

# Whole Life-cycle Carbon Optioneering Planning Advice Note 2022 - Consultation Statement

## Introduction

The City of London Corporation undertook public engagement on the draft Whole Lifecycle Carbon Optioneering Planning Advice Note (WLCO PAN) between 6 July 2022 and 30 September 2022.

This document sets out the main issues that were raised in written responses and at events, and how those issues have been addressed in the final version of the PAN.

## Consultation events

- Hybrid in person/virtual public consultation event on Wednesday, 7<sup>th</sup> September 2022, 6-7:30pm
- Virtual public consultation event on Thursday, 8<sup>th</sup> September 2022, 12:30-1:30pm
- Expert workshop on 13<sup>th</sup> September 2022, 9-10:30am
- Expert workshop on 15<sup>th</sup> September 2022, 9-10:30am

## Policy responses

This table sets out the issues raised during the engagement and how it has been addressed.

Number	Issue	How this issue has been addressed
1	The WLCO PAN should be clearer on the Climate Action Strategy goals.	We will clarify and set into context our CAS goals in the introduction to the PAN.
2	The WLCO PAN should clarify when optioneering is recommended and define technical terms.	The optioneering exercise is a means of comparing a limited number of development options in order to find the best balance in carbon emissions terms prior to adding other considerations into the planning balance.  This approach will aid the review and decision-making process through the submission of more in-depth information that demonstrates how developers have arrived at a particular proposal. This process can be

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	<p>Some respondents suggested that optioneering should be required for every proposed development and others suggested that optioneering should be limited to only those schemes that propose substantial demolition.</p>	<p>relevant to various application types that have a significant proportion of new built elements including replacing existing built elements.</p> <p>The types of development that the WLCO PAN applies to has been clarified. The PAN is now clear that optioneering is required for all major schemes. Other developments should carry out optioneering if they do not retain the majority of substructure and superstructure.</p> <p>Schemes that propose to retain the majority of the substructure and superstructure are classed as retrofits for the purposes of this PAN. While such schemes are not required to undertake a full optioneering exercise, applicants are encouraged to explore different options during the pre-application process, with the aim of incorporating design approaches that minimise the carbon intensity of the development. The purpose of the optioneering exercise is to compare bespoke development options for a particular site, which can mean that comparison with other City development proposals may not be relevant.</p> <p>The PAN advises on the consistent presentation of options in planning applications (see dashboard 1) and of the whole life-cycle carbon assessment results of the planning application scheme (see dashboard 2), so that this information is easier to understand and assess as part of the application consultation process.</p>
3	<p>Why is optioneering required?</p> <p>How are options chosen, in particular where there appears to be no beneficial re-use scenario?</p>	<p>The optioneering exercise is a means of comparing a limited number of development options in order to find the best balance in carbon emissions terms prior to adding other considerations into the planning balance.</p> <p>The GLA's Whole Life-Cycle Carbon Assessment Guidance and Circular Economy Statement Guidance – which apply to applications that are referable to the Mayor of London – require the full exploration of options before considering substantial demolition. The PAN sets out a methodology by which this can be carried out, and how this should be demonstrated in the planning application.</p> <p>Options will be developed in early discussions with applicants in the pre-application process and their details will vary on a case-by-case basis. The number of options will be limited and agreed based on presenting clearly discernible, feasible design approaches to the proposal in order to inform the optimum design for the application scheme, both in WLC terms and in considering other environmental opportunities such as urban greening and climate resilience opportunities.</p>

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		<p>The final preferred option may or may not be one or a combination of the assessed options.</p> <p>Options are hypothetical. They should be based on the same assumptions including which energy strategy is thought to be the most advantageous in carbon reduction terms, in order to be able to compare the options - unless there are reasons for not doing so which should be clearly stated.</p>
4	<p>The guidance appears to be geared more toward the land use preference of the developer rather than what the existing building could be. The question should be whether optimal site capacity can be achieved through retention.</p>	<p>In addition to the GLA requiring carbon calculations per square meter, we also request and evaluate the absolute figures and ensure that we understand the upfront proportion of carbon emissions. The land use proposal should be in line with our land use policies. We need to ensure that a well-balanced development is coming forward that considers both low carbon impact and future proofing generally. The focus of this exercise is on reducing carbon emissions, notwithstanding whether this is through a high or low level of retention.</p>
5	<p>How will the optioneering results be used in the later planning stages?</p>	<p>The optioneering exercise will stand on its own and not be used to challenge the preferred/planning application proposal which is developed based on much more detail than the options. The methodology has been developed to inform the design approach to the preferred option that will become the planning application scheme. Once this has been given planning permission, the Energy, Whole Life-Cycle Carbon and Circular Economy strategies of the approved scheme will be further detailed and approved during the planning conditions stages.</p>
6	<p>Will the options be monitored?</p>	<p>We will consider how we monitor post-completion Whole Life-Cycle Carbon information across all relevant applications. We are not intending to monitor options in order to compare optioneering results across CoL sites. However, the optioneering results may prove useful to learn more about the opportunities and constraints of certain building types which may help with pre-application discussions. The GLA monitors the Whole Life-Cycle Carbon Assessments of all referable planning application schemes.</p>
7	<p>Clarify how other policy considerations and issues are</p>	<p>We will make clearer how other policy considerations and opportunities influence the optioneering results. The WLC carbon impact of each option will be presented in the context of the evaluation of other</p>

