

# THIRD PARTY REVIEW

## Whole Life Carbon Assessment

**SELKIRK HOUSE**

**LONDON BOROUGH OF CAMDEN**

24 August 2023

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Issue 01



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## Document History:

Issue	Date	Details
01	24/8/2023	INITIAL REVIEW OF WLCA

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# 1. Introduction

Hilson Moran has been instructed by the **London Borough of Camden** to undertake an independent review of the Whole Life Carbon Assessment (WLCA) submitted for planning for the extensive redevelopment of the site at **Selkirk House**. The WLCA has been produced by Scotch Partners LPP on behalf of **Lab Selkirk House Ltd** (here in after ‘the applicant’) and submitted to Camden Council as part of the planning application n. 2023/2510/P.

This independent review comes after a previous third-party appraisal, conducted and completed by Hilson Moran in March 2023, for the former planning application (2021/2954/P) of the same site.




The scope of appointment of this review is limited to a documentary review of the submitted information for the project. The WLCA model in OneClick LCA has not been reviewed.

Hilson Moran has reviewed the documents submitted for planning (more details in the continuation of this report) against Camden’s planning policies, the latest GLA requirements for WLCAs and the London Plan 2021, specifically policy S12, minimising greenhouse gas emissions.

The key policy reference documents are:

- Camden Local Plan 2017
- Camden Planning Guidance (CPG) Energy efficiency and adaptation - January 2021
- London Plan Guidance – Whole Life Carbon Assessments – GLA, March 2022
- London Plan 2021, Greater London Authority, March 2021

As part of this review, Hilson Moran has been asked to provide a technical and independent commentary report of compliance on the WLCA produced by the design team for planning. This report includes a summary of the main findings of the initial review, including:

-  **NC** Areas of non-compliance against Camden planning policies and GLA WLCA requirements
-  **RFI** Requests for further design information / clarifications
-  **R** Recommendations and observations

The findings have been summarised in section 5 of this report. Appendix A sets out further details and references to the relevant clauses from the GLA WLC guidance.

A second round of verification will be undertaken to review applicant’s response to the findings.

## 2. Documents reviewed

This independent review is limited to the following documents from Camden's planning portal:

*Table 1 – List of planning documents within the scope of this review*

Document	Revision	Date
Whole Life Carbon Assessment Report	r06c	29/06/2023
GLA WLCA Template for Wide Site	v1a	21/06/2023
GLA WLCA Template for 1 Museum Street	v5a	21/06/2023
GLA WLCA Template for High Holborn	v4a	14/06/2023
GLA WLCA Template for Vine Lane	v4a	21/06/2023
GLA WLCA Template for West Central Street	v4a	15/06/2023

In addition to the above, the '*Retention & Redevelopment Options Review & WLC Comparison*' report issued by the applicant in July 2023 (rev. A) has been read and thoroughly reviewed. A technical and independent commentary against Camden's Policy CC1 Climate Change Mitigation and CPG Energy Efficiency and Adaption will be provided by Hilson Moran in a separate report.

Other planning reports have also been read to understand the project context and the wider sustainability brief; however these have not been commented on as they are not part of the agreed scope of appointment. This includes:

- Design & Access Statement issued for planning (June 2023)
- Sustainability Statement (Rev. 09 – June 2023)
- Energy Assessment (Rev. 11 – June 2023) and GLA Carbon Emissions Reporting Spreadsheets
- Circular Economy Statement (Rev. 10 – June 2023) and corresponding GLA template
- Internal Daylight, Sunlight and Overshadowing Report (May 2023)

### 3. WLCA reviewers

The independent review of the Whole Life Carbon Assessment (WLCA) of Selkirk House has been carried out by **Andrew Moore**, **Amedeo Scofone** and **Samuele Rando**.



**Andrew Moore** is an Associate Director and experienced Sustainability Consultant / LCA reviewer. He has over 13 years' experience in the industry. Areas of expertise include embodied carbon and materials impacts, energy management in use, and climate change risk.

Andrew is a leading industry figure, most notably for developing and co-authoring the City of London policy advice note on WLC optioneering, for early-stage carbon related decision making.



**Amedeo Scofone** is an Associate Sustainability Consultant with 11 years of experience in the building sector. His expertise includes environmental and technical design, energy and sustainability.

He worked on range of projects including commercial, masterplans, mixed use developments, residential, and listed buildings and he currently lectures on sustainability and environmental design in various universities across London.



**Samuele Rando** is a Principal Sustainability Consultant who has extensive experience undertaking lifecycle assessments and supporting design teams in the implementation of Circular Economy principles over the last 7 years.

Samuele recently supported Camden Council as an independent sustainability reviewer of other strategic applications in the London Borough of Camden, having gained in-depth knowledge of Camden's planning policies.

