in supporting energy performance monitoring, metering should be installed in line with best practice (e.g. CIBSE TM39) and should be sufficient metering to allow reporting as per section §4.3.3"
- Please also note that TM39 is being revised.
- It is not clear that the RICS PS is the best place to provide guidance on metering design (i.e. Appendix I.5. The PS starts in 4.3.2 by referring to TM39, but then states "Appendix I.5 provides guidance on how to meter the various energy uses in a building so that they can be reported in line with Table 14, as well as general guidance on energy metering." Appendix I.5 is at significant variance with the CIBSE Guidance. We think that, with NABERS Guidance for offices and TM39 there is no need for the RICS to publish this in a PS – potentially leading to a conflict between valuers who are required to follow this and other professionals following other professional body guidance. As an instance, use of a BMS for metering is deprecated. We think that this section (I.5) should be omitted and refer to TM39 (currently being revised) and for Offices could reference NABERS rules.

Important Table 14

- The PS needs to be explicit whether it means reporting of energy use for various end uses (heating, hot water etc), or the demand itself.
- In many residential projects it will not be possible to separately report cooking and catering, plug loads, lighting, ventilation etc... This may be modelled, but not metered separately.
- In many non-domestic buildings, particularly the smaller ones, the reporting requirements may be too onerous.

Important §4.3.3, 4.3.5 and 4.3.6 CIBSE very much agree that energy supplied from different energy sources (i.e. fuels, district energy, and electricity from on site renewables, off site renewables and the grid) should be reported separately. This must be reported in addition to carbon reporting, as it is independent from assumptions on carbon factors and allows further analysis and comparisons between projects.

§4.5 User activities: Some guidance or references to guidance on how to calculate these emissions would be useful.

§4.6 End of life and 4.7 Benefits and loads beyond the system boundary: CIBSE do not have the expertise to comment on these sections.

Appendices A to H: CIBSE have not reviewed these – if in doubt, we would refer to our contracted authors on embodied carbon, including TM65 and associated guidance.

Important – Decarbonisation outside the UK

- Appendix I.1 It is unclear why the UK National Grid Future Energy Scenarios, and the Consumer Transformation one in particular, should be used in countries where no decarbonization scenario exists. The lack of scenario may well mean lack of planning for decarbonization, so a very conservative scenario should be assumed e.g. flat emissions, or potentially a regional or global average from a source such as the IEA?
- Similarly, in Appendix I.2.2, it is not clear why the WLC-Predictions should only include a decarbonized scenario. In some countries this may not be the most likely ?

Important – Appendix I.2.3

- Do you mean that any green tariff is treated the same as the other (much more onerous) off site renewable options? This seems counter intuitive, as some green tariffs do not offer much benefit. Is this also a concept that would need caveats depending on the country where the WLCA is carried out ?
- The sentence starting “offsite renewables are treated” ... has it seems a typo. Do you mean “the same way as grid average mix”? If so, this seems counter intuitive for the options that do result in additional investment. Could this be explained (e.g. is this in accordance with an ISO / CEN?).

Important – Appendix I.2.5 The statement that the embodied carbon of energy infrastructure should be included in building-level WLCA seems really quite important, and a change from what I understand is current practice. If that’s indeed what is proposed:

- It should be flagged up very clearly in the main text, including the update summary, not just in appendix
- Is it compliant with ISO / CEN?
- In most countries it will be very difficult to get this information in a reliable manner. Is the recommendation to base this on FES (i.e. UK-focused) realistic and meaningful?
- For consistency, the embodied carbon of project-based renewables should also be included, but that is not what is implied in all cases by Appendix 1.2.4... and in this case, this embodied carbon would presumably be counted towards A1-A5, rather than B6? Or also in B6? I am not sure this is clear from Appendix I.2.5 or 1.2.3.
- Similarly, if the embodied carbon of district heating is counted towards B6, isn’t it inconsistent with embodied carbon of on-site heating plant, which is I think definitely under A1-A5??

An easier way may be to exclude the embodied carbon of infrastructure, and only include it in the case of district heating (for comparisons with on-site systems), or in the case of on-site renewable energy systems (for comparison with the grid)?

5. Is there anything RICS could do to help make the language or presentation of the content more accessible?

See comments on the readability of some figures and appendices

Page 18, page 20, page 25 (and probably also other occurrences): “appendices 5a and 5b”: do you mean Appendices E and F?

Pages 18-19: Table 2 “overview of carbon reporting”... should be labelled Table 3.

