Retrofit First Policy Guidance

Draft guidance to the emerging Retrofit First Policy for the Environment SPD

November 2024

FAIRER WESTMINSTER

City of Westminster

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Glossary

- **ASHP** – Air Source Heat Pump
- **BIM** – Building Information Modelling
- **Cat A –** refers to the base condition of an office space provided by the landlord. It includes the essential infrastructure and finishes necessary for occupancy
- **Cat B –** involves the customisation and interior fit out of the office space to meet the specific requirements of the tenant
- **CEnv** – Chartered Environmentalist
- **CLT** – Cross-laminated timber
- **CO_2** – Carbon dioxide
- **CO_2e** – Carbon dioxide equivalent
- **EoL** – End of Life
- **EUI –** Energy Use Intensity
- **GIA** – Gross Internal Area
- **GLA** – Greater London Authority
- **GSHP** – Ground source Heat Pump
- **KG** – Kilogram
- **kWh** – Kilowatt-hour
- **L** – litres
- **LCA** – Life Cycle Assessment
- **LPG** – London Plan Guidance
- **MEP** – Mechanical, Electrical and Plumbing
- **MRICS** – Chartered Member of the Royal Institute of Chartered Surveyors
- **NABERS** – National Australian Built Environment Ratings System
- **NIA** – Net Internal Area
- **NPPF** – National Planning Policy Framework
- **NRM** – New Rules of Measurement
- **P427, P440 protocols** – Protocols from the Steel Construction Institute
- **PACER** – Planning Application Carbon Evaluation Reduction tool
- **PHPP –** Passive House Planning Package
- **PT** – Post-tensioned
- **RC** – Reinforced Concrete
- **RFI** – Request for Information
- **RICS** – Royal Institute of Chartered Surveyors
- **SAP** – Standard Assessment Procedure
- **SFS** – Steel Framing Systems
- **SPD** –Supplementary Planning Document
- **Sqm** – Metres squared (m^2)

- **T** – Tonnes
- **TM54** – Methodology for the assessment of operational energy performance published by the Chartered Institution of Building Services Engineers
- **UKNZCBS** – UK Net Zero Carbon Building Standard
- **VRF** – Variable Refrigerant Flow
- **WCC** – Westminster City Council
- **WLCA** – Whole Life Carbon Assessment

1 Introduction

1.1 Background

1.1.1 This document serves to provide guidance for meeting requirements of draft Policy 43 (Retrofit First), as proposed in Westminster City Council's (WCC) City Plan Partial Review. This includes an overview of what is expected to be submitted for **Pre-Redevelopment Audits**, along with further detail on **Circular Economy Statements** and **Whole Life Carbon Assessments**. This document is a consultation draft and will be updated once the final policy has been adopted and will form part of a revision to Westminster's Environment Supplementary Planning Document (SPD), scheduled for Autumn 2025. It is intended to provide guidance to stakeholders during the City Plan Partial Review Examination on the implementation of the Retrofit First policy.

1.1.2 It is widely understood that to meet the UK's climate obligations, as well as Westminster's ambitious carbon reduction targets, wide scale retrofitting is required of the existing building stock to reduce emissions associated with built environment operations. In addition, it is becoming more widely recognised that construction activity is associated with a large volume of downstream emissions, referred to as embodied carbon. These are the emissions associated with building materials, including the extraction of raw materials, processing, transportation, and assembly. These emissions are also associated with the deconstruction and processing of waste materials from existing buildings. Westminster as a local authority is already heavily built upon, with the vast majority of development in the city occurring on sites where an existing building is present. One of the most effective ways to reduce the overall embodied carbon emissions associated with development is to prioritise and encourage the re-use of as much of an existing building as possible, and to create new floorspace area through sensitive extensions.

1.1.3 Despite the high embodied carbon emissions associated with new buildings, it is recognised that in some instances new buildings can result in greater opportunities for important growth areas, such as housing, services such as hospitals, schools and community spaces, and the provision of commercial floorspace. New buildings may therefore provide significant public benefit beyond what may be achieved through retrofitting. It is also recognised that in some cases, the structural condition of buildings may prevent retrofitting, risking buildings being vacated. A balance is therefore required between prioritising retrofitting and delivering high quality, world-leading new buildings.

1.1.4 The emerging Retrofit First policy seeks to achieve this through two principal mechanisms:

- Providing a sequential policy test to justify substantial demolition in order to encourage the retention and repurposing of existing buildings to reduce the upfront embodied carbon emissions associated with new builds; and
- Setting limits on the overall upfront embodied carbon emissions associated with development, to encourage best practice low carbon building design.

1.1.5 The policy also aims to provide greater certainty to applicants proposing retrofitted developments, along with providing an overarching principle in favour of responsible retrofitting to enable retrofits to happen at pace and scale across the city. In doing so, construction options higher in the Circular Economy hierarchy will be encouraged, as highlighted in Figure 1.1.

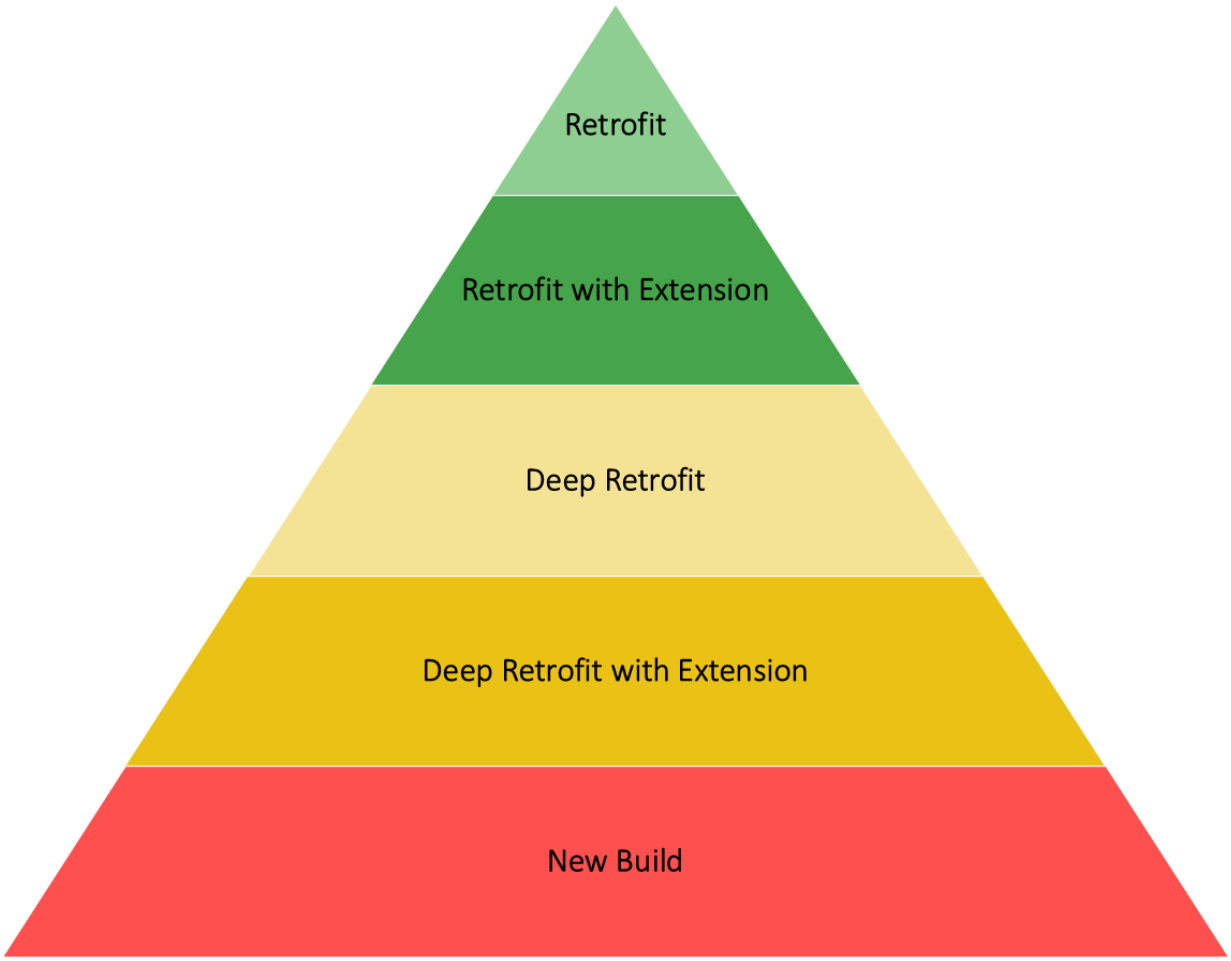

Figure 1.1: Circular Economy hierarchy, demonstrating the preferential treatment of retrofit developments

1.2 Policy requirements

1.2.1 This guidance document has been developed primarily to provide advice on how applicants should respond to the proposed Retrofit First policy. This document should be read in conjunction with the adopted Environment SPD and the Planning Obligations and Affordable Housing SPD.

1.2.3 Emerging Policy 43 of the City Plan – Retrofit First – requires that all development adopt a Retrofit First approach, evidencing that retrofitting (to varying degrees) has been considered where substantial demolition is proposed. The policy introduces requirements for the following documents:

- Pre-Redevelopment Audit
- Circular Economy Statement
- Whole Life Carbon Assessment

1.2.4 Table 1.1 provides an overview of when these documents will be required to support pre-application discussions and planning applications. Further information on the definitions of development and demolition are provided in Section 2.

Table 1.1: Overview of what documents will be required to support planning applications

Proposed development type	Level of demolition presumed	Pre-Redevelopment Audit	Circular Economy Statement	Whole Life Carbon Assessment
Retrofit	None or minor		✓[1]	✓*
Retrofit + extension	None or minor		✓[1]	✓*
Deep retrofit	Partial		✓	✓*
Deep retrofit + extension	Partial		✓	✓*
New building	Substantial	✓	✓	✓

[1] where demolition to any extent occurs, see footnote below

** where considered major development*

[1] The definition of 'retrofit' within the City Plan Glossary and within this document (see Figure 2.2) states that a development is considered a 'retrofit' where proposals involve removal and replacement of building envelope (facade and roof), finishes and building services, along with localised works to small areas of superstructure to facilitate replacement of elements noted above. It is therefore recognised that this may involve some very minor demolition works to facilitate this. In this instance, a Circular Economy Statement would be required even if the development is considered a 'retrofit' and the works are minor in nature.

1.2.5 Development proposed as a result of substantial demolition must provide evidence that the level of demolition proposed is justified through the sequential test set out within Part D of the Retrofit First policy. This is to be demonstrated through a **Pre-Redevelopment Audit**, which contains an appraisal of different construction options for the site.

1.2.6 Developments where any demolition has occurred must also provide a **Circular Economy Statement**. Circular Economy Statements are already requirements of Policy 37: Waste of the adopted City Plan, and for schemes referrable to the Mayor London, based on Policy SI 7 of the London Plan 2021. The introduction of the Retrofit First policy requires a wider range of developments in Westminster to prepare Circular Economy Statements. Additional information is provided in this document to demonstrate specific details required by Westminster for Deconstruction Audits, which form part of a Circular Economy Statement.

1.2.7 In addition, all major development, and any non-major development involving substantial demolition will need to comply with upfront embodied carbon requirements. This is to be demonstrated in a **Whole Life Carbon Assessment**. These assessments are currently required by Policy SI 2 of the London Plan 2021 for schemes referrable to the Mayor of London and have often been completed in Westminster as a means of demonstrating compliance with adopted Policy 38: Design Principles. The introduction of the Retrofit First policy requires a wider range of developments in Westminster to prepare these assessments.

1.3 Contents of the Guidance Document

1.3.1 This guidance document provides further details on the information required within the three documents referenced in the Retrofit First policy. This is shown in Table 1.2.

Table 1.2: Overview of guidance document

Document required by Retrofit First policy	Further information provided in this guidance
Pre-Redevelopment Audit	Section 2
Circular Economy Statement	Section 3
Whole Life Carbon Assessment	Section 4

1.3.2 This guidance only pertains to the proposed Retrofit First policy. Any proposals for demolition will still need to adhere to the requirements set out within other relevant policies. For example, demolition involving heritage assets, such as buildings within Conservation Areas and listed buildings, will still need to justify any demolition referring to other relevant policies within the Development Plan (including the NPPF and existing City Plan heritage policies). Similarly, applications seeking to demonstrate the delivery of public benefits due to increases in density would still be required to justify building heights, design and townscape impacts in line with the adopted City Plan.