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	<p>integrated into the Optioneering exercise.</p> <p>How about considering land use, e.g. change of use to residential?</p>	<p>environmental opportunities and constraints as well as social and economic sustainability issues such as commerciality, quality of the spaces and building, health and wellbeing.</p> <p>We will update the PAN to include all recent and emerging policy guidance and regulations.</p> <p>The City has a number of successful schemes that convert office buildings or sites to hotel or student accommodation. The review of the Local Plan (City Plan 2040) will consider the overall balance of uses across the City. There is still demand for offices in the City as a place for business.</p>
8	Third-party verification should be required.	We have incorporated third-party verification in the updated version of the PAN, which should be done by all schemes that undertake the optioneering exercise.
9	How is CoLC collaborating with other organisations and keeping up-to-date?	<p>CoLC is engaged with ongoing discussions about how to reduce WLC carbon emissions effectively across the whole industry. CoLC officers are involved in collaboration meetings on a variety of platforms that include other Local Authorities, London Councils, ReLondon, LETI and NLA expert panels.</p> <p>The methodology is designed and will be refined to be flexible to respond to different development types and needs – this will be discussed with applicants on a case-by-case basis – and that the methodology is easily updatable in accordance with changing and emerging national and GLA policies and standards.</p> <p>We are liaising with the GLA and keep up to date with government initiatives to ensure that the methodology remains up-to-date. This is easier to be achieved if the methodology itself remains an adaptable Planning Advice Note while the requirement for optioneering is already a requirement through London Plan SPDs, and which will be written into our forthcoming policy documents.</p>
10	Do planning officers have the necessary skills to assess whole life-cycle carbon assessments?	<p>Specialist CoLC officers (sustainability, climate resilience, biodiversity, SuDS, engineering etc) review proposals with the help of all available internal and external guidance currently available. Applicants' consultants will be approached to provide additional explanations and justifications as required to underpin the review of the proposals. Further upskilling, however, is ongoing.</p> <p>We are happy to arrange knowledge exchange meetings with or training for individual authorities and organisations, and we regularly attend CPD events on the subject.</p>

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11	<p>Clarify other reporting requirements mentioned in the PAN, e.g. through conditions.</p> <p>Updates to WLC Carbon Assessments should be requested at the time of submission to building control (design and as built) to reduce burden on applicants.</p>	<p>We encourage every major application, not just GLA referable applications, to include a WLC carbon assessment. We encourage minor development proposals to include information of how carbon emissions have been reduced in their design approach. We will strengthen this approach in our forthcoming Local Plan (City Plan 2040).</p> <p>For each major application, we request by condition an updated Detailed Whole Life-Cycle Carbon Assessment to be submitted before construction begins. Whole life-cycle carbon assessments submitted with planning applications are based on RIBA stage 2 design, therefore calculations are based on a number of intentions and assumptions. CoLC's approach to request RIBA stage 4 updates prior to construction is to understand more clearly how the detailed design evolves and impacts on carbon emissions. This might include new technologies, structure, material and construction choices that can be incorporated as a scheme evolves, and that contribute to a lower carbon impact. This information will help with managing the planning process, managing expectations of all involved and to document the progress during the detailed design phase. However, this is independent from the optioneering approach at pre-application stage.</p> <p>All submitted Whole Life-Cycle Carbon Assessments are available on the planning register for the public to view. We also request post-completion statements by condition.</p>
12	<p>What sanctions are proposed for exceeding whole life-cycle carbon emissions – please not offsets?</p>	<p>There are no standards that are required by policies to be achieved at the moment. The GLA has published the Standard benchmark and the Aspirational benchmark following their study of cases. The current requirement for developments to submit WLC carbon emissions to the GLA (for referable schemes) is to gather further evidence as to achievable carbon emission reduction for typical development types (by use).</p> <p>Policies are aiming for net zero whole life-cycle carbon emissions, however, this is not yet achievable as decarbonisation, alternatives in low carbon construction materials and materials exchange/reuse/recycling and processes/technologies to remove carbon from the atmosphere are not advanced enough yet. Net zero implies offsetting by means of carbon removal from the atmosphere and reducing energy use/production of renewable energy elsewhere. Zero whole life-cycle carbon development is not possible at the moment as every development activity (even minor refurbishment) will result in carbon emissions. Zero WLC carbon development will only become possible once the grid is fully decarbonised, materials sourced and transport</p>