Page 20: MEP is “mechanical, electrical and plumbing” (or public health) not “mechanical engineering and plumbing”

Important: There is quite a bit of overlap between Table 1 and section and §3.12.1:, and I am not sure there is 100% consistency. For example, “collective EPDs” is mentioned a few times in §3.12.1 but not in Table 1. I think Table 1 needs to be checked against this section, and also refer to it for more detail.

Page 32: “the CIBSE MEP product-level database”: include link, or say it is in development

Table 5 seems to repeat Table 1 from pp16-17?

Page 34: wastage default figures from “tables 7 and 8, section 4.2.5”: do you mean Table 10, section 4.1.5?

Important Section 4: there seems to be a lot of repeat between this section and previous ones, and possibly not 100% consistency e.g.

- Figure 11 is very difficult to read and seems to repeat information from previous sections e.g. Figure 2.
- Text in §4.1.1, §4.1.2 seems to repeat information from previous sections (e.g. §2.1 definition of modules, sourcing of data at different stages etc)

Appendix A: the title of this appendix is confusing; could it be re-worded e.g. “level of control by each party over emissions at key project stages”, or something along those lines?

Important - Appendix I.2 as a whole is quite difficult to follow. I realise it is a complicated topic, but maybe it could be improved by moving some material to the main text, as “what to do”, and keeping some in Appendix as “explanations for what to do, if you are interested”.

Important – Appendix I.2.1 the Table in this appendix is difficult to follow. Could some of it be turned into a diagram, to explain the varying components (e.g. similar to the ones used in the CIBSE-LETI FAQs)?

Important – Appendix I.2.2 the Table in this appendix is not readable.

Appendix I.2.4 page 108 – typo: “see example below showing a building that is generating 50% of its renewables”: I think you mean “50% of its energy needs from renewables” ?

Appendix I.2.4 : the 2 paragraphs at the top of page 110 are a repeat of each other.

Important - Appendix I.4 seems like a useful resource for energy modellers, but should be checked by the software manufacturers and would, I think, better be published as a separate resource e.g. appendix to the LETI modelling guide? I think the format and colouring of each cell could be simplified to avoid having to scroll back up to the key (e.g. use coding or simple words instead?).

6. Do you have any comments concerning the format, clarity and/or ease of use of the Reporting Templates?

Important: Section 5.1.1 lists name and company of 3rd party verifier as mandatory information to provide in the report, however the requirement for a 3rd party verifier is not mentioned elsewhere (only that the results should be “capable of 3rd party verification”). It would be useful to clarify whether having 3rd party verification is a must, a should, or just completely optional and all that is mandatory is to say whether or not it has taken place.

Apart from this, we have not reviewed the templates in detail, instead focusing on what the earlier sections state is mandatory reporting.

7. Do you have any further comments about the quality or usability of the document?

Part D: Your experience of whole life carbon assessments

1. Do you currently carry out WLCAs?
 - ~~a) No~~
 - ~~b) Yes – operational~~
 - ~~c) Yes – embodied~~
 - ~~d) Yes – whole life~~

~~CIBSE do not carry them, but provide guidance to members on how to carry them (both operational and embodied)~~

- ~~2. Which software tools do you use to perform whole life carbon assessments?~~

3. In which part(s) of the asset life cycle do you primarily operate?

~~All stages, but less so in C and D.~~

4. What do you consider to be the main barriers or challenges to undertaking whole life carbon assessments?

~~Lack of consistency in guidance, though less so since the RICS PS and TM65; probably more important now is the lack of consistency and availability of data sources.~~

~~Lack of requirements & incentives to do so.~~

- ~~5. Please list any other carbon assessment standards you are aware of or have used. Where possible, please provide:~~

- ~~● Title of standard~~

- ~~• Regional application~~

6. Applicable to UK only: The Professional Standard as drafted removes the use of SAP 10 calculations for operational energy use assessments in the UK. What effect, if any, do you believe this will have on the ability for users to undertake WLCAs?

It may make it more difficult at first, but this will raise awareness and skills.

Part E: Follow-up questions

1. Do you give consent for a member of the RICS Standards team to contact you about any of your responses?

Yes

2. Would you be interested in joining a focus group to share your views with RICS and other consultation participants?
 - ~~a) No~~
 - b) Teams meeting
 - c) In person (London)
 - ~~d) In person (Birmingham)~~

Note focus groups are expected to take place between 4-17 April 2023. Where possible, these will be hosted by RICS staff in various world regions to accommodate time zones and to facilitate discussion on specific requirements and considerations in different territories.

If you respond 'yes' to this question you will be contacted around 24 March with further information and options.

- ~~3. Is there anything you'd like additional information on to help you adopt or implement the standard (e.g. software tools, BECD, ICMS, other)?~~

- ~~4. Do you have any further comments about this standard?~~

Thank you for taking the time to respond to this consultation.