## 4. Project overview

Table 2 – Project information

Project name	Selkirk House
Application no.	2023/2510/P
GLA referable scheme	The project is GLA referable
Address	166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR
Property type	Mixed-Use – Office, Residential and Retail / Flexible Use
Gross Internal Area	30,980 m <sup>2</sup> (WLCA GLA template for wide site)
Project description	<p>The existing site comprises of 0.52 hectares and is bounded by High Holborn to the south, Museum Street to the east and New Oxford Street to the north, with the rear of the properties fronting Grape Street forming the western boundary.</p> <p>The proposed scheme comprises of redevelopment and extension to provide a mixed-use scheme of affordable housing, town centre uses and office floor space within the new 19 storey building on Museum Street.</p> <p>The proposed development comprises of the following components:</p> <ul style="list-style-type: none"> <li>• <b>1 Museum Street</b> - A single new building rising to 19 storeys, providing office accommodation on upper levels and a range of flexible town centre uses (Class E) at ground level.</li> <li>• <b>High Holborn</b> - A single new building rising to 6 storeys, providing residential (Class C3) accommodation on upper levels and a flexible town centre use (Class E) at ground level.</li> <li>• <b>Vine Lane</b> - A single new building rising to 5 storeys, providing market residential units with a flexible town centre use (Class E) at ground level. The office floorspace within this building will be operated by LABS as a co-working offer.</li> <li>• <b>West Central Street</b> - A series of new and refurbished buildings rising to 6 storeys, providing residential accommodation (market, LCR and Intermediate) on upper levels (Class C3) and flexible town centre uses (Class E) at ground level. This block includes 2 no. listed buildings: 35-37 New Oxford Street and 10-12 Museum Street.</li> </ul>
Developer	Lab Selkirk House Ltd
Planning Consultant	Iceni Projects
Architect	DSDHA
Structural Engineer	Heyne Tillett Steel
Sustainability and MEP	Scotch Partners
Project Manager / QS	Gardiner and Theobald (G&T)



## 5. Summary of main findings

### 5.1. Areas of non-compliance

This section includes a list of discrepancies and ‘non-compliant’ items with respect to the Camden’s planning policies and the GLA requirements for WLC assessments. The applicant should review the following findings and resolve all non-conformities in advance of the next round of verification.

*Table 3 – Areas of non-compliance*

ID	Finding description
NC1	<p><b>Gross Internal Area (GIA)</b></p> <p>The total development’s Gross Internal Area (GIA) used to determine the WLC emissions (<math>\text{kgCO}_2\text{e}/\text{m}^2_{\text{GIA}}</math>) is 30,980 <math>\text{m}^2</math>. This does not match the total value of 28,309 <math>\text{m}^2</math> given in the project’s Design and Access Statement. <u>The applicant shall provide clarifications / resolve the discrepancy.</u></p>
NC2	<p><b>Elemental scope of assessment</b></p> <p>The WLCA report states that all building elements in line with GLA requirements, including facilitating works (NRM RICS categories 0.3, 0.4 and 0.5) have been included in the assessment. However, embodied carbon impacts for these building categories are not provided in the GLA WLCA templates. <u>The applicant shall provide clarifications / resolve the discrepancy.</u></p>
NC3	<p><b>Material lifespans and future replacements (B4)</b></p> <p>Discrepancies between the declared lifespans of the internal partitions and the arising B4 impacts have been found in the WLCA GLA templates. For example, in the ‘High Holborn WLCA Template, v4a’ the impacts associated with future replacements (B4) of internal partitions (NRM 2.7) is zero, despite the reference service life declared for some of the partition materials is less than 60 years. <u>This is not possible and needs to be reviewed.</u></p>
NC4	<p><b>Use of GGBS in substructure concrete for 1 Museum Street</b></p> <p>Discrepancies have been found with regard to the targeted percentages of GGBS within the concrete elements. In the WLCA report, Table 3, the proposed cement replacement rate for the substructure of 1 Museum Street is 70%. In Table 26 of the same WLCA report, the targeted GGBS rate for 1 Museum Street is 50%. <u>The applicant shall resolve the discrepancy.</u></p> <p>The carbon reduction estimated by the applicant in the GLA WLCA template of 1 Museum Street for the ‘<i>Specification of 70% GGBS in substructure, compared to 20% GGBS (RICS recommendation)</i>’ is 138 <math>\text{kgCO}_2\text{e}/\text{m}^2_{\text{GIA}}</math>. This seems largely overestimated. <u>The applicant shall provide further details on how this reduction has been determined.</u></p>

## 5.2. Requests for further clarifications

This section identifies areas where compliance against Camden planning policies and GLA WLCA requirements cannot be demonstrated at this stage due to lack of details. The applicant should review the following requests for further clarifications and provide additional information as required. Applicant's response will be reviewed as part of the next round of verification.