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		and processes carried out that don't rely on the burning of fossil fuel. Hence, carbon targets are expressed as net zero targets.
13	How is optioneering affected by risks due to policy conflicts, such as the preference to connect to district energy systems?	<p>Options are hypothetical, all based on the same assumptions including which energy strategy is thought to be the most advantageous in carbon reduction terms. It is important that all options are based on the same energy strategy (where possible), in order to assess and compare the options, unless there are reasons for not doing so which should be clearly stated.</p> <p>Networks such as Citigen do have a strategy to decarbonise, however, for the sake of the optioneering exercise, the most realistic and best energy strategy should be applied to all options.</p> <p>Discussion on district energy will require practical dialogue at pre-application stage in relation to the planning application scheme.</p>
14	Clarify details of the expected operational energy modelling.	<p>At pre-application stage it will be very difficult to provide a TM54 (operational energy performance) or NABERS UK (certification scheme for operational energy performance) review, however reasonable assumptions on consumption should try and align with targets for the project. Methods should be consistent across options and include the upgrade of refurbished facades to highest level of energy efficiency. The dashboard will be adapted following feedback to make this clearer.</p> <p>The EPC rating was included into the dashboard information as reference only. The energy assumptions should not be based on the EPC for the optioneering exercise.</p>
15	Photovoltaics - clarify why it appears that the PAN suggests they are not effective over the building lifetime.	This was not the intention and will be clarified in the update. A review of low and zero carbon technology solutions should be provided as part of the energy strategy of planning applications.

## Technical responses

Number	Subject	Response
1	How will data reviews and misrepresentation of options/third-party review be accounted for?	<p>The intention of the document is for an initial review and transparent reporting for officers to make an informed decision. Planning Officers will seek out inconsistencies across documents and scrutinise approaches. Officers are taking part in training to identify inconsistencies in options and propose adjustments where necessary. Additionally, third-party verification has been included as a requirement for all schemes that undertake optioneering, in the revised version of the PAN.</p> <p>It should be noted that the lowest carbon option may not always be the best option for development in the overall planning context, or it could have significant technical challenges that need to be overcome.</p>
2	How will operational energy Carbon Factors be accounted for?	<p>A number of queries were raised relating to the use and declaration of carbon factors, which were welcomed.</p> <p>The updated PAN will set out the recommended approach to applying carbon factors. These should be kept consistent across options for the given energy source type. All options will require the carbon factor(s) to be reported in the dashboard. An operational energy carbon factor to be used as a basis for reporting will be included in the reporting template for B6. Teams will need to declare the energy carbon factors for each option. Where deviation occurs this will need to be clearly explained.</p> <p>The operational energy strategy would be more detailed for the planning application scheme in accordance with TM54 (operational energy performance modelling tool) or NABERS UK Design for Performance as required and recommended, respectively, by the GLA. At optioneering stage, this is unlikely to be feasible.</p>