1.3.3 Where other policy measures, or site constraints, may lead the applicant to proposing substantial demolition, pre-application discussion should be used to understand the balance of these requirements, with retention of the existing building being prioritised wherever possible.

1.3.4 The proposed Retrofit First policy also requires at Part H that where historic buildings are undergoing retrofitting measures, that "*applicants must demonstrate how technical risks have been addressed and how harm to heritage assets resulting from retrofit has been avoided or minimised*". Applicants can determine how they wish to demonstrate this. Existing adopted City Plan Policy 38: Design Principles currently requires that a Sustainable Design Statement is prepared. Further guidance on the contents of a Sustainable Design Statement is provided within the existing Environment SPD. If an applicant wishes to use the already required Sustainable Design Statement to demonstrate adherence to Part H of the proposed policy, then this should be in line with existing guidance.

1.4 Case studies

1.4.1 The following case studies are presented to provide an overview of best practice throughout Westminster.

Please note: these are being prepared and will likely be added to the document following Examination.

<table>
<tr><th colspan="2">Project name:</th></tr>
<tr><td>Project team:</td><td rowspan="5">Photographs</td></tr>
<tr><td>Location:</td></tr>
<tr><td>Year of planning application:
Year project completed:</td></tr>
<tr><td>Use type [and where relevant, quality metric]:</td></tr>
<tr><td>Description:</td></tr>
<tr><td>EPC rating prior to redevelopment:
EPC rating after redevelopment:</td><td rowspan="7">Best practice example of:</td></tr>
<tr><td>Embodied carbon performance: kg/CO_2e/sqm
Proportion of building retained: %
Methodology for assessment: RICS edition
Year of assessment:</td></tr>
<tr><td>Floorspace uplift: m^2</td></tr>
<tr><td>Length of construction period: months</td></tr>
<tr><td>Changes in building occupancy: %</td></tr>
<tr><td>Rental yield uplift: %</td></tr>
</table>

2 Pre-Redevelopment Audit

2.1 When a Pre-Redevelopment Audit is required

2.1.1 Where a site contains a building over a single storey which is proposed for substantial demolition, a Pre-Redevelopment Audit is required. Proposals must provide evidence that the level of demolition proposed is justified through the sequential test set out within Part D of the proposed Retrofit First policy. The policy requirements are intentionally designed to correspond with accepted industry practice.

2.1.2 All applicants proposing substantial demolition must sequentially follow the tests in the policy. Applicants do not need to demonstrate that they meet all of the tests, but rather follow the order of the tests until they meet the relevant evidential requirements to justify substantial demolition. Sequential test requirements are outlined in the flow chart in Figure 2.1 below.

2.1.3 Sites involving masterplans, or multiple buildings, will need to provide rationale for each individual building, meaning that the substantial demolition of any buildings over a single storey to deliver on an overall masterplan would need to be justified.

2.1.4 It is recognised that there may be circumstances where other planning policy requirements may result in lower or higher carbon emissions, or where the promotion of a Retrofit First approach may have an impact on other planning policies. All factors need careful consideration on a project-by-project basis.

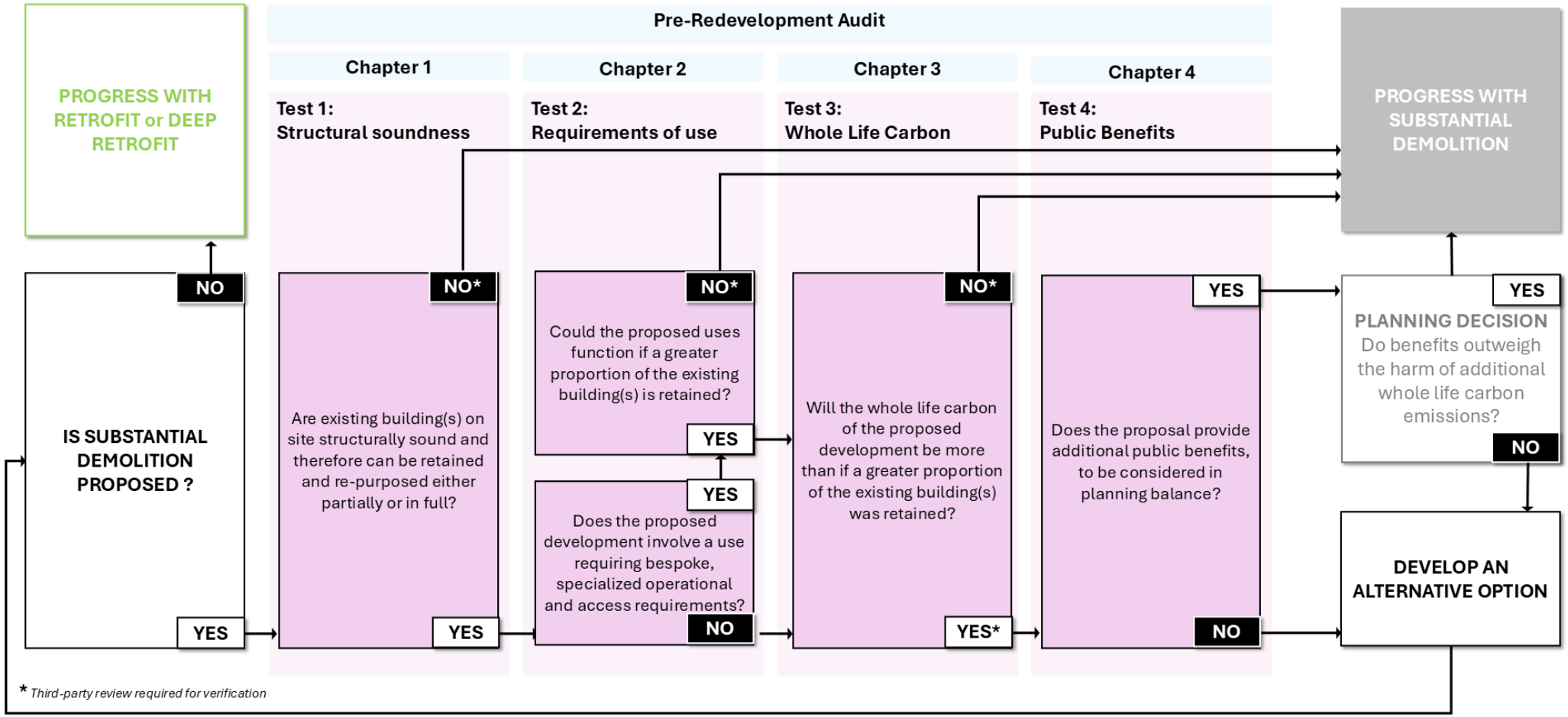

Figure 2.1 – Overview of Part A of the Retrofit First policy

2.1.5 The requirements of the Pre-Redevelopment Audit are aligned to the four policy tests. The Pre-Redevelopment Audit shall contain up to four chapters (one per test) and shall be succinct and concise. Table 2.1 provides an overview.

Table 2.1: Chapters to be included in Pre-Redevelopment Audit

Test being relied upon to justify substantial demolition (as required by Part D of the policy)	**Chapter 1** Structural Engineers Report	**Chapter 2** Requirements of Use Report	**Chapter 3** Carbon Options Appraisal	**Chapter 4** Public Benefits Statement
Test 1: Structural soundness	✓			
Test 2: Requirements of use	✓	✓		
Test 3: Whole Life Carbon	✓	✓*	✓	
Test 4: Public Benefits	✓	✓*	✓	✓
**include if proposal involves a use with new bespoke, specialised operational and access requirements*				

2.1.6 The tests require that construction options are compared to demonstrate the rationale for proposing substantial demolition. Options should be defined and refined through the pre-application process to support the sequential policy tests.

2.1.7 The definitions of development options and requirements are illustrated in Figure 1.3 below. These align with the definitions within the updates proposed to the City Plan glossary. Appendix A also provides an overview of how the definitions proposed by the City Plan align with those currently in use by the Greater London Authority (GLA), namely within their London Plan Guidance on Circular Economy Statements.[2]

[2] GLA (2022) London Plan Guidance- Circular Economy Statements, March 2022. Available from: https://www.london.gov.uk/sites/default/files/circular_economy_statements_lpg_0.pdf

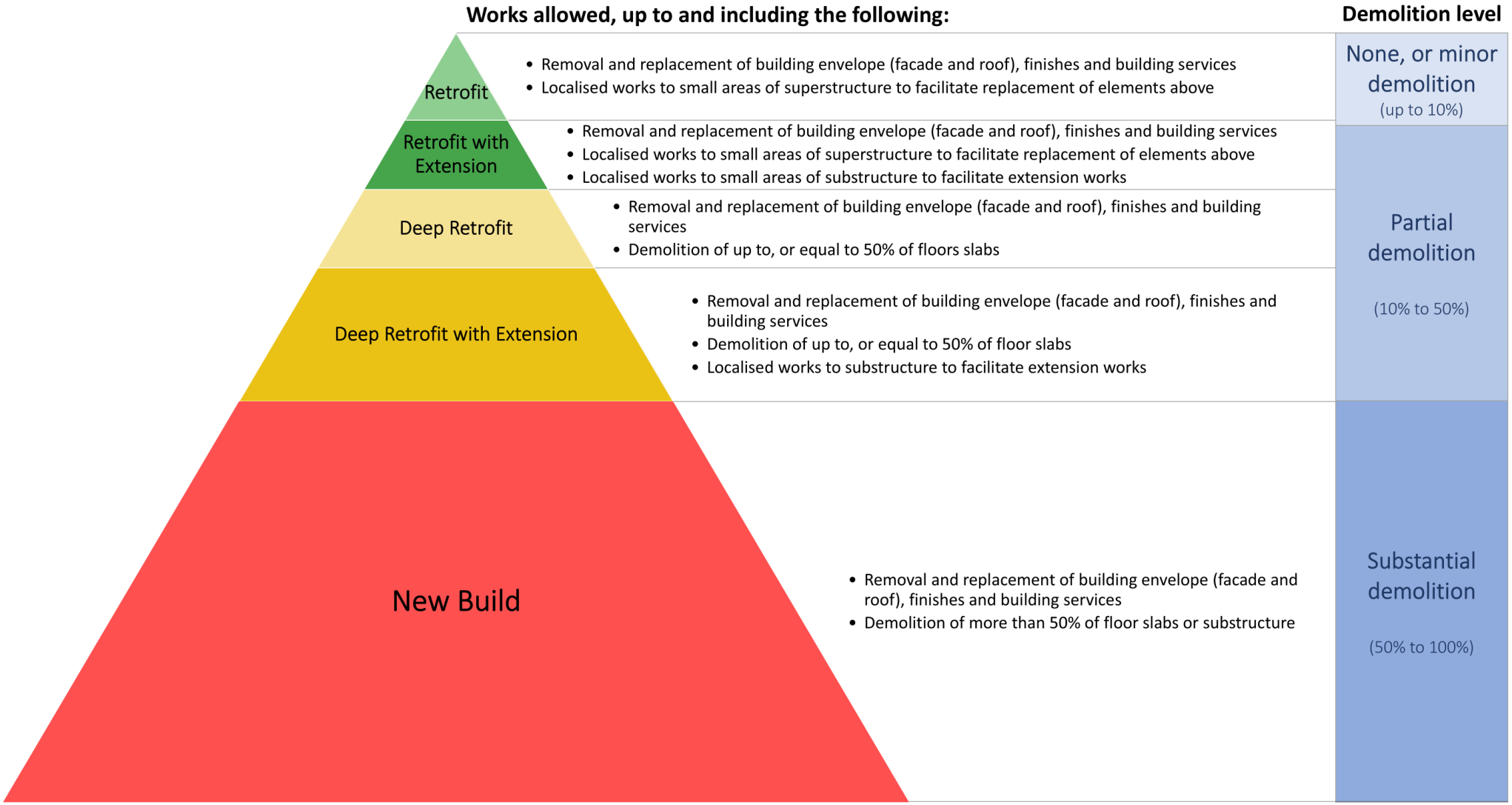

Figure 2.2: Definitions of development options, relevant to the Retrofit First policy

2.1.8 Based on the definitions articulated in Figure 2.2, proposals involving substantial demolition will usually mean that a new building is being proposed. Therefore, applications for deep retrofit and retrofit which do not trigger the amount of demolition defined as 'substantial' do not need to meet the sequential test and will therefore not need to produce a Pre-Redevelopment Audit.