**Table 4 – Additional information/clarification required**

ID	Finding description
RFI1	<p><b>Life expectancy of residential partitions</b></p> <p>The material lifespans used in the WLCA are in line with the default assumptions given in the 1<sup>st</sup> edition of the RICS PS for Whole Life Cycle Assessments, except for the residential drylining partitions; these have been assumed to have a 60-year life expectancy. The WLCA report does not clarify which considerations/facts formed the basis of this assumption. <u>Appropriate supporting evidence should be provided to justify deviation from RICS default material lifespans.</u></p> <p>The assumption that residential partitions could last for 60 years is listed in Table 26 of the WLCA report (item 9) as one of the actions taken by the project team to reduce whole life carbon impacts. <u>We believe that this shouldn't be referred as an action taken, as it's more an assumption by the project team. We would therefore suggest removing this item from the list.</u></p>
RFI2	<p><b>Material quantities</b></p> <p>The WLCA GLA templates do not include any material quantities for external works (NRM 8). These seem missing from the CES GLA template too. <u>Both the WLCA and CES templates should be updated including relevant quantities of materials for the proposed external works.</u></p> <p>Material quantities are not provided in the WLCA GLA template for the wide site, but only for the individual building's spreadsheets. <u>The spreadsheet for whole development should be completed with the missing information</u> (this does not appear to be a challenging task as it could be easily done by summing the material quantities of each individual spreadsheet).</p>
RFI3	<p><b>Acceptable sources of carbon data for materials and products</b></p> <p>The WLCA report does not include sufficient details to ascertain compliance against some of the quality data requirements outlined in the GLA guidance for Whole Life Carbon Assessments, (reference paragraphs: 2.7.1 and 2.7.2).</p> <p>Additional information should be provided with regard to:</p> <ul style="list-style-type: none"> <li>• <u>Approach to data selection</u> - OneClick LCA database includes an extensive range of both sector-level and product-specific data. In many circumstances, for the same material, both generic (e.g. industry-average) and product-specific (e.g. EPD) data are available in the database. What's the general approach adopted by the applicant? How has data been selected from the OneClick LCA database where multiple choices for the same material were available? Could the applicant provide more information?</li> <li>• <u>Structural materials</u> - Have the default values suggested by the IStructE's guide 'How to calculate embodied carbon' for structural materials been considered?</li> <li>• <u>Building services</u> - How was the embodied carbon of the MEP systems calculated?</li> <li>• <u>Fittings, furnishings and equipment</u> – What's the approach taken to estimate the embodied carbon impacts of the FF&amp;E? What's included in the WLCA?</li> </ul>

ID	Finding description
RFI4	<p><b>Cost plan and cost coverage</b></p> <p>The WLCA report (paragraph 3.4) states “<i>Quantities have been provided by the design team and the latest cost plan</i>” but does not reference date/revision of the cost plan used to inform the calculation. <u>This would be a useful information to include in the WLCA report.</u></p> <p>The WLCA report (paragraph 3.4.1) states “<i>Cost-consultant confirmation that 96.87% of cost allocated to each building element category has been accounted for in the assessment - this confirmation is in progress and will be updated</i>”. We understand the QS confirmation of the cost coverage was in progress at the time of issue of the WLCA report (29/06/2023). Has this been finalised now? <u>Can a copy of the QS confirmation be submitted?</u></p>
RFI5	<p><b>Study period of life cycle assessment</b></p> <p>There is no reference to the study period of the assessment in the WLCA report. We assume in-use impacts (B) have been determined over a study period of 60 years, in line with GLA requirements and RICS methodology. <u>However, this should be clearly stated in the report.</u></p>
RFI6	<p><b>Carbon savings associated with retention, reuse and recycling of existing structures</b></p> <p>Carbon savings associated with the retention of the existing basement have not been quantified in the GLA WLC template for 1 Museum Street, nor in the WLCA report. A rough estimate can possibly be extrapolated from the ‘Retention &amp; Redevelopment Options Review &amp; WLC Comparison’ report, as a difference between the embodied carbon of Option 4 (basement retention) and Option 5 (new basement) and included in the GLA WLC template for 1MS.</p>

### 5.3. Observations and recommendations

This section includes a list of recommendations to further improve the quality and enhance transparency of the WLCA submitted for planning. The applicant is encouraged to review the following recommendations and implement them before the next round of verification, where viable.

*Table 5 – Recommendation's list*

ID	Finding description
R1	<p><b>Reporting carbon intensities (A1-A3) for key materials</b></p> <p>The WLCA report provides some details on the recycled content of key materials (e.g. structural steel for 1 Museum Street 60%, structural steel for other buildings 80%, rebar 97%) and percentage of cement replacement for RC substructure and superstructure items. However, the applicant did not provide any information on the corresponding carbon intensities (A1-A3) used to inform the calculations. This would be a useful information to include in the WLCA report, at least for the most impactful materials to enable a greater level of transparency.</p>
R2	<p><b>TM54 Operational energy modelling</b></p> <p>A detailed TM54 standalone report has not been provided, only a summary as part of the energy statement. On the basis of the information currently available on the planning portal, it's difficult to review the assumptions and accuracy of the TM54 operational energy modelling.</p> <p>We appreciate that a standalone TM54 report is not required for planning. However, this would be a very useful element and should be encouraged.</p>

## 6. Conclusions

Hilson Moran has completed the initial review of the Whole Life Carbon Assessment (WLCA) for the detailed planning application of the extensive redevelopment of the site at **Selkirk House**.

The WLCA documents submitted for planning contain a significant amount of useful information and overall WLC results appear sensible, however there are a number of clarifications and updates that need to be addressed by the applicant and the project team.