Number	Subject	Response
3	Will the PAN account for decarbonisation of materials and/or declare carbon factors for the embodied carbon of materials?	<p>Grid decarbonisation will not be included in the embodied carbon assessment for this exercise. Supply chains are global and it is currently difficult to ascertain with any accuracy the decarbonisation pathways for materials with unknown procurement routes or locations.</p> <p>The decarbonisation carbon factor will not be altered for embodied carbon estimations (as in the energy decarbonisation effect on embodied carbon results).</p>
4	Dashboard 1 - Please clarify the % material retained relating to existing/recycled content	<p>The aim of this reporting metric is to demonstrate what is being considered for reuse. We will clarify this in the final document. At an early stage, it would be appropriate to provide estimations of the substructure and structure by mass and the facades by square meter. It would be sensible to be on the conservative side at this early stage. The % retained is purely for providing a metric for elements reused in situ. The industry is undertaking wider work in relation to circular economy metrics.</p>
5	What benchmarks are being used in the PAN?	<p>The PAN is trying to align with the GLA benchmarks for initial assumptions. It should be noted that taller buildings may fall outside of this range and should be considered very carefully from an early stage.-Dashboard 2 would require more detailed information, based on the selected option and this would be refined in the final documentation.</p> <p>The Built Environment Carbon Databases (BECD, <a href="https://www.becd.co.uk/">https://www.becd.co.uk/</a>) should help in future with better collated data and future benchmarks.</p>



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6	How will data collection/databases and the understanding of embodied carbon impacts be accounted for in terms of as-built real-world numbers?	The PAN will not currently be monitoring results in a database. As built data could inform the estimations made in the PAN as other datasets improve over time.
7	<p>How is waste and demolition accounted for in the assessment?</p> <p>Where does the waste go?</p>	<p>Waste and the end of life of new products is considered in WLC carbon assessments. Waste generation (from the building materials) would be considered in the estimations for life-cycle module C at the end of the building life.</p> <p>Waste from the existing building (where there is one) would have formed part of the previous building's assessment.</p> <p>Guidance and best practice (EN 15978 &amp; RICS guidance) does not currently account for the demolition waste as part of the assessment, however it is recognised there is an impact associated with removing a building. The updated RICS guidance in 2023 will be addressing and clarifying this. EN 15978-1 is due for an update in 2024 (<a href="https://standardsdevelopment.bsigroup.com/projects/2020-01551#/section">https://standardsdevelopment.bsigroup.com/projects/2020-01551#/section</a>).</p> <p>Demolition estimations should be added using the GLA rate as a default. The GLA do require reporting on demolition waste as a separate metric using an assumed value of 50 KgCO<sub>2</sub>e/m<sup>2</sup> (where a defined number has not been calculated). The revised PAN will clarify that options should consider this based on the area of the existing building.</p> <p>It is worth noting that a refurbishment with major changes would make demolition impacts difficult to predict (for example carbon impact of soft strip and facade replacement compared to full demolition). In time the availability of data will improve.</p> <p>The question as to where the waste goes falls outside the remit of the PAN. Relevant UK legislation on waste already exists and the amount of waste diverted from landfill has improved greatly in the last 10-15 years.</p>

Number	Subject	Response
8	<p>“Façade interfaces” and “Health and wellbeing” ignore opening windows as a means of ventilation without increasing carbon emissions. Is there a contradiction in the “design considerations” should be “intervention considerations”?</p>	<p>This will be reviewed. Openable windows are not a means of consistent ventilation but a means of free cooling. This is often confused. Windows should ideally be open in mild weather conditions only (and managed - we can see a 3kWh/m<sup>2</sup> increase on consumption in deep plan offices if mismanaged). The benefits of open windows or facades have the potential to save energy if used correctly, as well as the sense of wellbeing due to occupant control.</p> <p>Our view is that “considerations” is the correct term for the detailing of the options.</p>
9	<p>Is more ambition needed than the stated reduction of global emissions by 43% by the end of this decade?</p>	<p>The IPCC stresses the need to reduce greenhouse gas emissions by 43% by 2030 compared to the 2019 baseline. This is the minimum reduction needed to stay within a 1.5 degree increase in temperature by the end of this century, in line with the Paris agreement.</p>
10	<p>Will more in-depth analysis of two specific options be acceptable/ a better way of evaluating options?</p>	<p>There is no requirement for a set number of options but a view on variations in project should be undertaken. The PAN is about the fundamentals of building decisions for reuse. Approaches should be discussed with the planning officers to be practical but also to consider what could be done technically to try and reduce carbon, rather than defaulting to a new build position.</p> <p>In many cases, detailed analysis will not be feasible yet due to the lack of information and reliance on assumptions. Should a team want to look into two viable options with more detail that would be acceptable if the options cover the anticipated opportunities of a site, and this should be discussed with the planning officer. This will be clarified in the PAN revision. Applicants will not be required to undertake detailed WLC assessments of more than one option in the following planning and design stages.</p>

