# embodied carbon emissions

### Credit 19

### Design Review Submission ☐ As Built Submission ☐

|  |  |  |  |
| --- | --- | --- | --- |
| Total Points available: | 11 | Points claimed: | [#] |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Criteria** | **Description** | Points Available | Points Claimed |
| **19.1** | **Conditional Requirement – 4 Star** | A minimum reduction in upfront carbon emissions of 10% is required to achieve 4 Star Green Star rating | Conditional Requirement | [Y/N] |
| **Conditional Requirement – 5 Star** | A minimum reduction in upfront carbon emissions of 10% is required to achieve 5 Star Green Star rating | Conditional Requirement | [Y/N] |
| **Conditional Requirement – 6 Star** | A minimum reduction in upfront carbon emissions of 15% is required to achieve a 6 Star Green Star rating | Conditional Requirement | [Y/N] |
| **19.1A** | **Upfront Carbon Reduction – Absolute Value Pathway** | Reductions in upfront carbon relative to an absolute value. | 6 | [#] |
| **19.1B** | **Upfront Carbon Reduction – Reference Building Pathway** | Reductions in upfront carbon relative to a reference building | 6 | [#] |
| **19.2** | **Comparative Life Cycle Assessment** | Whole-of-building, whole-of-life (cradle to grave) comparative Life Cycle Assessment (LCA) is conducted and relevant reductions in Life Cycle Impacts are achieved relative to an appropriate reference building. | 3 | [#] |
| **19.3** | **Long-term Carbon Storage** | Incorporation of long-term Carbon storage into built project | 2 | [#] |

## Project-specific technical questions (formerly tcs and cirs)

|  |  |
| --- | --- |
| There are no project-specific Technical Questions for this credit. |  |
| There are project specific Technical Questions for this credit and all responses received from the NZGBC are attached. |  |

19.1 conditional requirement

The project has met the conditional requirement achievement with the reduction of upfront carbon emissions in comparison to

|  |  |
| --- | --- |
| 19.1A A pre-determined absolute value |  |
| 19.1B A reference building |  |

Upfront carbon emissions are calculated by

|  |  |
| --- | --- |
| Using the Green Star Life Cycle Impacts Calculator |  |
| Modelling the proposed building following the methodology of the 19.2 Comparative Life Cycle Assessment for modules A1 – A5 |  |

Provide a short description of the project building.

Provide a short description of the reference building when 19.1B is targeted

Provide a summary of the impact reducing initiatives that have been included in project design.

For a claim of 30% reduction in upfront carbon emissions or greater, please describe how quality assurance requirements are met by the project team.

|  |  |
| --- | --- |
| Cost for labour is included in the calculation for all the products and materials | [Y/N] |
| Cost for transport is included in the calculation for all the products and materials | [Y/N] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

19.1A aBSOLUTE VALUE PATHWAY

|  |  |
| --- | --- |
| Upfront carbon emissions (A1-A5) of the proposed building as calculated from the Green Star Life Cycle Impacts Calculator or from the project specific LCA model | [##]kg CO2e/m2 |
| The percentage of reduction in upfront carbon emissions compared to the pre-determined absolute value | [%] |
| A *Green Star – Design & As Built Embodied Carbon Calculator* showing the upfront carbon emissions of the proposed building is included within this submission. |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

19.1b reference building pathway

The project has demonstrated appropriate reductions in upfront carbon emissions relative to an accepted reference building:

|  |  |
| --- | --- |
| 19.1B.A. Standard practice reference building |  |
| 19.1B.B. Actual reference building |  |
| Upfront carbon emissions (A1-A5) of the proposed building as calculated from the Green Star Life Cycle Impacts Calculator or from the project specific LCA model | [##]kg CO2e/m2 |
| Upfront carbon emissions (A1-A5) of the reference building as calculated from the Green Star Life Cycle Impacts Calculator or from the project specific LCA model | [##]kg CO2e/m2 |
| The percentage of reduction in upfront carbon emissions compared to the reference building | [%] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