2.1.9 Where substantial demolition is proposed, at least two alternative schemes will need to be assessed to demonstrate adherence to the tests. The number of schemes to be compared will depend on the outcomes of pre-application advice but are recommended based on the options suggested in Table 2.2 below.

Table 2.2: Construction options required to be demonstrated in Pre-Redevelopment Audit

Proposed Development Type	Type of alternative options to be assessed	Number of alternative options to be assessed
1. Retrofit	Not applicable	0
2. Retrofit with extension	Not applicable	0
3. Deep Retrofit	Not applicable	0
4. Deep Retrofit with extension	Not applicable	0
5. New Build	a) Retrofit; or b) Retrofit with extension; or c) Deep retrofit; or d) Deep retrofit with extension.	2

2.1.10 In addition to the evidence provided by applicants, a third-party review of the Pre-Redevelopment Audit is required. This introduces rigour and scrutiny into the process and to ensure that where applicable, the evidence provided to demonstrate meeting the sequential test in Part D of the policy forms a robust basis for the development of the planning application for the development scheme.

Third Party Reviews of the Pre-Redevelopment Audit

2.1.11 The extent of review will depend on which sequential policy test is being relied upon for justification for substantial demolition:

- If policy test 1 (structural) is being relied upon, the Pre-Redevelopment Audit shall be reviewed by a suitably qualified structural engineer, such as a chartered engineer with experience working on similar schemes.
- If policy test 2, 3 or 4 is being relied upon, the Pre-Redevelopment Audit shall be reviewed by a suitably qualified sustainability consultant, such as a chartered environmentalist with experience working on similar schemes.

2.1.12 The third-party review is to be commissioned and managed by WCC, at the expense of the applicant. The third-party reviewers shall provide a short statement providing a declaration of independence, commentary against the relevant test requirements, and a statement that the reviewer agrees or disagrees with the justification for the proposed demolition. Reviewers must

be independent from the applicant's team and not involved in any other ongoing projects for the applicant. The review shall be undertaken at the earliest opportunity possible.

Requirements for each chapter of the Pre-Redevelopment Audit

2.1.13 Further guidance on what evidence will need to be included in the Pre-Redevelopment Audit is set out within the corresponding sections of this guidance document. Each section includes:

- Introduction, to provide an overview of the need for the sequential policy test and how it should be dealt within the Pre-Redevelopment Audit.
- Evidence required, to clearly set out what Applicants need to demonstrate to the council.
- Evidence review, to identify what the third-party reviewer will need to be considering.
- Decision criteria, to provide an overview of how decisions will be made by officers.

2.2 Chapter 1: Structural condition

Introduction

2.2.1 The structure of the building is critical in judging the potential to retain, retrofit and extend the building. A **Structural Engineers Report** is required to establish the condition of the structure and the potential for greater retention of the existing building.

2.2.2 If the structural condition is such that retaining the building is not considered feasible by a suitably qualified structural engineer, or if works required to repair and upgrade the structure are prohibitive to a viable development of the building, substantial demolition may be considered using this policy test and evidence to meet other tests is not required.

2.2.3 If the structural condition demonstrates that retaining the building is feasible, applicants shall follow the order of the sequential tests until they meet the relevant evidential requirements to justify substantial demolition, as per either test 2, 3 or 4.

2.2.4 This policy test must not be used to justify substantial demolition where commonly practiced structural repair and upgrade works would enable retention of the building.

2.2.5 This test has been included as the first in the sequential tests, as it can help to establish what development options are feasible based on the existing structure(s) on site. This means that any subsequent considerations as part of the other tests are based first on what is deliverable. As a structural condition report is usually prepared to inform development demolition and construction, preparing this at an early stage in the planning process through the Pre-Redevelopment Audit can assist in making informed decisions about development opportunities.

Evidence required

2.2.6 The table below outlines the evidence required if this policy test is being used to justify substantial demolition, or to support other policy tests. This shall be in the form of a **Structural Engineers Report**, which shall form **Chapter 1** of the Pre-Redevelopment Audit.

Table 2.3: Requirements of Chapter 1 of the Pre-Redevelopment Audit

Consideration	Evidence required for sequential test 1
Existing Building Information	• Site description and constraints, including original construction date(s) • Archive information for the building • Timeline of structural amendments, change of use, any historic defects • Survey works and testing undertaken to understand structural form, capacity and unknown information not attainable from archive drawings
Structural Condition	• The condition of all critical structural elements, including foundations, basement, frame and slabs

	• Any identified defects which would cause concern for use of the existing structure and prohibit retention • Options for improving the condition where applicable • Improvements required to align with current regulations
Structural Capacity	• Estimated residual capacity of all critical structural elements, including foundations, basement, frame and slabs • Opportunities to strengthen elements where applicable
Structural Uses	• Potential uses of the building which would prevent substantial demolition • Sufficiency of the existing core to meet modern fire and access requirements, and any required upgrades • A summary of risks associated with structural re-use • A summary of other policy requirements that may prohibit deep retrofit, retrofit or extensions to the building • Examples of similar structures which have been retained and reused
Structural reclamation	• Opportunities to reclaim materials for re-use on-site, rather than recycling • Steps required to enable opportunities for reclamation of materials for re-use off-site, rather than recycling
If the applicant is proposing substantial demolition and using sequential test 1 as justification, the additional evidence listed below is required	
Justification for substantial demolition	• Evidence that the proposed level of demolition is unavoidable, either due to: – Unsafe condition of existing structure – Financial viability of repair and upgrade requirements

Review of evidence

2.2.7 In line with the requirements and process specified in paragraph 2.1.12, a third-party review of this chapter of the Pre-Redevelopment Audit is required. This shall include:

- Short statement from third-party with commentary against each item included in Table 2.3 above.
- Statement that the reviewer agrees or disagrees with the justification for substantial demolition.

Decision criteria

2.2.8 In order to satisfy this test, the council will consider:

- Case study examples of similar buildings being retained and/or repaired.

- Evidence that the structure is demonstrably compromised to an extent whereby it could not be repaired and upgraded.
- Evidence that the extent of repair/ upgrade works makes deep retrofit or retrofit development financially unviable.

2.3 Chapter 2: Requirements of Use

2.3.1 A **Requirements of Use Report** must be provided to support test 2 of the policy, where it has been demonstrated in test 1 that construction options which involve higher proportions of building retention are structurally possible. This shall form Chapter 2 of the Pre-Redevelopment Audit. If a proposal includes uses which do not incorporate any bespoke operational and access requirements, this test may be skipped, with applicants able to proceed from test 1 to test 3, as relevant.

Introduction

2.3.2 The Retrofit First policy establishes the council's preference that uses (as appropriate to other policies within the Development Plan) which enable a greater proportion of an existing building to be retained are prioritised. This means that the capacity for existing buildings to accommodate uses most suitable to their existing form is a key consideration when promoting a retrofit first approach. Strategically, development sites should be selected that align with both local needs and locational requirements (as outlined in the Development Plan), along with the need to maximise the retention of buildings. The council supports a diverse range of buildings that can meet a variety of needs.

2.3.3 However, in some cases it may be necessary to develop a site for a required use, and it may not be feasible to meet operational and access requirements whilst supporting the retention of an existing building. In cases where existing building constraints prevent, or significantly restrict, the ability to develop a site to meet new bespoke operational and access requirements from proposed uses, this policy test may be used to justify substantial demolition.

2.3.4 This test focusses on where there are bespoke requirements needed to deliver a particular use. It therefore does not relate to operational requirements which might arise pertaining to a specific quality of use. Consideration will be given where a use could not operate at all without bespoke design requirements which could not be achieved through the retention of a higher proportion of the existing building.

2.3.5 Inclusive design considerations, such as ramps, signage and lighting should be prioritised and investigated within the constraints of the existing building first, before substantial demolition on the grounds of accessibility considerations, are justified.

2.3.6 Proposals involving substantial demolition based on speculative assumptions of future occupiers' operational needs will be resisted in principle to justify substantial demolition using this test, unless evidence is provided, such as a contractual agreement between the applicant and their potential occupiers. This is to ensure that proposals are not unnecessarily embedding carbon intensive operational requirements which may not prove to be needed for an eventual occupier.

Evidence required

2.3.7 The table below outlines the evidence required if this policy test is being used to justify substantial demolition, or to support other policy tests. This shall be in the form of a **Requirements of Use Report**, which shall form **Chapter 2** of the Pre-Redevelopment Audit.

Table 2.4: Requirements of Chapter 2 of the Pre-Redevelopment Audit

Consideration	Where required, evidence suggested for Part C of the policy to inform the evidence required for sequential test 2
Proposed use	• The proposed use is supported by the City Plan and/or London Plan requirements, including consideration of the geographic location of the development and the existing use of the building(s) • The proposed use is suitable for the existing building (in parts or as a whole). Where this cannot be demonstrated, confirmation that other alternative sites to deliver the use unsuited to the existing building(s) have been reviewed, and any reasons why a different site is not possible are provided.
Consideration	**Evidence required for sequential test 2**

Operational and Access Constraints and Requirements	• The constraints of the building (access, ceilings heights, internal columns, form factor, etc.)
	• Articulation of the specific operational and access needs of the use (including future occupier requirements)
	• An outline of why the constraints and needs don't align, and how the use of modern design approaches cannot enable retention of the existing building either in part or full
	• For commercial buildings, the following shall be provided:
	  ○ Confirmation that the existing building cannot be retrofitted to a standard that could facilitate the operations of the proposed use
	  ○ Confirmation that the clear height between the top of the floor slab to the underside of the floor slab soffit are not sufficient for heating, cooling and ventilation requirements
	• Consideration of other proposed uses which would enable the retention of more of the existing building

If the applicant is proposing substantial demolition and using sequential test 2 as justification, the additional evidence listed below is required	
Justification for substantial demolition	• Evidence that substantial demolition is unavoidable due to bespoke operational and access requirements

Review of evidence

2.3.8 In line with the requirements and process specified in paragraph 2.1.12, a third-party review of this chapter of the Pre-Redevelopment Audit is required. This shall include:

- Short statement from third-party with commentary against each item included in Table 2.4 above.
- Statement that the reviewer agrees or disagrees with the justification for substantial demolition.

Decision criteria

2.3.9 In order to satisfy this test, the council will consider:

- Alignment of the proposed use with City Plan and/or London Plan objectives, demonstrating a need for the proposed use on this specific site.
- Whether alternative sites could provide the proposed use through retrofit approaches, with less demolition than proposed.
- Whether substantial demolition is a necessity to deliver the proposed use, or otherwise if a scheme with a higher degree of retention could still deliver the proposed use.
- Whether a scheme with a higher degree of retention could deliver an alternative use which could deliver City Plan and/or London Plan objectives.
- Whether less carbon intensive constructions options would drastically alter the ability to keep a building occupied.
- Whether the operational requirements are specified by an end-user or as a speculative development.

2.4 Chapter 3: Carbon Options Appraisal

2.4.1 A **Carbon Options Appraisal** must be provided to support sequential test 4 of the policy, where it has been demonstrated:

- In sequential test 1 that construction options which involve higher proportions of building retention are structurally possible; and
- (if relevant) in sequential test 2 that a proposed use and associated access requirements could still be delivered without substantial demolition.

2.4.2 As tests 1 and 2 (as relevant) inform test 3, this means that only deliverable schemes need to be included for comparison purposes. This shall form Chapter 3 of the Pre-Redevelopment Audit.

Introduction

2.4.3 Whole life carbon is one measure of the environmental impact of a development, focusing on the contribution of the development to climate change through associated carbon emissions across its lifetime.

2.4.4 A Whole Life Carbon Assessment of development options shall be provided to ensure the emissions associated with different building options, as required by Table 2.2, are compared to each other. The feasibility of different building options will be established through test 1 (what the existing structure can accommodate) and, where relevant, test 2 (what the proposed use needs in order to function). The outcomes of these tests shall then form the basis for comparing whole life carbon impacts of development options. This means that only development options which are deliverable need to be included for comparison.

2.4.5 If using this policy test to justify substantial demolition, the whole life carbon emissions must be the lowest of the options considered, with results using carbon factors which represent average industry material supply and consider decarbonisation for both embodied and operational carbon emissions.

2.4.6 A Circularity Score shall also be provided for each option. This should be based on an audit of the existing building, and the anticipated material flows for each option considered. This will provide an indication of the loss of material value for each option proposed and demonstrate the potential contribution to second hand and/or low carbon materials markets. Each option shall also consider embodied ecological impacts, which may be done as a simplified comparative study. For further information, see Section 3.3 of this guidance document.