Number	Subject	Response
11	How is the PAN methodology accounting for the progress towards net zero by corporate entities?	<p>The PAN is not intended as a tool for reporting or demonstrating progress towards net zero by corporate entities. However, developers and occupiers or incoming tenants may want to understand the choices that have been made in terms of the carbon impacts of the developments they occupy, and the information and data presented as part of the optioneering exercise can provide useful insights.</p>
12	How are carbon factors used for specific materials and how do you deal with the risk of consultants using different factors for the same materials across the options?	<p>Detailed decisions about the fundamentals of a building design and about procurement can cause variation in embodied carbon performance-</p> <p>The PAN methodology recommends using the RICS Whole Life Carbon Assessment for the Built Environment default specification that is due to be updated in 2023, as a baseline approach (Page 18, Table 6: <a href="https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/building-surveying-standards/whole-life-carbon-assessment-for-the-built-environment">https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/building-surveying-standards/whole-life-carbon-assessment-for-the-built-environment</a>).</p> <p>This approach should be confirmed as part of the optioneering exercise or justified if a different approach is taken.</p> <p>The initial appraisal may be based on structural and material assumptions plus estimated breakdowns of elements to build an options profile. All assumptions about materials or structure must be declared and be consistent between options where the detail is the same.</p>
13	The capacity of the grid and ensuring that there is sufficient investment in the infrastructure to deliver all-electric buildings will be critical.	<p>This is one of the critical areas in terms of energy consumption reduction. UKGBC have set out a pathway relating to capacity. The Net Zero Building Standard will set out performance criteria as a leading standard (due to be launched in 2023/2024). NABERS UK is based on energy consumption rather than carbon. Both are critical for driving a lower carbon future and targets to be achieved in use.</p>
14	Why is NABERS UK stated to be the more onerous approach in the section	<p>There are varying levels of energy modelling. NABERS UK (Design for Performance) is the most complicated type of modelling standard than currently exists, hence why it is more onerous - however, it is currently voluntary. The wording in the PAN will be reviewed to clarify this point.</p>

Number	Subject	Response
	<p>'Operational Energy Modelling' in chapter 2 of the PAN (Related Reporting Requirements), since its requirements seem to warrant the use of "rational" instead?</p>	
15	<p>Is it better to do 5 high level options or work closely with design team to develop one viable option that can be interrogated in more detail? Not all 5 options will be developed further in the later stages.</p>	<p>Options will be limited and agreed based on presenting clearly different, feasible design approaches to the proposal in order to inform the best approach to the application scheme, both in WLC carbon terms and in considering other environmental opportunities such as urban greening and climate resilience opportunities. This will be discussed and agreed with the applicants at an early stage during the pre-application process.</p>
16	<p>What is the difference between the whole life-cycle carbon assessments developed by the GLA and the PAN, are there any concerns about clashes?</p>	<p>The intention of the CoLC is for this exercise to be a standalone assessment of high-level options rather than the detailed Whole Life-Cycle Carbon Assessment required in line with the GLA's guidance for an application proposal. It forms a precursor to the GLA guidance in which different options are compared, before undertaking detailed assessments of the selected option.</p> <p>The results of the optioneering are based on different data (some estimated or assumed) and design details than those of the assessment of a planning application scheme and therefore can vary and will not be compared with each other.</p> <p>For the same reason, whole life-cycle carbon options will not be compared to GLA benchmark data as part of the evaluation presented to the CoLC. However, GLA benchmarks – as they firm up through assessing the growing evidence base of post-completion data - can help developers making initial decisions, and the PAN approach has been designed to keep consistency between the two.</p> <p>The GLA (and other London boroughs) have been consulted on the PAN methodology during this process and their comments will be incorporated.</p>

