Circular Letter No.: 2023.190

Issue Date: 15 December 2023

Application: BEAM Plus NB Version 2.0

Effective Date: 15 December 2023

MW 10 Life Cycle Assessment

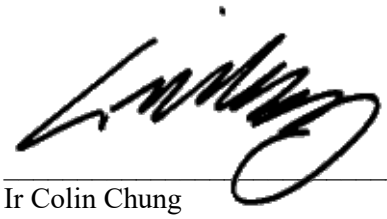
1. The Technical Circular Letter hereby announces an update to the credit content for **MW 10 Life Cycle Assessment** under BEAM Plus NB v2.0.

2. The aims of the update are to (i) include the **Carbon Assessment Tool under iBEAM Unison Toolset** as one of the accepted study tools for the assessment and (ii) introduce an additional BONUS credit for project conducting a **full embodied carbon assessment** of construction materials and carbon emissions of on-site construction process to incentivise projects in studying embodied carbon during the construction stage.

3. The requirements given in Section 1.3 and Section 4.3 of the BEAM Plus NB v2.0 Manual (2023 Edition) are hereby updated with the enclosures in Annex A and Annex B of this Technical Circular Letter respectively.

    - Pages Annex A-1 to A-2 shall replace all contents in Section 1.3 Summary of Credits specified in Pages 25 to 26 of the Manual; and

    - Pages Annex B-1 to B-3 shall replace all contents in Section 4.3 on MW 10 specified in Pages 235 to 236 of the Manual.



Ir Colin Chung
Chairperson of Standards Sub-committee

Annex A:
Updated Credit Content for Section 1.3 under BEAM Plus NB v2.0

	Section	Credit Requirement	Extent of Application	Credit
		(b) Rapidly renewable materials 1 BONUS credit for demonstrating 5% of all building materials/ products of interior non-structural components in the project is rapidly renewable materials. For exemplary performance, 1 additional BONUS credit for demonstrating 25% of all building materials/ products of interior non-structural components in the project is rapidly renewable materials.		
MW 10	Life Cycle Assessment	1 credit for demonstrating the environmental performances in the major elements of the building structure of the building has been studied and optimised through a Life Cycle Assessment (LCA). Alternatively, 1 credit for demonstrating the embodied carbon in the major elements of the building structure of the building has been studied and optimised through an embodied carbon assessment. 1 additional BONUS for demonstrating the full embodied carbon of construction materials and carbon emissions of on-site construction processes has been studied through an embodied carbon assessment.	All buildings	1 + 1 additional BONUS
MW 11	Adaptability and Deconstruction	(a) Spatial Adaptability 1 credit for designs providing spatial flexibility that can adapt spaces for different uses and allows for expansion to permit additional spatial requirements to be accommodated. Alternatively, (b) Flexible Engineering Services 1 credit for flexible design of services that can adapt to changes of layout and use.	All buildings	1 + 1 additional BONUS

	Section	Credit Requirement	Extent of Application	Credit
		Alternatively, (c) Structural Adaptability 1 credit for designs providing flexibility through the use of building structural systems which allow for change in future use, and which is coordinated with interior planning modules. 1 additional BONUS credit for compliance with requirements listed in sub-item (a), (b) and (c).		
MW 12	Enhanced Waste Handling Facilities	(a) Additional Recyclables Collection 1 credit for the provision of facilities for collection, sorting, storage and disposal of 2 other recyclable streams in addition to those described in MW P1. (b) Additional Facility Provisions to Enable enhanced Municipal Solid Waste (MSW) Charing Scheme 1 credit for additional facilities for collection, sorting, storage and disposal of recyclables in addition to those described in MW P1 and MW12 part (a). (c) Waste Treatment Equipment 1 BONUS credit for providing at least one set of waste treatment equipment. (d) Alternatives to Recycling Facilities 1 BONUS credit for providing alternative means of waste collection systems.	All buildings except one single family domestic building with not more than 3 floors, or domestic part of a composite building for one single family with not more than 3 floors, or a building not normally occupied or for transient stay (e.g. pump house, sewage treatment plant, carpark building) Part (b) is applicable only when Municipal Solid Waste Charging Scheme is activated	2 + 2 BONUS

Annex B:
Updated Credit Content for Section 6.1 under BEAM Plus NB v2.0

4 Materials and Waste **4.3 Selection of Materials**

MW 10 Life Cycle Assessment

Extent of Application All buildings

Objective Encourage the design and planning of structural elements, choice of materials and construction processes that results in lower environmental effects/ embodied carbon.

Credits Attainable 1 + 1 additional BONUS

Credit Requirement 1 credit for demonstrating the environmental performances in the major elements of the building structure of the building has been studied and optimised through a Life Cycle Assessment (LCA).