This report includes a summary of the main findings of the initial review, including:

- **4 no. non-conformities**
- 6 no. requests for clarifications / further information
- 2 no. recommendations

The applicant should review the findings summarised in this report, resolve all non-conformities and provide more clarifications as required. A second round of verification will be undertaken by Hilson Moran to review applicant's response to the findings.

## Appendix A – WLCA Checklist

This Appendix provides an exhaustive list of the checks undertaken by Hilson Moran to ascertain the compliance of the Whole Life Carbon Assessment submitted for planning against the requirements of the latest London Plan WLCA Guidance (March 2022).

WLCA GLA Requirements	Evidence of compliance
Scope of assessment	
<p><u>Scope of assessment – Clause 2.4.4 &amp; 2.5.2</u></p> <p>All life-cycle modules (A-D) should be reported to comply with the WLC policy. The scope of assessment should cover the entirety of all life-cycle modules (A-D), rather than just the minimum requirements identified in the RICS PS.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>The WLCA covers all applicable lifecycle modules (A-D). Module B2 (maintenance) and Module B3 (repair) have been reported together, accounting for approx. 11.3 kgCO<sub>2</sub>e/m<sup>2</sup><sub>GLA</sub>. This seems a sensible estimate.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clauses 3.1 and 4.4</li> <li>• WLCA GLA Templates</li> </ul>
<p><u>Scope of assessment – Clause 2.5.3</u></p> <p>The reference study period for the purposes of the assessment is 60 years.</p>	<p><input type="checkbox"/> Compliant</p> <p><input type="checkbox"/> Non-Compliant</p> <p><input checked="" type="checkbox"/> <b>Clarifications required</b></p> <p><input type="checkbox"/> N/A</p> <p>There is no reference to the study period of the assessment in the WLCA report. We assume in-use impacts (B) have been determined over a study period of 60 years, in line with GLA requirements. However, this should be clearly stated in the report.</p>

WLCA GLA Requirements	Evidence of compliance
<p><u>Scope of assessment – Clause 2.4.1</u></p> <p>The assessment should cover the development’s carbon emissions over its lifetime, accounting for any carbon emissions associated with pre-construction demolition.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Pre-construction demolition impacts have been included in the WLC assessment. The estimate is based on GLA benchmark of 50 kgCO<sub>2</sub>e/m<sup>2</sup> of demolished area. This is in line with GLA requirements.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clauses 3.4</li> <li>• WLCA GLA Templates</li> </ul>
<p><u>Scope of assessment – Clause 2.3.2</u></p> <p>The assessment should be aligned with the project brief, and with the latest available cost plan for the scheme.</p>	<p><input type="checkbox"/> Compliant</p> <p><input type="checkbox"/> Non-Compliant</p> <p><input checked="" type="checkbox"/> <b>Clarifications required</b></p> <p><input type="checkbox"/> N/A</p> <p>The WLCA report states “Quantities have been provided by the design team and the latest cost plan” but does not reference date and revision of the cost plan used to inform the calculation. This would be a useful information to include in the report.</p> <p>The total development GIA used to determine the WLC emissions (kgCO<sub>2</sub>e/m<sup>2</sup><sub>GIA</sub>) is 30,980 m<sup>2</sup>. This does not match the total value of 28,309 m<sup>2</sup> given in the project’s Design and Access Statement.</p>
<p><u>Scope of assessment – Clause 2.6.1</u></p> <p>The WLC assessment should cover all building elements listed in Table 2.2 that are applicable to the project and are to be included in the finished area of the completed project (including temporary works).</p>	<p><input type="checkbox"/> Compliant</p> <p><input type="checkbox"/> Non-Compliant</p> <p><input checked="" type="checkbox"/> <b>Clarifications required</b></p> <p><input type="checkbox"/> N/A</p> <p>The WLCA report states that the assessment includes all building elements in line with GLA requirements, including facilitating works (NRM RICS categories 0.3, 0.4 and 0.5). However, embodied carbon impacts for these building categories are not provided in the GLA WLCA templates.</p>

WLCA GLA Requirements	Evidence of compliance
<p><u>Scope of assessment – Clause 2.6.3</u></p> <p>The total quantities for the project should be used (including temporary works), as provided or approved by the project Quantity Surveyor, to inform the WLC assessment.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A         </p> <p>The WLCA report states “Quantities have been provided by the design team and the latest cost plan” but does not reference date and revision of the cost plan used to inform the calculation. This would be a useful information to include in the report.</p> <p>The WLCA report states that the assessment includes all building elements in line with GLA requirements, including facilitating works (NRM RICS categories 0.3, 0.4 and 0.5). However, embodied carbon impacts for these building categories are not provided in the GLA WLCA templates.</p>
<p><u>Scope of assessment – Clause 2.6.3</u></p> <p>A minimum of 95 per cent (EN 15804; 6.3.5) of the capital cost allocated to each building element category should be accounted for at each stage of the assessment and this should also be approved by the project Quantity Surveyor as part of the third-party review of each submission.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A         </p> <p>The cost coverage stated in the WLCA report exceed 95% of the project’s capital costs. However, the Quantity Surveyor confirmation that &gt;95% of cost allocated to each building element category has been accounted for in the assessment was not provided (indicated as ‘in progress’ in the WLCA report).</p> <p>Reference:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.4.1</li> <li>• WLCA GLA Templates</li> </ul>
<p><u>Scope of assessment – Clause 2.6.3</u></p> <p>It is good practice to include the carbon emissions from the excluded items. Applicants are encouraged to calculate and report this by multiplying the carbon emissions of each building element category by the appropriate adjustment factors based on the achieved cost coverage of each category.</p>	<p> <input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A         </p> <p>A carbon contingency of 10% has been applied to all WLCA results, in line the consultation draft of the 2<sup>nd</sup> edition of the RICS WLCA PS (2023).</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.4</li> </ul>