Evidence required

2.4.7 The table below outlines the evidence required if this policy test is being used to justify substantial demolition, or to support other policy tests. This shall take the form of a **Carbon Options Appraisal**, which shall form **Chapter 3** of the Pre-Redevelopment Audit.

Table 2.5: Requirements of Chapter 3 of the Pre-Redevelopment Audit

Consideration	Evidence required for sequential test 3
Options appraised	• At pre-application stage, it is expected that a number of options shall be developed, depending on the nature of the proposed development and other constraints or opportunities (see Table 2.2) • Pre-application discussions with the planning officer and a third-party reviewer should be used to determine the best and most comparable options • Pre-application discussions shall also be used to discuss how other Development Plan requirements may restrict the possibility of an option which could enable a higher proportion of building retention and lower upfront embodied carbon emissions
Whole Life Carbon Assessment methodology	• RICS Whole Life Carbon Assessment (WLCA) Standard, 2nd Edition methodology shall be used • Assumptions shall be clearly stated, including where values are based on benchmarks, estimates or calculations • Industry representative average carbon factors shall be used *Note: additional options may be provided to outline impacts where specific procurement methods are proposed which deviate from standard procurement* • Uncertainty levels shall be clearly stated where applicable with use of ranges to convey best/ worst case scenarios • Carbon factors shall be used that reasonably account for future decarbonisation of energy generation both for embodied carbon and operational carbon emissions • The scope of the assessment shall be as outlined in Section 4 of this document and in the results reporting template (included in Appendix B)
Whole Life Carbon Assessment results	• Outcomes to be presented clearly using templates provided in Appendix B of this document, including submission to the PACER platform[3] • Results to be presented as total emissions and normalised emissions, using Gross Internal Area (GIA) as the primary metric. Other relevant secondary metrics may be used to demonstrate efficiency/ quality of space

[3] PACER is a digital platform that Westminster is using to streamline the Whole Life Carbon Assessment reporting process. Further information is available online here: https://www.preoptima.com/preoptima-pacer with full guidance to be published by WCC in due course. A summary of the forms required are provided in Appendix B of this document.

Circularity Metric	• An audit of key materials in the existing building must be provided as a minimum including all substructure and superstructure elements (RICS element category 1 and 2) • This audit must be used to accompany the Carbon Options Appraisal. For each option, scenarios should be stated for the end-state for the key existing materials (for example, retained in-situ, recovered for re-use, recovered for high value recycling, downcycled, landfilled or used for energy recovery) • The scenarios must be used to provide an overall circularity score for each option, considering the end state of existing building materials based on the building audit • At this time, any justifiable method for calculating the circularity score is accepted. A recommended approach is provided in Section 3.3 of this document *Note: this metric shall only consider existing materials on site. A circularity score for new materials required for the development is not required as this would be largely unknown at such an early stage*
Embodied ecological impacts	• A statement shall be provided for each option assessed outlining the most significant embodied ecological impacts associated with material waste and new material requirements and providing a simple relative comparison of impacts between options
Assessment conclusions	• Whole life carbon, circularity score and an embodied ecological impact statement shall be provided for each option considered. • The chapter must provide an overview of initial options considered, logic for discounting options, and a detailed comparison of options (as per Table 2.2).
If the applicant is proposing substantial demolition and using sequential test 3 as justification, the additional evidence listed below is required	
Justification for substantial demolition	• A statement shall be provided that confirms that the whole life carbon associated with the proposal is lower than the best alternative scheme

Review of evidence

2.4.8 In line with the requirements and process specified in paragraph 2.1.12, a third-party review of this chapter of the Pre-Redevelopment Audit is required. This shall include:

- Short statement from third-party with commentary against each item included in Table 2.5 above.

- Statement that the reviewer agrees or disagrees with the justification for substantial demolition.

Decision criteria

2.4.9 In order to satisfy this test, the council will consider:

- Evidence that the whole life carbon emissions associated with the proposed development would be less than other options which involve more retention of the existing building(s).
- That options compared are robust and suitably comparable to the proposed development.

2.4.10 It is well established that in most cases, a higher proportion of building retention will have a lower whole life carbon. Therefore, for many applications, justification for substantial demolition on the grounds of test 3 will be unlikely. However, the sequential nature of the tests in Part D of the policy are such that this evidence and consequent Chapter 3 of the Pre-Redevelopment Audit will be required. The reason for this is to inform test 4 of the policy, so that the public benefits can be considered relative to the additional carbon emissions expected from the proposed development when compared to other deliverable scheme options with retain a greater proportion of the exisitng building(s).

2.4.11 The Carbon Options Appraisal to be presented as Chapter 3 of the Pre-Redevelopment Audit is a requirement of Part D of the policy. Part G of the policy requires that all major development, and all non-major schemes where a new building is proposed, prepare a Whole Life Carbon Assessment. This requirement is therefore separate to the Carbon Options Appraisal. As such, the results of the carbon options appraisal do not necessarily need to show that the scheme can meet the upfront embodied carbon requirements stipulated in the policy. However, it would be expected that the outcomes of the assessment would be in a sufficient range such that the detailed planning application submission is able to achieve the upfront embodied carbon limits.

2.4.12 For details on the Whole Life Carbon Assessment requirements for planning applications for the chosen option, and meeting upfront embodied carbon requirements, refer to Section 4 of this document.

2.5 Chapter 4: Public Benefits

2.5.1 A **Public Benefits Statement** must be provided to support sequential test 4 of the policy, where it has been demonstrated:

- In sequential test 1 that construction options which involve higher proportions of building retention are structurally possible;
- (if relevant) in sequential test 2 that a proposed use and associated access requirements could still be delivered without substantial demolition; and
- In sequential test 3 that the whole life carbon of a scheme with substantial demolition would not be lower than a construction option which retains a higher proportion of the existing building, such as a deep retrofit or retrofit.

2.5.2 The sequential order requires that test 4 follows test 3, as the public benefits can then be compared against the additional whole life carbon emissions of a development scheme involving substantial demolition, as identified in the Carbon Options Appraisal as part of test 3. This comparison within a Public Benefits Statement shall form Chapter 4 of the Pre-Redevelopment Audit.

Introduction

2.5.3 Public benefits should result in 'net good' accruing to the public which may be direct, indirect, immediate or long-term. Where public benefits are referred to in draft Policy 43, this should be interpreted in line with the three objectives of sustainable development defined in paragraph 8 of the National Planning Policy Framework: economic, social and environmental. In this context, benefits are any elements of a proposed development that help to deliver on the targets and objectives in the adopted City Plan and London Plan in accordance with these principles of sustainable development. These benefits should be measurable.

2.5.4 For public benefits to be considered as meeting policy test 4, they must be above and beyond what would be considered to be the minimum policy compliant requirement across other existing policies within the Development Plan.

2.5.5 Where additional public benefits beyond a policy compliant scheme are identified, these need to be demonstrated to be only deliverable through an approach which involves substantial demolition. The options for comparison shall be based on those assessed as part of test 3 within Chapter 3 of the Pre-Redevelopment Audit, to demonstrate the additionality of public benefits compared to estimated carbon emissions. However, public benefits that result simply due to additional floorspace being created cannot be used to justify substantial demolition.

2.5.6 The public benefits shall be significant and proportional to the relative carbon, circularity and ecological impacts of the proposed scheme compared to other options as calculated in policy test 3. It would be expected that the public benefits delivered would be significantly greater where the carbon differential between options is greater. As a result, it would be expected that the additionality of the public benefits corresponds to the circular economy hierarchy (see Figure 2.2). For example, significantly more public benefits should be delivered where a new build is proposed.

2.5.7 Applicants are strongly encouraged to seek pre-application advice confirming the proposed public benefits, to ensure that they are proportionate and appropriate for the scheme.

Evidence required

2.5.8 The table below outlines the evidence required if this policy test is being used to justify substantial demolition. This shall take the form of a **Public Benefits Statement**, which shall form **Chapter 4** of the Pre-Redevelopment Audit. Table 2.6 below and its contents are not exhaustive, given the wide variety of factors which can be considered to constitute 'public benefits' but are provided as an initial list to guide applicants.

Table 2.6: Examples of requirements of Chapter 4 of the Pre-Redevelopment Audit

Consideration	Example evidence required for sequential test 4
Social/Infrastructure	• Critical infrastructure[4] improvements • Increase of capacity and coverage of digital infrastructure improving quality and affordability of provision in the wider neighbourhood area • Transport infrastructure improvements • Estate regeneration and renewal activities such as: – Increased number and proportion of affordable homes – Wider placemaking and community benefits arising from estate regeneration schemes • Community infrastructure including public health, social or educational facilities • Provision of publicly accessible greenspace (measured in sqm) delivery in open space deficiency areas • Delivery of heat-network capacity infrastructure or storage • Public realm transformation to increase permeability, accessibility and perceptions of safety in an area • Delivery of additional or improved cultural institutions • Heritage conservation and townscape enhancements • Social value
Environmental	• Circular Economy infrastructure enabling local reclaim or storage of material for re-use in high value state • Use of bio-based materials which promote long term carbon capture and storage in building materials • Initiatives contributing to regenerative design and addressing the embodied ecological impacts of material extraction

[4] Critical infrastructure is defined as assets that are essential for the functioning of society, such as those associated with energy supply, water supply, transportation, health and telecommunications

	• Climate adaptation and resiliency measures for the development and where possible, serving areas beyond the site boundary • Air quality improvements • Significant uplift in biodiversity and habitat creation, beyond national requirements • Use of locally sourced materials and investment in local supply chains • Piloting innovative technology and / or materials delivering environmental improvements for the site, with potential for affordable mass application in the future
Economic	• Net uplift in employment[5], considering the quantum of employment floorspace and associated jobs it could support, compared to the current employment potential of the existing building and the employment potential of options which retain more of the existing building • Net uplift in affordable workspace • Contribution of the development towards the local economic functions of the area. Reference must be made to any geographic policy areas focussing on economic growth, such as special policy areas, spatial development priority areas or town centre hierarchy areas[6] included within the City Plan, the London Plan or any national economic objectives as published by Central Government • Optimising site capacity to deliver sustainable commercial floorspace well serviced by public transport in any geographic policy areas focussing on economic growth such as special policy areas, spatial development priority areas or town centre hierarchy areas[6] included within the City Plan or London Plan • Contributions (beyond those required by policy) towards employment and skills development within the city and for local communities
Housing	• Fast Track Route levels of affordable housing (delivered on-site and/or through a small sites contribution, where relevant to smaller schemes) • Significant uplift in housing (based on number of units) • Improvement in quality, tenure, and unit sizes of housing on offer • Uplift in provision of specialist housing

[5] Employment potential shall be assessed using a recognised industry standard (for example, the Employment Density Guide).
[6] This includes geographic areas such as the CAZ, and others specified in the adopted City Plan including within Spatial Strategy Policies, Town Centre Hierarchy and Special Policy Areas

Other	• The benefits listed within this table are non-exhaustive. Other public benefits can be defined by applicants and presented to the council.
If the applicant is proposing substantial demolition and using sequential test 4 as justification, the additional evidence listed below is required	
Public Benefits Statement	• Based on the public benefits identified, a summary of net additional public benefits shall be provided and compared against other deliverable scheme options, as ascertained through Chapter 3 of the Pre-Redevelopment Audit • Where applicable, quantitative metrics shall be normalised by carbon and by area. For example, for economic metrics such as uplift in employment potential, Gross Value Added and increases in local employment these shall be evaluated against $kgCO_2e$ by floorspace area, to enable easy comparison between development options • For qualitative metrics, a simple scoring system may be used to communicate relative differences in public benefits • The summary must clearly outline how the public benefits demonstrated justify the carbon emissions associated with the scheme involving substantial demolition

Review of evidence

2.5.9 In line with the requirements and process specified in paragraph 2.1.12, a third-party review of this chapter of the Pre-Redevelopment Audit is required. This shall include:

- Short statement from third-party with commentary against any public benefits identified, which may include items listed in Table 2.6 above.
- Statement that the reviewer agrees or disagrees with the justification for substantial demolition.

Decision criteria

2.5.10 In order to satisfy this test, the council will consider:

- Evidence that the estimated social public benefits with the proposed development would be greater than other options which involve more retention of the existing building(s).
- Evidence that the estimated environmental public benefits with the proposed development would be greater than other options which involve more retention of the existing building(s).
- Evidence that the estimated economic public benefits with the proposed development would be greater than other options which involve more retention of the existing building(s).
- The combined scale of social, environmental and economic benefits and if, on balance, their contribution towards objectives within the Development Plan justifies the additional expenditure of carbon emissions resulting from substantial demolition.
- Any impacts upon the delivery of other council's strategies.