Number	Subject	Response
17	Going from RIBA stage 2 to 4 is critical, as stage 2 may promise the world and later on it is found not to be feasible. This should be acknowledged in the PAN or SPD. How will it be accounted for?	The aim is to ensure carbon reductions are considered at the earliest possible stage of the project. Possible changes resulting from later stage details should be acknowledged but the detailed design stages of an application scheme are not subject to this advice note. All major applications are expected to undertake Whole Life-Cycle Carbon Assessments to the GLA's standards, and this requires planning reporting and as built reporting. All applications with new build elements will be encouraged to undertake life-cycle assessments of the associated construction works. Further detail will be provided in the forthcoming City Plan 2040.
18	What is the basis of the required life cycle of 60 years?	<p>The PAN methodology is aligned with the GLA guidance requirement of reporting carbon emissions on a standard baseline of a 60-year life cycle as set out in the RICS Whole Life-Cycle professional statement.</p> <p>We use the 60-year period, as this is the industry metric for LCA based professional guidance documents, such as RICS Whole life carbon assessment for the built environment. We therefore use this as the basis for the PAN.</p>
19	What about the development of a pre-redevelopment audit guide document?	Pre-redevelopment audits are required by the adopted GLA Circular Economy Statement Guidance which include the consideration of development options relating to the retention of buildings and building elements. The suggested guide would be a useful separate exercise with a wider focus compared to this PAN.
20	What is the purpose of the updated Whole Life-Cycle Carbon Assessment at pre-commencement stage and at practical completion?	This section of the PAN refers to the future planning stage proposals that are outside the scope of this advice note. It explains the whole life-cycle carbon reporting required at planning stage and recommends how the optioneering results can be developed to the required detail. This includes the request for applicants to submit an update of the whole life-cycle carbon assessment before construction begins to demonstrate how further details of the design, materials and construction would impact on whole life-cycle carbon emissions. The post-completion statement is required by GLA guidance and will provide important evidence about the real whole life-cycle carbon impact of development in order to help develop future standards.

Number	Subject	Response
21	The PAN is unclear about updates to Part L in relation to LZCT i.e. PV, please can this be clarified?	<p>The new Part L 2021 applies renewable energy to the notional building as a way to reduce target carbon emissions relative to the previous target and to encourage a fabric-first approach. The use of renewable energy is therefore not discouraged. However, designers should be aware of the embodied carbon of all building services, which are responsible for a significant proportion of embodied carbon emissions of a development, especially in refurbishments due to their relatively shorter lifecycle. 7</p> <p>The optimum solutions will vary on a project-by-project basis. They will depend on opportunities for energy storage and demand-side energy management, and more detail would be expected in applications.</p> <p>The comments relating to this PAN section have been very useful and detailed. It has become clear how this chapter can be misinterpreted, and therefore it will be revised accordingly.</p>
22	Does the PAN methodology apply to commercial proposals only? In the executive summary, should the fourth to last paragraph also refer to the commercial and residential built environment?	<p>The PAN optioneering methodology should apply to all development types, but this will be confirmed on a case-by-case basis for each scheme. We will make this clearer in the revised document.</p>
23	<p>Options should also be reviewed for refurbishment cases where there might be a number of possible variations.</p> <p>Opportunities for strategic reductions in embodied carbon that have been</p>	<p>The PAN will be reviewed to clarify that there is no precise threshold for the expectation that an optioneering exercise will be undertaken.</p> <p>We will however provide examples of development proposals for which we expect optioneering, such as schemes that only retain a small proportion of an existing building. However, schemes that are classed as retrofits (retention of structural elements, alterations, to include facades in most cases, and extensions, new building services) are likely to only be assessed qualitatively, including requiring details as to the need for carbon intensive alterations. This will be discussed and agreed between developers and planning officers.</p>

Number	Subject	Response
	considered but are not taken forward, need to be justified.	The purpose of the PAN is to demonstrate how a development can reduce whole life-cycle carbon emissions, including through encouraging retention.
24	Can the PAN show more regard to the benefit of new buildings that are adaptable, and the beneficial impact this can have on extending the lifespan of buildings?	<p>Noted. However, the purpose of this note is to reduce carbon emissions throughout the full life-cycle of a building, including limiting the upfront carbon emissions before <del>designing</del> with major adaptation in mind, i.e. to another use type. This aspect could be included in the justification where appropriate.</p> <p>There could be a case that the new building would become outdated in future, too, and that occupiers then will have to start compromising to ensure the WLC emissions remain low.</p>
25	How does the PAN address responsible sourcing?	<p>This is an important sustainability aspect, but this cannot be covered by the PAN methodology as responsible sourcing can only be confirmed at later RIBA stages. This should, however, not affect the interpretation of the optioneering exercise, which needs to be based on comparable assumptions about material choices.</p> <p>Sourcing is covered by Local Plan development polices and by BREEAM assessments (Credit Mat 03).</p>
26	Despite low carbon emissions, minor refurbishment is not considered to be good in carbon terms due to required maintenance/replacement/upgrade work within a short timeframe - how will this be accounted for?	<p>Carbon emissions are an important factor in the decision-making process but planning also covers a range of other issues and requirements. The question will depend on the level of quality of the existing building and the detailed extent of intervention and renewal under consideration. It is difficult to set a general rule. A minor refurbishment may extend the life of the building which could be beneficial in carbon terms and reduce upfront carbon emissions in the near future.</p> <p>We want the PAN to guide developers to make better decisions and consider options in the wider context of carbon emissions and the climate. Planning committees will then have an enhanced ability to make an informed decision.</p>