WLCA GLA Requirements	Evidence of compliance
<p><u>Scope of assessment – Clause 2.6.4</u></p> <p>The WLC assessment should include the building services/MEP listed in the latest GLA WLC guidance (Box 2) where applicable.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA GLA Templates (column C)</li> </ul>
<p><u>Scope of assessment – Clause 2.7.2</u></p> <p>Sequestered carbon from the use of timber should be assessed in accordance with Clause 3.4.1 of the RICS PS. Sequestered carbon should be reported separately in the relevant part of the WLC assessment template.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Section 4</li> <li>• WLCA GLA Templates</li> </ul>
<b>Upfront impacts (A1-A5)</b>	
<p><u>Upfront impacts (A1-A5) – Clause 2.5.4 to 2.5.7</u></p> <p>The WLC assessment should provide sufficient details on the recycled content and carbon intensities (A1-A3) of critical items with high upfront emissions (such as structural concrete, structural steel, etc.)</p>	<p><input type="checkbox"/> Compliant</p> <p><input type="checkbox"/> Non-Compliant</p> <p><input checked="" type="checkbox"/> <b>Clarifications required</b></p> <p><input type="checkbox"/> N/A</p> <p>The WLCA report provides some details on the recycled content of key materials (e.g. structural steel for 1 Museum Street 60%, structural steel for other buildings on site 80%, rebar 97%) and percentage of cement replacement for RC items. However, the applicant did not provide any information on relevant carbon intensities (A1-A3) used to inform the calculations. This would be a useful information to include.</p>

WLCA GLA Requirements	Evidence of compliance
<p><u>Upfront impacts (A1-A5) – Clause 2.5.4 to 2.5.7</u></p> <p>The WLC assessment should provide sufficient details on assumptions made to evaluate the transport impacts (A4) of critical components with either high mass or volume (such as structural concrete, structural steel, aggregates, etc.)</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Transport impacts (A4) have been calculated in line the default set of assumptions specified in the 1<sup>st</sup> edition of the RICS WLCA PS (2017). Steel is specified to be sourced from Europe.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.4</li> </ul>
<p><u>Upfront impacts (A1-A5) – Clause 2.5.4 to 2.5.7</u></p> <p>The WLC assessment should provide sufficient details on the methodology used to inform site impacts (A5) calculations.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Construction site impacts (A5) have been calculated in line default rate 1,400 kgCO<sub>2</sub>e/£100k provided by the 1<sup>st</sup> edition of the RICS WLCA PS (2017).</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.4</li> </ul>
<b>In-Use Embodied Carbon (B1-B5)</b>	
<p><u>In-Use Embodied Carbon (B1-B5) – Clause 2.5.9</u></p> <p>The WLC assessment will require the applicant to report the refrigerant type, its Global Warming Potential (GWP), initial quantity/charge, assumed annual leakage rate, maintenance regime and end-of-life recovery rate.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Refrigerant assumptions and leakage impacts (B1) have been calculated by MEP engineer based upon manufacturer information.</p> <p>The annual leakage rate (5%) and the recovery rate at end-of-life (90%) used within the WLCA are more conservative than the default figures suggested in the CIBSE TM65 for heat pumps.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.4</li> <li>• WLCA GLA Templates</li> </ul>

WLCA GLA Requirements	Evidence of compliance
<p><u>In-Use Embodied Carbon (B1-B5) – Clause 2.5.11</u></p> <p>The WLC assessment should provide transparency on the estimated life expectancy of the proposed materials and relevant assumptions made for future material replacements (B4).</p>	<p> <input type="checkbox"/> Compliant  <input checked="" type="checkbox"/> <b>Non-Compliant</b>  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A         </p> <p>Material lifespans assumed in line with RICS default figures, except for residential partitions; these have been assumed to have a 60-year life expectancy. The WLCA report does not clarify which considerations / evidence support this assumption.</p> <p>Discrepancies between the declared lifespans of the internal partitions and the arising B4 impacts have been found in the WLCA GLA templates. For example, in the 'High Holborn WLCA Template v4a' the impacts associated with future replacements (B4) of internal partitions (NRM 2.7) is zero, but the lifespans declared for the partition materials in the table above range between 30 and 60 years.</p>
<p><u>In-Use Embodied Carbon (B1-B5) – Clause 2.5.12</u></p> <p>Applicant should provide sufficient details on assumptions made to determine future carbon emissions associated with building maintenance (B2) and repair (B3).</p>	<p> <input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A         </p> <p>Module B2 (maintenance) and Module B3 (repair) have been reported together, accounting for approx. 11.3 kgCO<sub>2</sub>e/m<sup>2</sup><sub>GLA</sub>. This seems a sensible estimate.</p> <p>Also, relevant assumptions with respect to future maintenance/repair for each building elements are reported in the GLA WLCA templates (Column E).</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clauses 3.4</li> <li>• WLCA GLA Templates</li> </ul>
Operational carbon (B6-B7)	