2.5.11 As the delivery of public benefits will likely directly relate to other policy objectives within the Development Plan, the consideration of these benefits will form part of the wider planning balance process. Therefore, if Chapter 4 of the Pre-Redevelopment Audit is completed, the decision of whether substantial demolition can proceed will likely depend on the determination of the planning application.

3 Circular Economy Statements

3.1 Content of Circular Economy Statements

Introduction

3.1.1 Part F of the Retrofit First policy requires that a **Circular Economy Statement** is prepared where any demolition takes place. It is intended that this statement provide a concise summary of project specific objectives.

3.1.2 For applications being submitted to the council, the Circular Economy Statement shall align with the London Plan Guidance – Circular Economy Statements[2] with additional requirements, specific to Westminster also included. These are summarised in Table 3.1 below.

Table 3.1: Circular Economy Statement requirements, comparing Westminster specific requirements with that included within the London Plan Guidance

London Plan Guidance Circular Economy Statement Requirement	Westminster City Council (WCC) Circular Economy Statement Requirement
Circular Economy targets	• Required, as per London Plan Guidance
Circular Economy design approaches	• Required, as per London Plan Guidance
Circular Economy design principles	• Required, as per London Plan Guidance
Pre-Redevelopment Audit	For schemes involving substantial demolition: • Required. Refer to Section 2 of this guidance document. The Pre-Redevelopment Audit shall be a standalone document and can be excluded from the Circular Economy Statement when already being prepared for submission to WCC in accordance with Part D of the Retrofit First policy. This is to reduce duplication of work For schemes involving demolition, not considered to be substantial demolition: • Not required
Pre-Demolition Audit (now to be a Deconstruction Audit)	• Required. Refer to Section 3.2 of this guidance document. The Deconstruction Audit replaces the Pre-Demolition Audit. This document is to be updated pre-deconstruction and post-deconstruction, and appended to the Circular

	Economy Statement when being prepared for submission to WCC
Bill of materials	• Required within the Deconstruction Audit (see Section 3.2 of this document), or materials can be submitted as part of the Whole Life Carbon Assessment (see Section 4 of this document) to avoid any duplication
End of life strategy	• Required, as per London Plan Guidance
Operational waste management plan	• Required, as per London Plan Guidance
Recycling and waste reporting	• Required. Refer to Section 3.2 of this guidance document. This shall be included in the Deconstruction Audit (as above)
Lessons learnt and key achievements	• Required, as per London Plan Guidance
Circular Economy Reporting Spreadsheet	• Not required when being prepared for submission to WCC

Requirements for schemes referrable to the Mayor of London

3.1.3 Circular Economy Statements for schemes referrable to the Mayor of London shall be prepared in accordance with the London Plan Guidance, with the additional requirements set by Westminster to be submitted in addition to a Circular Economy Statement deemed compliant by the GLA. This will include the Circular Economy Reporting Spreadsheet.

Rationale for having different requirements to the Mayor of London

3.1.4 Since the London Plan Guidance was written, a number of changes have been made across the industry. This reflects advancements in understanding circular economy principles and the ways in which these are understood by decision makers. The different requirements set by WCC are proposed to ensure a robust understanding of the development and how environmental benefits can be maximised.

3.2 Deconstruction Audit

3.2.1 A **Deconstruction Audit** (known alternatively as a Pre-Demolition Audit) is required for the final scheme proposed where any demolition is occurring. The Deconstruction Audit is made up of two parts:

- Pre-Deconstruction Audit (before any works commence)
- Post-Deconstruction Audit (after works have been completed)

3.2.2 The term 'deconstruction' is used to encourage and support the industry in transitioning to circular practices where all materials are valued, and demolition is avoided where possible.

3.2.3 The Pre-Deconstruction Audit shall be submitted to support the planning submission and developed through the detailed design process to embed the outcomes of the audit in the design and procurement activities. An update to the Audit will be required by condition before any deconstruction works commence on site. A Post-Deconstruction Audit shall be submitted following completion of deconstruction works.

3.2.4 This section of the guidance document outlines the requirements of the Deconstruction Audit at each stage of the planning application process. The Audit should be used as a tool to add value to the project, focusing on project specific strategies to keep key materials in a high value state. The Audit must not be a basic quantification of materials and generic summary of standard processing methods.

Planning Submission

3.2.5 An audit of the building shall be undertaken at the earliest convenience to inform decision making on the project. This shall include:

- Collecting and summarising archive information for the site.
- Collecting and summarising survey works undertaken on the building.
- Collecting and summarising building owner manuals, such as the operation and maintenance manual, if available.
- A site survey with access provision made to all areas and where practical, localised removal of finishes to observe structural elements.
- Categorising of elements identified by re-use potential, considering critical properties (see Table 3.2 below).
- Quantity estimations of materials, focusing on estimated ranges rather than detailed calculations.
- Deconstruction Circularity score (see Section 3.3 of this guidance document), with range provided based on recommended actions and potential.
- Action plan with prioritised list of actions to enable and facilitate recovery of materials on site, including key stakeholders, timeframes, survey works and estimated cost/ programme implications. This may be presented as a tracker for the project with actions for stakeholders.
- Plans to use material exchange sites and/or material passporting.

Pre-commencement of Deconstruction Works

3.2.6 Prior to commencement of any deconstruction works associated with the planning consent, an updated Pre-Deconstruction Audit shall be submitted. This shall include:

- Full granular breakdown of elements and processing routes
- Updated quantity estimations for all materials
- Updated deconstruction circularity score, and explanation of how this has been maximised
- Update against action plan. This may be presented as a tracker evidencing actions and decisions made on the project
- Plans to use material exchange sites and/or material passporting

Post-completion of Deconstruction Works

3.2.7 Within three-months of completing any deconstruction works associated with the planning consent, a Post-Deconstruction Audit shall be submitted. This shall include:

- Full granular breakdown of elements and processing routes
- Final quantity estimations for all materials
- Final deconstruction circularity score
- Lessons learnt and case study examples

Table 3.2: Materials considerations within the Pre-Deconstruction Audit

Material	Critical Properties	Recommendations
Concrete	• Age • Whether in-situ or pre-cast system • For precast elements- type of system and/ or original supplier • Condition, including visible signs of structural cracking and corrosion	• Panelised cutting of slabs to form wall elements • Early testing of concrete specimens to determine quality of aggregates to prevent downcycling • Explore innovative methods of crushing to recover unreacted cements
Steel	• Age (Pre 1932, 1932 – 1970, Post 1970) • Length of sections (focus on 6 metres+ for beams) • Number of similar section sizes	• P427 and P440 protocols enable structural steel reuse (1932 onwards) • Identify sections with high reuse potential and value, such as larger section lengths of similar section

	• Protection method (encased, painted, galvanised)	size, without prohibitive coatings (concrete encased or galvanised) • Plan for programme implications of reclamation and avoid critical path • Early engagement with deconstruction specialists and reuse stockists
Timber	• Age • Condition, including signs of cracking and rotting • Whether structurally graded	• Due to carbon storage, timber is most critical material to reclaim for re-use • Workshop ideas for creative reuse of timber elements – investigate innovative approaches including repurposing into structural laminated elements
Brick	• Age • Mortar Type • Access	• Victorian era (pre-early 20th century) bricks used lime mortar which is easier to remove than modern cement mortar enabling reuse of older bricks • Panelised cutting to reuse as structurally supported panels • Explore innovative methods of crushing to recover clays for calcined clay cements
Glass	• Age • Lamination, potential contamination and grade of cullet • Framing types • Access and location	• Explore direct reuse of internal glass which is easier to reclaim without damage • Early engagement of specialist contractor to survey glass and establish grading of cullet
Finishes and Equipment	• Age • Condition (split by critical/ non-critical issues) • Manufacturer • Fitting/ fixing details including bonding	• Contact original manufacturers to identify takeback schemes • Engage with material exchange platforms • Identify actions to avoid damaging in strip out works • Act early, strip-out works often occur before main deconstruction

3.3 Deconstruction Circularity Metric

3.3.1 A circularity metric for the existing building shall be provided, to support Test 3 in the Pre-Redevelopment Audit, and as part of the Deconstruction Audit.

3.3.2 Whilst whole life carbon is a useful metric for understanding the environmental impact of development options, it does not consider several wider environmental impacts associated with waste and new material extraction required to replace materials wasted. To capture this, a method for calculating the circularity of existing building materials shall be reported.

3.3.3 In the absence of accepted industry guidance for developing this metric, an approach is proposed below. Key materials must include, as a minimum, all materials in the RICS New Rules of Measurement (NRM)[7] element category '1. Substructure' and '2. Superstructure'.

3.3.4 For each key material, the embodied carbon associated with producing the material today shall be calculated. Furthermore, for each key material, a scenario for the resulting state of the material from the development option shall be specified, which may include (recommended circularity scores in brackets):

- Retained in-situ (100% circularity)
- Recovered for re-use (90% circularity)
- Recovered for recycling as equivalent product (50% circularity)
- Recovered for recycling as downgraded product (20% circularity)
- Waste disposed to landfill or for energy recovery (0% circularity)

3.3.5 Scenarios and associated circularity scores may be amended following emerging industry guidance or valid alternative approaches.

3.3.6 A circularity score can be calculated for each material instance based on the above using the following formula:

Material Mass x Embodied Carbon Factor x Circularity %

3.3.7 An overall circularity score for the project can then be calculated as follows:

Sum (Material Mass x Embodied Carbon Factor x Circularity %) / Sum (Material Mass x Embodied Carbon Factor)

3.3.8 A higher percentage deconstruction circularity score will indicate lesser environmental harm. The template in Appendix D, or similar, shall be used.

[7] Royal Institute of Chartered Surveyors (RICS) (2022) RICS NRM: New Rules of Measurement. Available from: https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/construction-standards/nrm#tabs-6fc5409ee0-item-9689a74605-tab

4 Whole Life Carbon Assessment

4.1 Upfront Embodied Carbon Requirements

Introduction

4.1.1 Part G of the Retrofit First policy requires that all major schemes, and all non-major schemes involving substantial demolition of an existing building over a single storey submit a **Whole Life Carbon Assessment**. The Whole Life Carbon Assessment must be compliant with the RICS Whole Life Carbon Assessment (WLCA) Standard, 2nd Edition.[8]

4.1.2 For major commercial, residential and hotel development, upfront embodied carbon requirements are specified. For other development not covered by these benchmarks, Whole Life Carbon Assessments are still needed, and justification must be provided for the assessment outcomes, however there are no specific upfront embodied requirements that need to be met.

4.1.3 The Whole Life Carbon Assessment must be third-party verified for all major schemes, unless submitting using the PACER[3] platform, in which case a third-party review is not required for submissions except for the final as-built assessment.

What are the requirements

4.1.4 The requirements from the policy are set out in Table 4.1 below. They are normalised by the total proposed gross internal area (GIA) for all buildings. Requirements are set regardless of development approach, meaning that the same requirements are to be applied to retrofit, deep retrofit and new buildings, where required by the policy. As such, retrofit and deep retrofit projects are likely to easily meet the aspirational requirements set out below given the fact that these proposals will involve the retention of existing buildings.

[8] Royal Institute of Chartered Surveyors (RICS) Whole life carbon assessment (WLCA) standard, second edition – 2024. Available from: https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/construction-standards/whole-life-carbon-assessment

Table 4.1: Overview of upfront embodied carbon requirements, set out within draft policy

Building type	Upfront Embodied Carbon (A1-A5[9]) requirements
Major schemes - Commercial buildings (including commercial led mixed use schemes)	Aspirational: 550kg CO_2e/sqm Limit: 650kg CO_2e/sqm
Major schemes - Residential (including residential led mixed-use schemes) and hotels over 18 metres in height	Aspirational: 600kg CO_2e/sqm Limit: 700kg CO_2e/sqm
Major schemes - Residential (including residential led mixed-use schemes) and hotels under 18 metres in height	Aspirational: 550kg CO_2e/sqm Limit: 650kg CO_2e/sqm
Major schemes – uses not listed above, or where there are justified site specific constraints	Lowest deliverable embodied carbon
Minor schemes and development types not considered above	Lowest deliverable embodied carbon without affecting provision of affordable housing

What is in scope for the requirements

4.1.5 A full scope Whole Life Carbon Assessment to RICS WLCA Standard 2nd Edition is required for reporting purposes. However, some elements shall be excluded for demonstrating compliance with the upfront embodied carbon requirements within the Retrofit First policy.