Number	Subject	Response
27	Will a template/digital tool be created?	<p>An Excel template will be created for consistency and graph set up/reporting as part of the final version.</p> <p>A digital tool is not currently planned.</p>
28	Some guidance should be provided to ensure consistency and transparency of input data and carbon factors, will this be added?	<p>We have recommended an approach in the WLC PAN following consultation and require applicants to report the figures used in each option for greater transparency. See response 2 for further information on carbon factors.</p>
29	Why is the PAN not allowing comparison across different schemes?	<p>The purpose of the PAN is to compare options of a site with specific opportunities and constraints that may not be comparable to other sites. However, over time, the assessment of optioneering exercises may help to build an experience base for planning officers and the industry generally.</p> <p>For detailed WLC assessments The Built Environment Carbon Database (BECD) database is designed to make comparisons across schemes, if desired. Comparison should be treated with caution as there are so many variations within the built environment sector. Sometimes impacts will be contextual to a specific site, i.e. ground conditions affecting substructure options.</p>
30	<p>In relation to the comparison graph, how much confidence do we have in the comparison of different options?</p> <p>It's our opinion that different software tools lead to</p>	<p>Consultants should be following RICS (Royal Institute of Chartered Surveyors) Whole Life Carbon Assessment for the Built Environment guidance for the baseline and GLA guidance, consistently across all options. RICS is due to provide an update in 2023 which should add clarity to this issue. In many cases, at optioneering stage, there may not be sufficient data available to model individual elements. Substructure, superstructure and facade are the crucial elements at this stage.</p> <p>Hilson Moran have reviewed a few projects using both tools (etool and Oneclick). The variation when the same information and assumptions made are about 2-4%, which is not a significant difference (as</p>



Number	Subject	Response
	different results and are influenced by people using different assumptions.	<p>both tools use the ecoinvent databases as a basis). From our reviews (although a small sample size) and looking at several applications, a number of buildings at planning stage seem to have selected materials with limited availability, which makes a bigger difference. Hopefully these projects will be able to procure the materials or the as built numbers will increase (they will also increase due to greater materials quant accuracy at later stages).</p> <p>Often bigger differences are down to the model and making lower material choices that may be very challenging to procure. This is the danger of using low target but using the same construction methods.</p>
31	The PAN omits technologies such as the creation of bio-solar roofs, will measures like this be included?	This PAN methodology is not designed to be a detailed dive into solutions. The positive or negative impact of carbon emissions from photovoltaics and green roofs could be factored into the optioneering as long as it is consistently applied across the options or reported where such solutions cannot be incorporated for some of the options.
32	How are tenants' impacts accounted for?	<p>It should be estimated as part of the optioneering exercise and included in the estimations. It would be reasonable to assume the levels would be similar across the options. Reporting should include assumptions made. The impacts of internal finishes &amp; FF&amp;E are estimated to be around 21% (GLA WLC guidance estimates) of the impact over a 60-year period, due to the number of anticipated replacements.</p> <p>Note: for an office, the tenant fit-out is not included if not in the applicants' scope of works.</p>

Number	Subject	Response
33	<p>The term embodied carbon is misleading and shouldn't be used, as we are talking about carbon that is being emitted. Can you please clarify your choice in terminology.</p>	<p>Embodied carbon is part of the agreed industry wide terminology. Carbon is being emitted, but it is also contained within certain materials, which is why it is appropriate to use in this way.</p> <p>Upfront and in-use carbon may also be referenced. The definitions and terms used in the PAN are part of industry wide terminology and align with current guidance and standards such as RICS, UKGBC, World Green Building Council (WGBC) definitions. The terms in the glossary are in line with NABERS, GLA, RICS and LETI terminologies.</p> <p>LETI have just released a Whole Life-Cycle Carbon definition document (Jan 2023) to which the PAN will be aligned.</p>
34	<p>The "Cumulative Carbon Emissions" in Figure 11 do not account for the phasing out of fossil fuels.</p>	<p>Figure 11 will be changed and updated. This is a graphic that CoLC members requested, however it does not reflect the estimated nature of changes. It is likely that fossil fuels will not be phased out for a while, so there is a need to account for other fuel types. It will be some time before the grid reaches 'zero emissions' on an annual basis.</p> <p>In terms of options, the change in carbon emissions as a result of the phasing out of fossil fuels would often be consistent regardless of type (unless a different system is used).</p>
35	<p>Terminology - please expand on abbreviations where used?</p>	<p>We will expand on abbreviations to make them clearer in the final version.</p>
36	<p>Can the references to existing structures be clarified, as this requires qualification rather than generalisation (page 24 of the draft PAN)?</p>	<p>Current industry experience shows that particular care should be taken when considering 1950s / 60s concrete structures, due to the construction techniques and curing of the concrete used in buildings of this age, as well as the grading of the concrete and steel used at the time. However, each project should ideally check the condition of the existing building materials quality as far as practically possible to enable informed decisions to be made.</p>