19.1A&19.1B Offsetting demolition works

This section needs to be completed when points are targted under 19.1. It doesn’t apply to the conditional requirement.

|  |  |
| --- | --- |
| Is there any existing building demolished for the construction? | [Y/N] |
| The age of the demolished existing building | [##] |
| If the demolished building is less than 60 years old, please provide the upfront carbon emissions (A1-A5) of the existing building as calculated from the Green Star Life Cycle Impacts Calculator or from the project specific LCA model | [##]kg CO2e/m2 |
| The amount of embodied emissions that need to be offset for the demolished portion. | [##]kg CO2e/m2 |
| Have the upfront emissions (A1-A3) of the demolished materials and the demolition process (module C1-C4) been offset through the purchase of verified carbon credits? | [Y/N] |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

Provide the calculation of embodied carbon emissions that need to be offset for the demolished portion.

19.2 COMPARATIVE LIFE CYCLE ASSESSMENT

|  |  |
| --- | --- |
| The project has undertaken a whole-of-building and whole-of-life comparative LCA (modules A-D) in conformance with EN 15978. |  |
| Embodied carbon emissions (modules A-D) of the proposed building as calculated from the Green Star Life Cycle Impacts Calculator or from the project specific LCA model | [##]kg CO2e/m2 |
| Embodied carbon emissions (modules A-D) of the reference building as calculated from the Green Star Life Cycle Impacts Calculator or from the project specific LCA model | [##]kg CO2e/m2 |
| Percentage of reduction in life cycle impacts as reported in the LCA | [%] |
|  |  |

The Reference Building used for LCA comparison of buildings was:

|  |  |
| --- | --- |
| A Standard Practice Reference Building |  |
| An Actual Reference Building |  |

Provide a short description of the project building.

Provide a short description of the reference building.

Provide a summary of the impact reducing initiatives that have been included in project design.

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

### LCA practitioner and peer review Details

|  |  |
| --- | --- |
| Name and details of the LCA practitioner: | [####] |
| Summary of experience of the LCA practitioner: | [####] |
| Name and details of the Peer Reviewer: | [####] |
| Summary of experience of the Peer Reviewer: | [####] |

### Outcome of the Peer Review

|  |  |
| --- | --- |
| The peer review investigated whether:   * The LCA conforms to the requirements and intent of this credit, including (but not limited to) appropriateness of scope. * The Interpretation section of the LCA report explains the validity of any claims of LCA consideration in the design and construction of the building. * The methods used to carry out the LCA were consistent with ISO 14040 and 14044. * The methods used to carry out the LCA were scientifically and technically valid. * The data used were appropriate and reasonable in relation to the goal of the LCA. * The interpretations reflected the limitations identified and the goal of the LCA. * The LCA report is transparent and consistent. |  |
| The peer reviewer has confirmed that the LCA report reviewed is the same LCA report (including any revisions) that has been provided for assessment. |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

19.3 Long term carbon storage

|  |  |
| --- | --- |
| The amount of atmospheric carbon stored in the project for a forecasted period of at least 50 years | [##] kg CO2/m2 |

Provide a summary of materials that contribute to the long-term carbon storage in the project

The timber recognised for long term carbon storage has the following certification:

|  |  |
| --- | --- |
| Forest Stewardship Council (FSC). |  |
| Programme for the Endorsement of Forest Certification (PEFC) |  |
| Responsible Wood chain of custody certification |  |

Provide a short description of how the long-term carbon storage is calculated for the project.

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation** (Name / title / description of document) | **Reference** (Page no. or section) |
| [####] | [####] |
| [####] | [####] |

DISCUSSION

Outline any issues you would like to highlight and clarify with the Certified Assessor(s).

## DECLARATION

I confirm that the information provided in this document is truthful and accurate at the time of completion.

Provide author details, including name, position and email address:

[Date]

––– **Report end** –––