4.1.6 Excluded elements for meeting the A1-A5 upfront embodied carbon requirements are as follows:

- Pre-construction demolition (A5.1)
- Toxic/contaminated material treatment & Demolition (0.1.1)
- For commercial buildings, Cat B finishes
- For all other buildings, loose fit-out installed by the end user
- External works

4.1.7 Benchmarks may be used to estimate emissions associated with elements not designed or known in the planning application. This could include some building services and Cat A elements which are in-scope for the upfront embodied carbon requirements but may not be designed within the scope of the proposed development at the time of the planning application.

4.1.8 Justification for any values used as proxies to demonstrate compliance with the upfront embodied carbon requirements at planning application stage is needed and should be discussed with officers at pre-application stage to confirm the appropriateness of values.

[9] See elements excluded from A1-A5 reporting in paragraph 4.1.6

What is expected at each stage

4.1.9 A Whole Life Carbon Assessment is required at the following stages:

- Pre-application – to support the Carbon Options Appraisal (if applicable to justify substantial demolition, refer to Section 2.4 of this document for further guidance).
- Detailed planning application.
- Pre-commencement of any works associated with the detailed planning consent.
- Post-completion of all works, within three months of occupancy.

4.1.10 Applicants will be expected to provide evidence pursuant to a legal agreement or planning condition to demonstrate that the upfront embodied carbon limit or lower has been achieved through the implementation of the development. Whole Life Carbon Assessments submitted at planning stage may exceed the limits, provided that a robust plan for reducing emissions through the detailed design process is outlined.

4.1.11 A pre-commencement Whole Life Carbon Assessment will be conditioned for all developments subject to upfront embodied carbon requirements. This assessment must be aligned with updated detail required in the RICS WLCA Standard 2nd Edition and must not simply be a copy of the assessment submitted for planning. It must demonstrate that the requirements set in the policy will be met before works commence on site.

4.1.12 A post-completion Whole Life Carbon Assessment will be conditioned for all developments subject to upfront embodied carbon requirements. This assessment must align with the level of detail outlined in the RICS WLCA Standard 2nd Edition. It must demonstrate that the requirements in the policy have been met on site. If this is not the case, then an embodied carbon offset payment is required to be paid to the council's Carbon Offset Fund.

4.1.13 Westminster currently has a carbon offsetting system which focuses on excess operational carbon. These carbon emissions are identified at the planning application stage in Energy Statements produced for developments. Through the introduction of the Retrofit First policy, it is recognised that the focus on whole life carbon and indeed upfront embodied carbon emissions, rather than just operational carbon, calls for an adjustment on the way in which carbon emissions and associated offsetting is dealt with. Therefore, the Retrofit First policy introduces an embodied carbon offset which is to be applied to any development proposal which exceeds the upfront embodied carbon limits, as demonstrated in the post-completion Whole Life Carbon Assessment.

4.1.14 The price of this offset per tonne of excess carbon will be different to the current price set for operational carbon. The calculation of both offset payments, as relevant, will be detailed within the Planning Obligations and Affordable Housing SPD.

Trajectory to Net Zero

4.1.15 The requirements in the Retrofit First policy provide short-term upfront embodied carbon aspirational requirements and limits. It is expected that these will continue to be reviewed in future years to ensure better alignment with the UK's net-zero carbon emission ambitions.

Whole Life Carbon Assessment reporting requirements

4.1.16 The reporting requirements for the Whole Life Carbon Assessment are set out in Appendix B.

4.1.17 The PACER platform shall be used for all major applications and is recommended for all non-major applications. If using PACER, third party verification of the Assessment is not required, other than for the pre-application and post-completion Whole Life Carbon Assessments.

Meeting the Requirements

4.1.18 It is acknowledged that the ability to meet the upfront embodied carbon requirements will vary for each development based on site specific constraints.

4.1.19 To maximise the likelihood of meeting the aspirational requirements, where a Pre-Redevelopment Audit is being completed, discussions during the pre-application stage to inform the Carbon Options Appraisal (required as Chapter 3 of the Pre-Redevelopment Audit) will be critical. Completion of the Pre-Redevelopment Audit is therefore essential to ensure that re-use of existing building(s) and associated materials are maximised, that the development proposal is suitable for the site, and that strategic decisions are made to enable low carbon design.

4.1.20 The council is committed to working with applicants on the following measures to enable low carbon design:

1. Massing considerations to facilitate additional floor area provision, through lightweight extensions.
2. Ensuring sufficient structural depths through floor-to-floor heights. It would be expected that zones are used to enable structural efficiency, rather than maximising clear floor to ceiling heights.
3. Reducing the need for material intensive structural systems such as transfer and cantilever elements. Applicants are encouraged to discuss where other requirements necessitate such systems and propose solutions to omit them.
4. Enabling efficient form factors and glazing ratios. Whilst façade systems are highly nuanced, the ambition is to avoid the use of complex façade systems with unnecessarily high form factors and glazing ratios.

4.1.21 The ambition of the requirements is to achieve reductions in atmospheric carbon emissions, and not simply reducing emissions occurring as a result of development in Westminster. Sustainable design should be at the forefront of applications addressing the policy, with design measures encouraged first, before material substitution to achieve carbon requirements.

4.1.22 In particular, the circumnavigation of the upfront embodied carbon requirements through the specification of low-carbon, scarce materials as a method of disguising business-as-usual design should be avoided. This is currently mostly applicable to the use of Ground Granulated Blast-furnace Slag (GGBS) in concrete, the use of high recycled content steel, and the use of high recycled content aluminium.

4.1.23 Assumptions deviating from average supply chain carbon factors for these materials cannot be made at planning application stage, and as such, applicants should demonstrate that requirements can be met through low carbon efficient design.

4.1.24 Material quantity reduction (i.e. where less materials are used) is the highest priority for carbon reductions. In some cases, reducing material quantities may result in the procurement of materials with above average carbon factors. This is most notably the case for some types of structural steel. In these cases, the relaxation of requirements may be agreed as the material

quantity reductions are likely to drive atmospheric carbon reductions, despite higher project emissions.

4.1.25 In all decision making, applicants are encouraged to take a systems approach to holistically consider atmospheric emissions. In doing so, this can consider ways to eliminate waste, keep products and materials in circulation and regenerate nature.

UK Net Zero Carbon Building Standard Alignment

4.1.26 Applicants are encouraged to align with the processes, recommendations and requirements of the UK Net Zero Carbon Building Standard[10], where these requirements do not conflict with requirements in this document.

4.1.27 Applicants are encouraged to align with upfront embodied carbon limits set within the UK Net Zero Carbon Building Standard, particularly for buildings which do not strictly align with typologies covered within this policy.

4.1.28 Applicants are encouraged to align with best practice industry standards, including new revisions of these Standards, which may be published at a later date to this document.

[10] UK Net Zero Carbon Buildings Standard (2024) Available from: https://www.nzcbuildings.co.uk/home

5 Appendices

Appendix A:
Mapping of GLA definitions to WCC glossary terms

Westminster City Council City Plan: Glossary		London Plan Guidance – Circular Economy Statements: Definitions	
Development which involves measures to facilitate energy, performance and climate adaptation upgrades. For the purposes of the Retrofit First policy, this could include the removal and replacement of building envelope, services and finishes and may involve none or minor works to the superstructure of the existing building(s) (including foundations, core, and floor slabs) resulting in less than 10% of the existing building(s) being subject to demolition.	**Retrofit**	**Retain and Retrofit**	The vast majority of the building's fabric is retained, with the building refurbished for the same or new uses through restoring, refinishing and future-proofing. This also encompasses retrofitting, where new technology or features are added to existing buildings to make them more efficient and to reduce their environmental impacts.
Development involving the re-use of as much of the existing building(s) as possible and which involves measures to facilitate energy, performance and climate adaptation upgrades. For the purposes of the Retrofit First policy, this could include the removal and replacement of building envelope, services and finishes and may involve works to the superstructure of the existing building(s), involving the demolition and replacement of less than, or equal to 50% of the existing floor slabs.	**Deep Retrofit**	**Partial Retention and Refurbishment**	Significant quantities of carbon-heavy aspects of the building are retained in place, such as the floors and substructure, with replacement of some elements of the building, such as walls or roofing. More significant refurbishment can involve adding floors or extensions.
For the purposes of the Retrofit First policy, development which involves the demolition and replacement of more than 50% of the floor slabs and substructure of any pre-existing building over a single storey, or entirely new structures.	**New Building(s)**	**Disassemble and Reuse**	Disassemble sections of a building and enable their direct reuse ideally on the site or, where this is not possible, off site (with nearby sites preferred). This approach also includes careful selective deconstruction of the building and material types i.e. taking apart each layer and material type as much as possible, minimising damage to parts and maintaining their value, and then reusing those elements and materials. If reuse is not possible, materials may be carefully and selectively separated for processing and recycling into new elements, materials and objects.
		Demolish and Recycle	Traditional demolition, with elements and materials processed into new elements, materials and objects for use on the site or on another site.

Appendix B: Carbon Options Reporting

The Whole Life Carbon Assessment (WLCA) methodology undertaken for all scheme options shall be provided, as detailed in the table below.

Requirement	Detail
WLCA Assessor experience	*Person submitting meet one of: CEnv, MRICS, 3 Years LCA experience*
Scope	*Must be full scope, excluding Cat B/ Loose fit*
Confirmation that RICS Standard 2nd Edition used	*Must be yes*
Reference study period	*Should be 60 years*
Construction Site Activity emissions allowance ($kgCO_2e/sqm$)	*Should be 40*
Demolition emissions allowance ($kgCO_2e/sqm$)	*Should be 35*
Contingency factor used?	*Should be 15%*
Operational carbon factor used to convert electricity to carbon for decarbonisation scenario?	*Should align with RICS WLCA 2nd edition, Set 1 for pre-application*
Embodied carbon factor to be applied to modules B1,B2,B3,B4,C1,C2,D1 for decarbonisation scenario?	*Should be 0.5*
What existing building information has been used to inform the assessment?	*Select from: Archive drawings, survey results, testing results, N/A*
Has a third-Party verification been undertaken?	*Should be yes*
Have assumptions been made to account for industry average carbon factors for key materials e.g. concrete, steel, aluminium and have these been consistently used for all schemes?	*Should be yes*

For each option, the following building information shall be provided.

Building information

Requirement	Detail
Demolition of Previous Works	*Area of demolished building if applicable*
Construction Type	*Select from: Refurbishment, Retrofit, Retrofit + extension, Deep Retrofit, Deep retrofit + extension, Extension only, New build*
GIA	*Area of proposed development (m^2)*
Secondary metric unit	*Optional input to demonstrate occupancy or efficiency of use, for example, number of keys for hotels, m^3 volume for industrial uses, number of affordable units for residential*
Secondary metric value	*Integer value representing unit above*
Primary Use class (UKNZCBS definitions)	*Select from: Comm-res, Culture/Worship/Ent, Data Centre, Health, Higher Ed, Single home, Flats, Hotel, Storage/Distribution, Office, Retail, School, Science/Tech, Sport/Leisure*
Net Internal Area (NIA) of primary use class	*(m^2)*
Secondary Use class	*Select from: Comm-res, Culture/Worship/Ent, Data Centre, Health, Higher Ed, Single home, Flats, Hotel, Storage/Distribution, Office, Retail, School, Science/Tech, Sport/Leisure*
Net Internal Area (NIA) of secondary use class	*(m^2)*
Number of Storeys below ground	*Integer value*
Number of Storeys above ground	*Integer value*
Typical Floor to floor height	*Typical distance between top of slab level*
Typical Floor to soffit height	*Typical distance from top of slab to underside of slab above*
Typical primary grid span	*Typical Span of primary structural system i.e. span over which majority of load is transferred into columns*

Requirement	Detail
Typical secondary grid span	*Typical span of secondary structural system i.e. span over which load is transferred to primary system, or over which minority of load is transferred into columns*
Number of floors containing transfer system	*Number of floors whereby the majority of the columns above the floor do not have aligned columns below, such that horizontal transfer of load is required*
Energy Use Intensity	*Total for all predicted energy consumption (kWh/m^2/yr)*
Heat demand	*Energy use for heat (kWh/m^2/yr)*
% EUI from electricity	*%*
Water use intensity	*Total water use, including potable and waste (l/m^2/yr)*
Substructure (NRM 1) retention by mass	*%*
Superstructure (NRM 2.1-2.4) retention by area	
Facade (NRM 2.5-2.6) retention by area	
Internal wall (NRM 2.7-2.8) retention by area	
Finishes retention (NRM 3) by area	
Building Services retention (NRM 5) by mass	
Substructure (NRM 1) calculation methodology	*Calculation, Estimation, Benchmark*
Superstructure (NRM 2.1-2.4) calculation methodology	
Facade (NRM 2.5-2.6) calculation methodology	
Internal wall (NRM 2.7-2.8) calculation methodology	
Finishes retention (NRM 3) calculation methodology	

Requirement	Detail
Building Services retention (NRM 5) calculation methodology	
Substructure (NRM 1) calculation assumptions	*Text Field to provide detail about critical assumptions made for each element*
Superstructure (NRM 2.1-2.4) calculation assumptions	
Facade (NRM 2.5-2.6) calculation assumptions	
Internal wall (NRM 2.7-2.8) calculation methodology	
Finishes retention (NRM 3) calculation methodology	
Building Services retention (NRM 5) calculation methodology	
Key constraints and areas of uncertainty	*Text field to provide detail about constraints of the WLCA and to outline how the results are affected by level of uncertainty*

Whole Life Carbon Reporting

For each option considered, the results shall be provided using the following template (Granularity Level 0).