WLCA GLA Requirements	Evidence of compliance
<p><u>Operational carbon (B6) – Clause 2.4.1 &amp; 2.5.14</u></p> <p>The assessment should cover the development's carbon emissions over its lifetime, accounting for its operational carbon emissions (both regulated and unregulated). Applicants should report regulated and unregulated carbon emissions separately.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>Regulated and unregulated carbon emissions have been reported separately, as per GLA requirements. The figures added into the GLA WLC templates match the values given in the WLCA report.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 4.3</li> <li>• WLCA GLA Templates</li> </ul>
<p><u>Operational carbon (B6) – Clause 2.5.14 &amp; 2.8.3</u></p> <p>In reporting regulated emissions, applicants should use the estimate of carbon emissions from operational energy use provided in the energy assessment and insert this figure directly into the WLC assessment. Applicants should ensure that in reporting module B6 results, the carbon emission factors used align with those used in the energy strategy for the development.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>The carbon emission factor stated in the WLCA report for electricity supplied from the grid (0.14 kgCO<sub>2</sub>e/kWh) seems corresponding to a yearly average of the monthly carbon factors displayed in the Energy Assessment report.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> <li>• Energy Assessment report - 1.3.1 and 3.2.1</li> </ul>
<p><u>Operational carbon (B6) – Clause 2.5.14</u></p> <p>Energy demand should be determined in line with SAP and CIBSE TM54 analyses for domestic and non-domestic uses respectively.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>Dwelling operational energy has been calculated from the SAP assessments and non-domestic operational energy has been calculated using CIBSE TM54. Results of these assessments have been used to populate the energy GLA spreadsheets. <u>A full TM 54 report has not been provided.</u></p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> <li>• Energy Assessment Report – Section 9</li> </ul>

WLCA GLA Requirements	Evidence of compliance
<p><u>Operational carbon (B6) – Clause 2.5.14</u></p> <p>In reporting unregulated emissions, applicants should include carbon emissions from non-building-related systems, such as ICT equipment, and from the operation of building-integrated systems, such as lifts.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>A list of assumptions and inclusions for unregulated operational emissions is available in the energy assessment report. The assessment includes non-building-related systems (e.g. office equipment) and building-integrated systems (e.g. lifts).</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• Energy Assessment Report – Section 9</li> </ul>
<p><u>Operational carbon (B6) – Clause 2.8.1</u></p> <p>Applicants shall not account for the long-term decarbonisation of the electricity grid in their WLC assessments, in line with EN 15978.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>The operational carbon emissions associated with energy use (B6) do not account for the future decarbonisation of the UK grid, as per GLA methodology.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> </ul>
<p><u>Operational carbon (B7) – Clause 2.5.15</u></p> <p>In reporting carbon emissions associated to building's water demand (module B7), applicants should include both water supply and wastewater treatment.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>The operational carbon emissions associated with water use (B7) include both fresh water supply and wastewater treatment.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> </ul>

WLCA GLA Requirements	Evidence of compliance
<p><u>Operational carbon (B7) – Clause 2.5.15</u></p> <p>Estimates of anticipated water consumption at early design stages may be made using BSRIA's Rules of Thumb – Guidelines for the building services (fifth edition). The estimated water consumption should be replaced by figures provided by the public health and/or MEP consultant and landscape architect as they become available.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>The water consumption estimates have been based upon calculations undertaken by the Public Health Engineer for the project.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> </ul>
<p><u>Operational carbon (B7) – Clause 2.5.15</u></p> <p>Carbon conversion factors for water use and treatment as published by the local water supplier should be used.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>The emission factors for water use and wastewater treatment are provided in the WLCA report.</p> <p><u>Water use:</u> 0.019 kgCO<sub>2</sub>e/m<sup>3</sup> Source: <i>Thames Water Combined Report 2019/2020</i></p> <p><u>Wastewater treatment:</u> 0.390 kgCO<sub>2</sub>e/m<sup>3</sup> Source: <i>OneClick (ecoinvent 2016)</i></p> <p>As shown above, the WLCA is based on generic data from Ecoinvent for wastewater treatment instead of local data produced by Thames Water Utilities Ltd.</p> <p>This approach results in a more conservative representation of the B7 impacts (the wastewater carbon factor by Thames Water is approx. 0.11 kgCO<sub>2</sub>e/m<sup>3</sup>), and therefore, it's deemed to be acceptable at this stage.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> </ul>
End-of-Life impacts (C1-C4)	