Number	Subject	Response
37	What is the role of hydrogen and other fuel types?	This is part of the solutions applicant teams can propose if viable. Hydrogen has its complexities at the building level. Other heating sources are more likely to produce satisfactory results in the near future.
38	What is the role of commerciality in the PAN?	An acknowledgment that commerciality is a factor to be considered will be added. Commerciality should be included into the evaluation of the options in the Dashboard.
39	What is the role of transport in the PAN?	<p>Transport of materials is accounted for in the whole life-cycle carbon assessment methodology.</p> <p>Transport impacts of building users is not accounted for in WLC assessments.</p>
40	LETI support the inclusion of references to existing guidance and initiatives, including the RICS Professional Statement, Part Z and LETI. Please see our suggestions for additional materials to be included in the PAN. Can these be included?	Sources will be reviewed and updated wherever possible.

Number	Subject	Response
41	<p>How does variation in building use type and hours affect operational energy?            And how is demand for types of space considered i.e. gyms and labs?</p> <p>How is this accounted for?</p>	<p>Operational hours can vary, for instance food establishments use a lot of unregulated energy. It's just one example given for context. The operational energy calculations for options will be based on very early estimates and should be consistent across the options.</p> <p>The different use types in the PAN are just cited as examples of certain considerations that may be needed. Light types labs (life sciences) are becoming a fast-growing sector, so we need to be adaptable to this use type and the City adapts to future needs. This links to circular economy principles and ensuring adaptability and flexibility in the change of use over time.</p>

## Stakeholders

The following list provides an overview of the key stakeholders that were invited to one of the consultation sessions and/or submitted written comments on the PAN.

Stakeholder group	Organisation
Professional bodies and expert organisations	CIBSE
	Low Energy Transformation Initiative (LETI)
	Historic England
	Institute of Structural Engineers
	New London Architecture (NLA)
	Royal Institute of Chartered Surveyors (RICS)
	Royal Town Planning Institute (RTPI)
	The Architects' Journal
	UK Green Building Council
	Architects Climate Action Network
	Building Research Establishment (BRE)
	Royal Institute of British Architects (RIBA)
Professional companies involved in the built environment (architects, engineers, environmental and planning consultants, property managers, landowners etc.)	Hilson Moran (Authors of the PAN)
	DP9
	Brookfield Asset Management
	Waterman Group
	Igloo Regeneration
	Etude
	Make architects
	Shaw Corporation
	Hertshten Properties
	3XN
	AECOM
	Arcadis
	Arup Group
	Atelier Ten

	Buro Happold
	Chapmanbdsp
	Greengage Environmental
	Hoare Lea
	Milieu Consult
	Ramboll
	Sweco
	TFT Consultants
	British Land
	City Property Association (CPA)
	Dominvs
	Gerald Eve
	Land Secs
	Lichfields
	London First
	Montagu Evans
	Stanhope
	Turley
	Concrete Centre
	Ray King
London government bodies & Statutory authorities	Greater London Authority (GLA)
	Environment Agency
	London Councils
	Natural England
	Transport for London (TfL)
	Central London Forward
	Diocese of London
	North London Waste Plan (NLWP)
	Port of London Authority (PLA)
London boroughs	Camden
	Hackney
	Islington

	Kingston
	Lambeth
	Newham
	City of Westminster
	Richmond and Wandsworth
	Southwark
	Tower Hamlets
Business Improvement Districts	Aldgate Connect
	Cheapside Business Alliance
	City Property Advisory Team (CPAT)
	The Eastern City Partnership (EC Partnership)
	Fleet Street Quarter/Partnership
Other	A number of individuals, including subject matter experts, City of London residents, people working in related fields and others generously gave their time and feedback during the production of the Planning Advice Note. Individuals are not listed for data protection purposes.