Alternatively,

1 credit for demonstrating the embodied carbon in the major elements of the building structure of the building has been studied and optimised through an embodied carbon assessment.

1 additional BONUS for demonstrating the full embodied carbon of construction materials and carbon emissions of on-site construction processes has been studied through an embodied carbon assessment.

Assessment

1. Demonstrate the reduced environmental effects/ embodied carbon by conducting a Life Cycle Assessment (LCA)/ embodied carbon assessment on a baseline case, justified by the Applicant, and the proposed case.

2. The LCA/ embodied carbon assessment should cover only the elements and materials used in the building foundations, walls, primary and secondary structures and building façade, and does not include the building services system.

3. The service life of the baseline and proposed cases should be the same and at least of 50 years. The same software tools and data sets should be used to evaluate both the baseline building and the proposed building, and report all the listed impact categories. Data sets must be compliant with ISO 14044.

4. Life Cycle Assessment (LCA)

   4.1. In lieu of the above requirements, the LCA tool developed by EMSD can also be used. Select at least three (3) of the following impact categories for reduction:

      i. Global warming potential (greenhouse gases), in CO_2e;

      ii. Depletion of the stratospheric ozone layer, in kg CFC-11;

      iii. Acidification of land and water sources, in moles H^+ or kg SO_2;

      iv. Eutrophication, in kg nitrogen or kg phosphate;

      v. Formation of tropospheric ozone, in kg NO_x or kg ethene; and

vi. Depletion of non-renewable energy resources, in MJ.

5. Embodied Carbon Assessment

5.1. Alternatively, demonstrate that the materials used for (a) permanent works-substructure and (b) permanent works - superstructure have lower embodied carbon in the proposed case than the baseline case, with the result of the study generated from the "Design Input" module of the CIC Carbon Assessment Tool or “Embodied Carbon” module of the iBEAM Unison Carbon Assessment Tool or similar assessment tool.

6. The LCA/ embodied carbon assessment should be conducted during the design stage.

6.1. For the assessment using tools other than the iBEAM Unison Carbon Assessment Tool, the study covering the foundation components should be completed prior to the commencement of piling works, and the study covering the superstructure, structural elements of facades and other remaining components of the building structures should be completed prior to the commencement of superstructure works.

6.2. The assessment using the iBEAM Unison Carbon Assessment Tool, which utilise the material data from structural BIM model to perform embodied carbon calculation, should be completed prior to the commencement of superstructure works.

7. The LCA report/ embodied carbon assessment report should at least include the following contents with a minimum of 6 A4 pages:

7.1. Quantity of the building materials;

7.2. Narrative detailing on how the design of structural elements between the baseline case and proposed case enable a reduction in environmental effects/ embodied carbon;

7.3. Assumptions made;

7.4. Methodologies;

7.5. Screenshots of input parameters;

7.6. Results; and

7.7. Conclusions.

The endorsement for LCA report/ embodied carbon assessment report by the Structural Engineer or Quantity Surveyor is not required in BEAM Plus New Buildings assessment.

8. The structural drawings or BIM models for the baseline scheme and proposed scheme shall be provided to illustrate the structural design.

9. Additional BONUS credit will be granted for providing a full embodied carbon assessment report inclusive of (a) permanent works – substructure, (b) permanent works – superstructure, (c) temporary works and (d) site impact using the “Construction Input” module of the CIC Carbon Assessment Tool or similar assessment modules.

Provide extract of tender documents (e.g. specification) highlighting the clause requiring the contractors to carry out the embodied carbon assessment for (c) temporary works and (d) site impact if construction (foundation to be included, if any) has not yet commenced or have commenced but not yet completed prior to PA stage, to demonstrate the commitment to conduct the study throughout the construction period.

Submittals

Supporting Documents *Please provide softcopies with filename prefix as indicated on the leftmost column below.*		**PA**	**CA**	**FA/ RFA**
MW_10_00	BEAM Plus NB submission template for MW 10	✓	✓	✓
MW_10_01	LCA report/ embodied carbon assessment report for building structure	✓	✓	✓
MW_10_02	Structural drawings or BIM models	✓	✓	✓
MW_10_03	Embodied carbon assessment report during construction stage, with supporting information on the construction data [or] Extract of tender documents (e.g. specification) highlighting the clause requiring the contractors to carry out the embodied carbon assessment during construction stage (for additional BONUS only)	✓* ✓	✓ -	✓ -
* Evidence of compliance with credit requirements for construction works started not less than 3 months prior to PA (first submission) shall be submitted in PA.				

Remarks

(a) Additional Information

None

(b) Related Credit

None