WLCA GLA Requirements	Evidence of compliance
<p><u>EoL impacts (C1-C4) – Clause 2.5.16 to 2.5.18</u></p> <p>The WLC assessment should capture the emissions from when the proposed building has reached the end of its useful life, including deconstruction and demolition (C1), transport (C2), waste processing for reuse, recovery or recycling (C3) and disposal (C4).</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>The WLCA includes an estimate of the carbon emissions associated with future demolition/deconstruction (C1), waste transport (C2) and subsequent waste treatment (C3/C4).</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clauses 3.1</li> <li>• WLCA GLA Templates</li> </ul>
<p><u>EoL impacts (C1-C4) – Clause 2.5.17</u></p> <p>Applicants should ensure that the end-of-life scenarios and GWP results reported in the WLC assessment match the end-of-life scenarios reported in the Circular Economy Statement.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>The declared 'end of life' scenarios provided in the GLA WLCA templates for some of the most important materials (e.g. steel, concrete, glass, aluminium, timber, plasterboard, etc) have been checked against the scenarios provided in the Circular Economy GLA template.</p> <p>A good level of alignment has been found.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA GLA Templates</li> <li>• CES GLA Template</li> </ul>
Data Quality	
<p><u>Data quality – Clause 2.3.3</u></p> <p>Applicants and developers should adopt third-party quality assurance mechanisms to ensure accuracy in their submissions. The mechanisms used should be reported at the planning application submission and post-construction stages using the template.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A</p> <p>The WLCA has been third-party peer reviewed by Greengage Environmental.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Appendix A</li> </ul>

WLCA GLA Requirements	Evidence of compliance
<p><u>Data quality – Clause 2.7.1</u></p> <p>Applicants should use acceptable sources of carbon data for materials and products as outlined in the latest GLA WLC guidance.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A </p> <p>Source of carbon data: OneClick LCA</p> <p>OneClick LCA database includes an extensive range of both generic and product-specific data. In many circumstances, for the same material, both generic (e.g. industry-average) and product-specific (e.g. EPD) data is available in the selected database.</p> <p>The WLCA report does not clarify the approach adopted by the applicant to select the most appropriate carbon data.</p>
<p><u>Data quality – Clause 2.7.2</u></p> <p>If the manufacturer has not provided data or it is too early in the design process for the manufacturer to be known, then sector level data should be used.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A </p> <p>Linked to the above. The applicant should provide more clarifications on the source of data.</p>
<p><u>Data quality – Clause 2.7.2</u></p> <p>Where EPDs are not available for structural elements, e.g. concrete, it is recommended that applicants use IStructE's guide, 'How to calculate embodied carbon', to source default values.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A </p> <p>Linked to the above. The applicant should provide more clarifications on the source of data.</p>



WLCA GLA Requirements	Evidence of compliance
<p><u>Data quality – Clause 2.7.2 &amp; 3.2.12</u></p> <p>The embodied carbon emissions of MEP systems may be difficult to calculate in detail due to a lack of EPDs or other data sources. In these cases, it is recommended that applicants use the calculation methodology in CISBE TM65 Embodied carbon in building services. If detailed information is not available at the time of planning submission for certain items, default values in the software tools could be used to calculate the carbon baseline.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A         </p> <p>Linked to the above. The applicant should provide more clarifications on the source of data.</p>
<p><u>Data quality – Clause 2.7.2</u></p> <p>For projects where FFE is included in the scope of the planning application (e.g. lockers, benches, desks, etc.) applicants can refer to the Furniture Industry Research Association's data if specific product information is not yet known.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A         </p> <p>Linked to the above. The applicant should provide more clarifications on the source of data.</p>
<p><u>Data quality – Clause 3.2.11</u></p> <p>Applicants should use a suitable software tool to undertake the WLC assessment. A list of suitable tools has been provided in Appendix A of the latest WLC GLA guidance. Applicants wishing to use an alternative tool to those listed should ensure that the selected software meets the requirements outlined at paragraph 3.2.11.</p>	<p> <input checked="" type="checkbox"/> <b>Compliant</b>  <input type="checkbox"/> Non-Compliant  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A         </p> <p>Selected tool: OneClick LCA</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> </ul>
Reduction strategy	

WLCA GLA Requirements	Evidence of compliance
<p><u>Reduction strategy – Clause 2.4.1</u></p> <p>WLC assessments should demonstrate the actions that have and will be taken to reduce WLC emissions.</p>	<p> <input type="checkbox"/> Compliant  <input checked="" type="checkbox"/> <b>Non-Compliant</b>  <input type="checkbox"/> Clarifications required  <input type="checkbox"/> N/A         </p> <p>A concise narrative of the key actions and opportunities that will be taken to reduce WLC impacts is provided in the WLCA report. Associated carbon savings have been quantified and reported in the GLA WLCA templates.</p> <p>Discrepancies have been found with regard to the targeted percentages of GGBS within the concrete elements. In the WLCA report, Table 3, the proposed cement replacement rate for the substructure of 1 Museum Street is 70%. In Table 26 of the same WLCA report, the targeted GGBS rate for 1MS is 50%.</p> <p>The carbon reduction estimated by the applicant in the GLA WLCA template of 1MS for the '<i>Specification of 70% GGBS in substructure, compared to 20% GGBS (RICS recommendation)</i>' is 138 kgCO<sub>2</sub>e/m<sup>2</sup>GIA. This seems largely overestimated.</p> <p>Item 9 in Table 26 of the WLCA report it's not an action taken to reduce the carbon impact, it's just an assumption by the project team.</p>
<p><u>Reduction strategy – Clause 2.4.1</u></p> <p>The assessment should cover the development's carbon emissions over its lifetime, accounting for any carbon savings associated with the retention, reuse and recycling of existing structures and materials that are already on-site.</p>	<p> <input type="checkbox"/> Compliant  <input type="checkbox"/> Non-Compliant  <input checked="" type="checkbox"/> <b>Clarifications required</b>  <input type="checkbox"/> N/A         </p> <p>Carbon savings associated with the retention of the basement of 1MS have not been quantified in the GLA WLC template, nor in the WLCA report.</p> <p>A rough estimate of the carbon saving can possibly be extrapolated from the 'Retention &amp; Redevelopment Options Review &amp; WLC Comparison' report as difference between the results given for Option 4 and Option 5.</p>