- Purple elements are optional.
- Blue elements are mandatory.
- Grey elements are not required.

Pre-application reporting - Decarbonised Scenario

Buildings - new build, refurbishment, masterplans and external works

KEY

mandatory
optional
not applicable

**Only the decarbonisation scenario is required for the Carbon Options Appraisal during pre-application

all units to be kgCO2e	A0	Sequestered	A1-A5	B1	B2-B3	B4	B5	B6	B7	B8	C1-C4	D
Pre-construction - whole development												
Site emissions - whole development												
Emissions associated with energy in-use and renewable generation - building												
Emissions associated with energy in-use and renewable generation - external works (within project boundary)												
Water in-use - building												
Water in-use - external works (within project boundary)												
User carbon - whole development												
0.1 Treatment and demolition works Facilitating works												
1 Sub-structure												
Super structure 2.1 Frame 2.2 Upper floors 2.3 Roof 2.4 Stairs and ramps												

Facade 2.5 External envelope including roof finishes 2.6 Windows and ext doors												
Internal Walls, partitions, doors 2.7 Internal walls and partitions 2.8 Internal doors												
3 Finishes												
4 FFE												
5 Building Services												
6 Pre-fabricated buildings and units												
7 Works to existing buildings												
8 External works (within the site boundary)												
Sub-totals kgCO2e												

Appendix C: Whole Life Carbon Assessment Reporting

A compliant Whole Life Carbon Assessment (WLCA) must be submitted with the following information provided. Information shall be provided at planning application stage and updated at pre-commencement and post-completion.

WLCA Compliance

Requirement	Detail
Is the proposal for substantial or full demolition of existing building?	*If yes, pre-redevelopment audit must be provided*
BECD upload permission	*Should be yes*
WLCA Assessor experience	*Person submitting meet one of: CEnv, MRICS, 3 Years LCA experience*
Scope	*Must confirm if Cat B/ Loose fit-out included*
Confirmation that RICS WLCA 2nd edition used	*Must be yes*
Supplementary methodologies used	*Select from: StructE, CWCT, TM65, Other*
Reference study period	*Should be 60 years*
Main Software tool used	*Select from: One-Click, eTool, Sturgis, CarboniCa, Tally, Other*
Manual calculations undertaken outside of main software	*Text input*
Operational modelling methodology	*Select from: SAP, TM54, NABERS, ASHRAE Standard 90.1. PHPP, Other*
Is 95% cost plan reflected in LCA?	*Must be yes*
Construction Site Activity emissions allowance ($kgCO_2e/sqm$)	*Should be 40*
Demolition emissions allowance ($kgCO_2e/sqm$)	*Should be 35*
Contingency factor used?	*Should be 15% at planning, 6% at pre-commencement, 0% at post completion*

Quantity uncertainty used?	*Should be 0% at planning, 0%-11% at pre-commencement/ post completion*
Carbon uncertainty used?	*Should be 0% at planning, 0%-6% at pre-commencement/ post completion*
Operational carbon factor used to convert electricity to carbon?	*Should align with RICS v2: Set 1 for pre-application, Set 2 for planning/pre-commencement, and Set 3 for post-completion*
Operational carbon factor used to convert electricity to carbon for decarbonisation scenario?	*Should align with RICS v2: Set 1 for pre-application, Set 2 for planning/pre-commencement, and Set 3 for post-completion*
Embodied carbon factor to be applied to modules B1,B2,B3,B4,C1,C2,D1 for decarbonisation scenario?	*Should be 0.5*
What existing building information has been used to inform the assessment?	*Select from: Archive drawings, survey results, testing results, N/A*
Has a third-Party verification of the final as-built WLCA been undertaken?	*Only required for final as-built assessment*

Building Information

Requirement	Detail
Demolition of Previous Works	*Area of demolished building if applicable*
Construction Type	*Select from: Refurbishment, Retrofit, Retrofit + extension, Deep Retrofit, Deep retrofit + extension, Extension only, New build*
GIA	*Area of proposed development (m^2)*
Secondary metric unit	*Optional input to demonstrate occupancy or efficiency of use, for example, number of keys for hotels, m^3 volume for industrial uses, number of affordable units for residential*
Secondary metric value	*Integer value representing unit above*
Primary Use class (UKNZCBS definitions)	*Select from: Comm-res, Culture/Worship/Ent, Data Centre, Health, Higher Ed, Single home, Flats, Hotel, Storage/Distribution, Office, Retail, School, Science/Tech, Sport/Leisure*
Net Internal Area (NIA) of primary use class	*(m^2)*
Secondary Use class	*Select from: Comm-res, Culture/Worship/Ent, Data Centre, Health, Higher Ed, Single home, Flats, Hotel, Storage/Distribution, Office, Retail, School, Science/Tech, Sport/Leisure*
Net Internal Area (NIA) of secondary use class	*(m^2)*
Number of Storeys below ground	*Integer value*
Number of Storeys above ground	*Integer value*
Typical Floor to floor height	*Typical distance between top of slab level*
Typical Floor to soffit height	*Typical distance from top of slab to underside of slab above*
Typical primary grid span	*Typical Span of primary structural system i.e. span over which majority of load is transferred into columns*
Typical secondary grid span	*Typical Span of secondary structural system i.e. span over which load is transferred to primary system, or over which minority of load is transferred into columns*

Requirement	Detail
Number of floors containing transfer system	*Number of floors whereby the majority of the columns above the floor do not have aligned columns below, such that horizontal transfer of load is required*
Energy Use Intensity	*Total for all predicted energy consumption (kWh/m^2/yr)*
Heat demand	*Energy use for heat (kWh/m^2/yr)*
% EUI from electricity	*%*
Water use intensity	*Total water use, including potable and waste (l/m^2/yr)*

Building information- major schemes only

Further detailed building information is required for major schemes. In the table below the following information is requested for each building element, using the stated unit of measurement, and what differs for each element:

- Retained quantity - This is the amount retained from the existing building, if applicable
- % Strengthening of Retained (optional) – This is the proportion of retained quantity that requires strengthening works
- Primary new system type – The system type that is most commonly used for each category, using the options provided. Note this is only requested for certain elements.
- Quantity of primary new system (optional) – This is the amount of the primary system in the new building, which will be less than the total if secondary systems are used
- Total quantity for new development – This is the total amount of each element in the new development

For several elements, no inputs are required, as represented by N/A in the table below.

NRM/ Element	Unit	Quantity retained	% Strengthening of Retained (optional)	Primary New System type	Quantity of primary new system (optional)	Quantity of total for new development
1.1 Foundations and piling	*Mass (kg)*			*Deep (piled), Shallow (pads), Mixed (raft/piled raft), other*		
1.2.1 Lowest slab	*Floor Area (m^2)*			Ground bearing, suspended, included in foundation		
1.2.2 Suspended slabs	*Floor Area (m^2)*			*N/A*	*N/A*	
1.2.3 Basement retaining walls	*Wall Area (m^2)*			*Masonry, Precast, in-situ gravity, secant piled, contig piled, sheet piled, other*		

NRM/ Element	Unit	Quantity retained	% Strengthening of Retained (optional)	Primary New System type	Quantity of primary new system (optional)	Quantity of total for new development
2.1 Frame	*Floor Area supported (m^2)*			*Steel braced/ moment frame, RC frame + core, Steel frame with RC core, Timber braced/ moment frame , Timber frame with RC core, Other*		
2.2/2.3/2.4 Upper Floors/Roof/Stairs	*Floor Area (m^2)*			*Metal deck, RC flat slab, PT flat slab, ribbed slab, other in-situ slab, precast , CLT, other*		
2.5.1 Facade Opaque Envelope	Façade Area (m^2)		N/A	Masonry Hand-Set Cavity Wall, Precast with Rainscreen, Precast with masonry, SFS with Rainscreen, SFS with Masonry, Sandwich Panel, Rendered Facade, Other		
2.5.2 Glazed Envelope	Façade Area (m^2)		N/A	N/A	N/A	
2.5.3 Roof Envelope	Roof area (m^2)		N/A	N/A	N/A	
2.6 Windows/ External Doors	Window Area (m^2)		N/A	N/A	N/A	
2.7/2.8 Internal Walls/ Doors	Wall Area (m^2)		N/A	N/A	N/A	
3. Finishes	*Mass (kg)*		N/A	N/A	N/A	
4. FFE	*Mass (kg)*		N/A	N/A	N/A	

NRM/ Element	Unit	Quantity retained	% Strengthening of Retained (optional)	Primary New System type	Quantity of primary new system (optional)	Quantity of total for new development
5 Building Services (MEP)-Heating	*Mass (kg)*		N/A	Air Source Heat Pump (ASHP), Boiler, Direct electric , District heating , Ground Source Heat Pump (GSHP), Solar thermal, other	N/A	
5 Building Services (MEP)-Cooling	*Mass (kg)*		N/A	Air Source Heat Pump (ASHP), Chiller, Variable Refrigerant Flow (VRF), Ground Source Heat Pump (GSHP), other	N/A	
5 Building Services (MEP)-Ventilation	*Mass (kg)*		N/A	Full mechanical, Mixed mode, Natural, other	N/A	
5 Building Services (MEP) – All other	*Mass (kg)*		N/A	N/A	N/A	
8 External works inside boundary	*Mass (kg)*		N/A	N/A	N/A	

Material schedule

- All materials used in the development, including retained elements, shall be provided in a schedule.
- The A1-A3 global warming potential information is required only for the following material families:
    - Concrete – In-situ
    - Concrete – products
    - Clay and Stone based materials
    - Wood
    - Metals – Steel
    - Metals – Aluminium

Element Category	Material Family	Material Type	Material Description	Material quantity	Is material reused in-situ?	Is material reclaimed?	Service Life	Source of quantity Data	A1-A3 GWP
To RICS Granularity L1	List to be provided	List to be provided	Optional Text input	kg	Y/N	Y/N	years	BIM, Drawings, RFI from Design Team, Estimate, Benchmark	$kgCO_2e/kg$

- A refrigerant schedule shall also be provided for all refrigerants used

Refrigerant Type	GWP	Refrigerant Charge	Service Life	Annual Leakage	EoL Leakage
Name	$kgCO_2e/kg$	kg	years	%	%

Whole Life Carbon Reporting

The RICS WLCA Standard 2nd edition detailed reporting sheets shall be used to submit Whole Life Carbon information, to the granularity associated with the design, for both non-decarbonised and decarbonised results.

- Purple elements are optional.
- Blue elements are mandatory.
- Grey elements are not required.

