

**Development Control Group**  
**Urban Redevelopment Authority**  
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**WHOLE LIFE CARBON (WLC) OPTIONEERING ASSESSMENT**

- This template provides the recommended format for applicants to provide the necessary information required under the WLC Optioneering Assessment. It is meant to provide a detailed assessment on the trade-offs of different redevelopment scenarios from a carbon emissions perspective.
- The scope of the WLC computation is to take reference from the BCA Green Mark Whole Life Carbon Section Technical Guide and should be for the 'minimum scope' described in the Guide, i.e. major superstructure and substructure elements across lifecycle stages A1 to A5, B2 (façade), B5 (ACMV) and B6 (Operational energy use).
- Applicants have the flexibility to propose alternative approaches for outlining their considerations and trade-offs for different (re)development scenarios, so long as the requisite information (as outlined in this template) is provided within the overall proposal submission.
- Supporting documentation for the WLC assessment should be furnished as appendices:
  - Filled Singapore Building Carbon Calculator (SBCC) or equivalent software calculations and Whole Life Carbon Assessment Template<sup>1</sup>.
  - Where applicable, a methodological statement detailing the use of approximations, references or benchmarks should be clearly stated.

<sup>1</sup> Technical guide and template is available in the [Green Mark:2021](#) website.

**SUMMARY TABLE OF REDEVELOPMENT SCENARIOS**

	<b>Option 1</b>	<b>Option 2</b>
<b>Redevelopment scenarios</b>		
Applicants should provide a WLC assessment of the proposal and at least one other option that considers adaptive reuse		
<b>Proposal description</b> Graphical and/or textual description of redevelopment scenario, including elements retained or reused	E.g. Complete demolition and rebuild	E.g. Partial demolition and adaptive reuse
<b>Proposed GFA</b> With indication of % increase over existing GFA		
<b>GFA Retained</b> With indication of % GFA retained and/or substructures		
<b>Whole Lifecycle Carbon (Detailed breakdown)</b>		
<b>Upfront embodied carbon (Stages A1-A5)</b> Expressed in kgCO <sub>2</sub> e / m <sup>2</sup> GFA		

<b>Average yearly use stage embodied carbon (Stages B2, B5)</b> kgCO <sub>2</sub> e / m <sup>2</sup> GFA / year		
<b>Energy Use Intensity</b> Projected energy usage expressed in kWh / m <sup>2</sup> / year		
<b>Operational Carbon from Annual Energy Use (Stage B6)</b> Projected annual operational carbon for Stage B6. Expressed in kgCO <sub>2</sub> e / m <sup>2</sup> GFA / year. The prevailing carbon conversion factor in BCA's Green Mark Carbon Badge Technical Guidance may be assumed.		
<b>Key Assumptions Made</b>		
<b>Assessment of Results</b>		
<b>Whole Lifecycle Carbon (Summary figures)</b> Projected carbon footprint for Stages A1-A5, B2 (Façade), B5 (ACMV) and B6. Expressed in kgCO <sub>2</sub> e / m <sup>2</sup> GFA.		
<b>20-year building lifespan</b>		
<b>35-year building lifespan</b>		
<b>50-year building lifespan</b>		