WLCA GLA Requirements	Evidence of compliance
<p><u>Reduction strategy – Clause 2.4.1</u></p> <p>The assessment should cover the development's carbon emissions over its lifetime, accounting for any future potential carbon savings post end-of-life, including savings from reuse and recycling of building structure and materials.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>The WLCA covers the development's carbon emissions over its lifetime. Future potential saving associated with material recycling / reuse are reported under module D.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA GLA Templates</li> </ul>
GLA WLC template	
<p><u>GLA WLC template – Clause 2.3.1</u></p> <p>A WLC assessment template has been developed that includes all of the information applicants will need to submit at each stage. This template should be completed and submitted as an Excel document to the GLA to ensure clarity and transparency.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA GLA Template for the wide site – v1a</li> <li>• WLCA GLA Template for 1 Museum Street – v5a</li> <li>• WLCA GLA Template for High Holborn – v4a</li> <li>• WLCA GLA Template for Vine Lane – v4a</li> <li>• WLCA GLA Template for West Central St. – v4a</li> </ul>
<p><u>GLA WLC template – Clause 3.2.2</u></p> <p>The WLC assessment template for both outline and detailed planning applications should include the information listed in Box 4 of the latest WLC GLA guidance (March 2022).</p>	<p><input type="checkbox"/> Compliant</p> <p><input type="checkbox"/> Non-Compliant</p> <p><input checked="" type="checkbox"/> <b>Clarifications required</b></p> <p><input type="checkbox"/> N/A</p> <p>The material quantities given in the WLCA GLA templates are in line with the Bill of Materials table produced as part of the Circular Economy Statement.</p> <p>However, the WLCA GLA templates do not include any material quantities for external works (NRM 8). These seem missing from the CES GLA template too.</p> <p>Material quantities are not provided in the WLCA GLA template for the wide site, but only for the individual building spreadsheets.</p>

WLCA GLA Requirements	Evidence of compliance
<p><u>GLA template – Clause 3.2.5 &amp; 3.2.6</u></p> <p>All developments, regardless of their scope, are expected to compare their WLC baseline against the most relevant benchmark. Mixed-use developments should compare their WLC baseline with the benchmark of the typology which makes up the greatest proportion of the development in GIA. If the uses are relatively equally split, then the highest WLC benchmark should be used for comparison.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>The WLC emissions of the whole development are compared to the GLA WLCA benchmarks for office buildings. This seems a sensible approach, as the commercial use (Class E) represents the largest proportion of the proposed development's GIA.</p> <p>In addition, individual WLCA performance of High Holborn, Vine Lane and West Central St. are compared to residential benchmarks.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA GLA Template for the wide site – v1a</li> <li>• WLCA GLA Template for 1 Museum Street – v5a</li> <li>• WLCA GLA Template for High Holborn – v4a</li> <li>• WLCA GLA Template for Vine Lane – v4a</li> <li>• WLCA GLA Template for West Central St. – v4a</li> </ul>
Reference standard	
<p><u>Reference standard – Clause 2.4.4</u></p> <p>In developing a WLC assessment, applicants should follow BS EN 15978:2011. This is the standard UK framework for appraising the environmental impacts of the built environment.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clause 3.1</li> </ul>

WLCA GLA Requirements	Evidence of compliance
<p><u>Reference standard – Clause 2.4.4</u></p> <p>The RICS Professional Statement: Whole Life Carbon assessment for the built environment (the RICS PS) should be used as the methodology for assessment.</p>	<p><input checked="" type="checkbox"/> <b>Compliant</b></p> <p><input type="checkbox"/> Non-Compliant</p> <p><input type="checkbox"/> Clarifications required</p> <p><input type="checkbox"/> N/A</p> <p>The WLCA of the proposed redevelopment seems well aligned with the methodology proposed by the 1<sup>st</sup> edition of the RICS PS (2017).</p> <p>Compliance against RICS requirements has been also checked by Greengage Environmental Ltd, as part of their third-party verification process.</p> <p>Evidence of compliance:</p> <ul style="list-style-type: none"> <li>• WLCA Report – Clauses 3.1 and 3.4</li> <li>• WLCA Report – Appendix A</li> </ul>



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