Granularity level 1 reporting - early/ concept design stages

Buildings - new build, refurbishment, masterplans and external works

Carbon emissions by building element and life cycle stage/module - granularity level 1

KEY

mandatory
optional
not applicable

Granularity Level 1 Early/ concept design stages all units to be kgCO2e	A0 Pre-construction stage (optional, include if significant)	A1-A3 Sequestered carbon within installed materials/products (benefit - assumed negative figure)	A1-A3 Product stage (exc sequestered carbon)	A4 Transport to and from site	A5.1-4 Pre-construction demolition (A5.4 Transport of workers is optional)	B1.1 In use emissions and removals (carbonation and materials)	B1.2 Fugitive emissions (refrigerants)	B2-B3 Maintenance and repair	B4 Replacement	B5 Refurbishment/ planned change (where relevant)	B5 Sequestration related to planned refrubishment (eg added or removed material.)	B6.1-B6.3 Regulated and un-regulated energy in-use	B7.1 Water used by essential building-integrated systems	B7.2 Water used by other building-integrated systems (recommended but optional)	B7.3 Water used by non-building integrated systems (optional)	B8.1-B8.2 User activities energy-related and other impacts (optional)	C1 Deconstruction / demolition process	C2 Transport to waste processing or disposal facilities	C3 Waste processing for reuse, recycling and/ or energy recovery	C4 Waste disposal	D1 Potential net benefits/ loads from reuse, recycling, energy recovery and/ or other recovery	D2 Potential benefits and loads from exported utilities
Whole entity (anything that can't be broken down into more detail then the whole asset)																						
Pre-construction - whole development																						
Site emissions - whole development																						
Emissions associated with energy in-use and renewable generation - building																						
Emissions associated with energy in-use and renewable generation - external works (within project boundary)																						
Water in-use - building																						
Water in-use - external works (within project boundary)																						
User carbon - whole development																						
Carbon emissions where they can be broken down into elements																						
0.1 Treatment and demolition works Facilitating works																						
1 Sub-structure																						
Super structure 2.1 Frame 2.2 Upper floors 2.3 Roof 2.4 Stairs and ramps																						
Super structure 2.5 External envelope including roof finishes 2.6 Windows and ext doors																						
Super structure 2.7 Internal walls and partitions 2.8 Internal doors																						
3 Finishes																						
4 FF&E																						
5.1 Public Health																						
5.2 Heating, Ventilation and Cooling (HVAC)																						
5.3 Electrical insatllations																						
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, builders work in connection with services																						
6 Pre-fabricated buildings and units																						
7 Works to existing buildings																						
8 External works (within the site boundary)																						
8 External works (outside the site boundary)																						
Sub-totals kgCO2e																						

Granularity levels 2 and 3 reporting - technical to post-completion

Buildings - new build, refurbishment, masterplans and external works

Carbon emissions by building element and life cycle stage/module - granularity levels 2 and 3

KEY

mandatory
optional
not applicable

Note: Users must complete two versions of this sheet to cover decarbonised and non-decarbonised scenarios

Granularity Level 1 Early/ concept design stages all units to be kgCO2e	Granularity Levels 2 and 3 Technical design, construction stages, post completion and in-use stages (Mandatory reporting at Level 2 in all rows in bold text. Reporting at Granularity Level 3 strongly recommmended at post completetion stage)	A0 Pre-construction stage (optional, include if significant)	A1-A3 Sequestered carbon within installed materials/ products (benefit - assumed negative figure)	A1-A3 Product stage (exc sequestered carbon)	A4 Transport to and from site	A5.1 Pre-construction demolition including waste and waste management of those acitivites	A5.2 Construction activities	A5.3 Waste & waste management	A5.4 Transport of construction workers (optional, include if significant)	B1.1 In use emissions and removals (carbonation and materials)	B1.2 Fugitive emissions (refrigerants)	B2-B3 Maintenance and repair	B4 Replacement	B5 Refurbishment / planned change (where relevant)	B5 Sequestration related to planned refrubishment (eg added or removed material	B6.1-B6.3 Regulated and un-regulated energy in-use	B7.1 Water used by essential building-integrated systems	B7.2 Water used by other building-integrated systems (recommended but optional)	B7.3 Water used by non-building integrated systems (optional)	B8.1 User activities energy-related impacts (optional)	B8.2 User activities other impacts (optional)	C1 Deconstruction/ demolition process	C2 Transport to waste processing or disposal facilities	C3 Waste processing for reuse, recycling and/ or energy recovery	C4 Waste disposal	D1 Potential net benefits/loads from reuse, recycling, energy recovery and/ or other recovery	D2 Potential benefits and loads from exported utilities
Whole entity - (anything that can't be broken down into more detail than the whole asset)																												
Pre-construction - whole development	Pre-construction - whole development																											
Site emissions - whole development	Site emissions - whole development																											
Emissions associated with energy in-use and renewable generation - building	Emissions associated with energy in-use and renewable generation - building																											
Emissions associated with energy in-use and renewable generation - external works (within project boundary)	Emissions associated with energy in-use and renewable generation - external works (within project boundary)																											
Water in-use - building	Water in-use - building																											
Water in-use - external works (within project boundary)	Water in-use - external works (within project boundary)																											
User carbon - whole development	User carbon - whole development (not used for buildings)																											
Carbon emissions where they can be broken down into elements																												
0.1 Treatment and demolition works Facilitating works	0.1.1.1 Toxic/ contaminated material treatment																											
	0.1.1.2 Demolition works																											
	0.1.1 Toxic/ contaminated material treatment Demolition works																											
	0.1.2.1 Temporary supports																											
	0.1.2.2 Facade retention																											
	0.1.2.3 Specialist groundworks																											
	0.1.2.4 Temporary diversion works																											
	0.1.2.5 Extraordinary site investigations																											
	0.1.2.6 Site preparation																											
	0.1.2 Facilitating works																											
1 Sub-structure	**1.1 Foundations and piling**																											
	1.2.1 Lowest slab																											
	1.2.2 Suspended slabs																											
	1.2.3 Basement retaining walls																											
	1.2 Basement retaining walls and lowest slab																											
Super structure 2.1 Frame 2.2 Upper floors 2.3 Roof 2.4 Stairs and ramps	2.1.1 Frame (Vertical) - Columns/																											
	2.1.2 Frame (Horizontal) - Beams, joists &																											
	2.1 Frame																											
	2.2.1 Upper floor and roof - structural																											
	2.2.2 Upper floor and roof - non-structural																											
	2.2 Upper Floors and roof (2.3)																											
	2.4.1 Stairs																											
	2.4.2 Ramps																											
	2.4.3 Safety and access ladders, chutes,																											
	2.4 Stairs, ramps and safety guarding																											
Super structure 2.5 External envelope including roof finishes 2.6 Windows and ext doors	2.5.1 External - opaque walls																											
	2.5.2 External - full height glazing systems																											
	2.5.3 External - roof finishes/ coverings																											
	2.5.4 External - safety systems																											
	2.5 External envelope including roof finishes																											
	2.6.1 Windows - vertical																											
	2.6.2 Windows - roof or horizontal																											
	2.6.3 External doors																											
	2.6 Windows and ext doors																											
Super structure 2.7 Internal walls and partitions 2.8 Internal doors	2.7.1 Internal walls - solid																											
	2.7.2 Internal walls - non-structural glazed																											
	2.7 Internal walls																											
	2.8 Internal doors																											
3 Finishes	**3.1 Wall finishes**																											
	3.2.1 Raised access floor or specialist sprung floors																											
	3.2.2 Non-structural screed																											
	3.2.3 Floor finishes																											
	3.2 Floor finishes																											
	3.3 Ceiling finishes																											
4 FF&E	4.1 FF&E Group 1 - fixed by the contractor																											
	4.2 FF&E Group 2 - supplied by the client/ fixed by the contractor																											
	4.3 FF&E Group 3 - supplied and fixed by the client																											
	4.4 Loose FF&E																											
	4.5 IT																											
	4.6 Audio and visual																											
	4 FF&E																											

5.1 Public health	5.1.1 Sanitaryware																											
	5.1.2.1 Cold water systems																											
	5.1.2.2 Cold water storage																											
	5.1.2 Cold water systems																											
	5.1.3.1 Surface water/ rainwater/ foul																											
	5.1.3.2 Water reuse systems																											
	5.1.3 Drainage and rainwater																											
5.2 Heating, Ventilation and Cooling (HVAC)	5.2.1.1 Heat & Hot water generation																											
	5.2.1.2 Heat & hot water distribution,																											
	5.2.1.3 Heat storage equipment																											
	5.2.1 Space heating and hot water																											
	5.2.2.1 Cooling generation equipment terminal units, ancillaries and control, distribution, storage																											
	5.2.2 Dedicated cooling installations																											
	5.2.3.1 Air movement																											
	5.2.4.1 Air terminals																											
	5.2.4.2 Ductwork & ancilleries																											
	5.2.4.3 Control dampers, attenuation and fire safety related to ventilation equipment																											
	5.2.4 Ventilation air terminals, ductwork and ancillaries, control dampers, attenuation, fire safety related to ventilation equipment																											
5.3 Electrical installations	5.3.1.1 Internal lighting																											
	5.3.1.2 External lighting (building																											
	5.3.1.3 Emergency lighting																											
	5.3.1.4 Other lighting																											
	5.3.1 Lighting																											
	5.3.2.1 Electrical power																											
	5.3.2.2 ELV/ Communications/ Security																											
	5.3.2.3 IT & Data																											
	5.3.2.4 BMS																											
	5.3.2.5 Electricity back up generation																											
	5.3.2.6 Fire detection & alarm																											
	5.3.2 Electrical services for power, communications, security, IT and fire detection,																											
5.4 On site renewable energy generation	5.4.1.1 Renewable energy - Electrical																											
	5.4.1.2 Renewable energy - Storage onsite																											
	5.4.1 On site renewable energy generation																											
5.5 Systems including Life safety, Fuel installations, Lift and conveyor installations, Services equipment Disposal installations, Specialist installations, Builders work in connection with services	5.5.1.1 Sprinkler system																											
	5.5.1.2 Fire fighting systems																											
	5.5.1.3 Lightning protection/earth bonding																											
	5.5.1 Life safety																											
	5.5.2 Fuel installations																											
	5.5.2.2 Lift, stair lift, lifting platform																											
	5.5.2.3 Escalators and moving walkways																											
	5.5.3 Lift and conveyor installations																											
	5.5.4 Specialised and communal waste disposal																											
	5.5.5 Specialist installations & maintenance																											
	5.5.6 Builders work in connection with services																											
6 Pre-fabricated buildings and units	Pre-fabricated buildings and building units																											
7 Works to existing buildings	7.1 Alterations																											
	7.2 Repairs, cleaning, general renovation																											
	7.3 Damp-proof courses/fungus and beetle eradication																											
	7 Works to existing buildings																											
8 External works (within the rpoject boundary)	8.1.1 Roads, paths, pavings, surfaces																											
	8.1.2 Fencing, railings, walls																											
	8.1.3 External fixtures																											
	8.1 Roads, paths, pavings, surfaces Fencing, railings, walls External fixtures																											
	8.2 Soft landscape, planting, irrigation																											
	8.3.1 External drainage																											
	8.3.2 External services																											
	8.3.3 Minor building works, ancillary																											
	8.3 External drainage External services Minor building works																											
8 External works (associated with the works outside the boundary)	8.1.1 Roads, paths, pavings, surfaces																											
	8.1.2 Fencing, railings, walls																											
	8.1.3 External fixtures																											
	8.1 Roads, paths, pavings, surfaces Fencing, railings, walls External fixtures																											
	8.2 Soft landscape, planting, irrigation																											
	8.3.1 External drainage																											
	8.3.2 External services																											
	8.3.3 Minor building works, ancillary																											
	8.3 External drainage External services Minor building works																											
	Sub-totals kgCO2e																											

Carbon Reduction

The assessment shall detail:

- Three ways in which the design has been optimised to reduce carbon. These should be categorised as structural/ architectural/ building services related interventions and provide an estimation of carbon reduction.
- Three ways in which the design will be further optimised to reduce carbon. These should be categorised as structural/ architectural/ building services related interventions and provide an estimation of carbon reduction.
- Any constraints that have led to increased carbon associated with the development, mitigation strategies adopted and an estimation of carbon impact.

Appendix D: Deconstruction Circularity Metric Template

Material – categorised by recovery outcome	NRM 3 Element Category	Mass	Embodied Carbon Factor	Estimate of embodied carbon	Expected recovery outcome of material	Circularity Score assigned	Estimate of embodied carbon retained
		Tn	$kgCO_2e/kg$	$tnCO_2e$		%	$tnCO_2e$
Explanation / example	e.g. 2.1 Superstructure Frame	Estimated based on known info/ rules of thumb	Carbon intensity to produce today	= Mass x Embodied Carbon Factor To represent the embodied carbon of replacing material today	e.g. Reclaimed for re-use	Recommended values: Retained-100%, Re-used-90%, Recycled as equivalent-50%, recycled as downgraded- 20%, Landfill -0% circularity	= Estimate of embodied carbon x Circularity Score assigned
Include all materials in substructure (NRM 1) and superstructure (NRM 2)							
Sum			Estimate of embodied carbon of existing materials:	**Total 1**		Estimate of embodied carbon of existing materials retained:	**Total 2**
Circularity Score	**Total 2 / Total 1 (%)**						

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City of Westminster