

NABERS Embodied Emissions Report

PROJECT NAME: OSG Schgool Lithgow

ADDRESS: Lot 1 Magpie Hollow Road
South Bowenfels, NSW
2790

CLIENT: Dezin

CLASS: 9b

DOCUMENT CONTROL

PREPARED BY: WD/TC

CHECKED BY: TC

ISSUE: FINAL

REVISION: 1

DATE: 22/03/24



Table of Contents

1 - Introduction	3
1.1 - NABERS Embodied Emissions Material Form	3
1.2- Report scope	4
1.3 - Referenced Documents	4
2 - Project Details	5
2.1 – Project Classification and Climate Zone	5
2.2 – Proposed Development and building elements nomenclature	6
3 - Embodied Emissions Material Form	9
3.1 – Work Sheet 1 – Building Information	9
3.2 – Work sheet 2 – Quantity of Materials	10
3.3 – Work sheet 3 – Certifier Details	11
4 - Report Recommendations	12
5 - Statement of Embodied Emissions reporting	13

1 - Introduction

The objective of the Embodied Emission Report is to disclose the embodied emissions of key materials that are required for non-residential developments from 1st/October 2023.

The use of Embodied Emissions Material Form is an interim instrument before the NABERS Embodied Emission Tool becomes the required format of reporting when the NABERS framework is released in mid-2024.

The quantities of key materials and associated embodied emissions at the development application and construction certificate stages, or when applying for a residential complying development certificate.

This report will provide the NSW government access to data to enable oversight of modelled operational emissions water use or embodied emissions performance for new non-residential buildings under State Environmental Planning Policy Sustainable Buildings 2022 (SB SEPP).

1.1 - NABERS Embodied Emissions Material Form

The NABERS Embodied Emissions Material Form has been developed by the National Australian Built Environment Rating System [NABERS] team to enable Applicants to input quantities of key construction materials used in a development. Until mid-2024, this form will be considered satisfactory for meeting the requirements of sections 35B clause (3) and 10A clause (4) of the EP&A Regulations.

The building components and key construction materials to be reported on will be itemised in the tool which will automatically convert the quantities into embodied emissions factors.

The total embodied emissions for the development, measured in kgCO₂-e/m², will be calculated by summing up the emissions from the provided materials. These emissions factors are derived from Environmental Product Declaration (EPDs). Emissions factors for materials that don't have EPDs will be conservative estimates, based on a review of available data. It will preference process life cycle assessment data from EPDs where this is available (e.g. timber concrete, steel). Hybrid data will be considered where there is a lack of suitable process data (e.g. facade assemblies and building services).

What materials are included? Embodied emissions reporting for non-residential development encompasses the whole building. At a minimum, 80% of materials must be quantified, including: - Substructure (foundations, ground-bearing slabs, basement retaining walls etc) - Superstructure (suspended floors, structural walls, columns, beams etc) - Envelope (cladding, curtain walls, roofing, windows, doors etc) - Permanent internal walls and doors. - External works (hard landscaping and vehicle trafficable surfaces). In addition, cost material amounts (excluding labour, plant, equipment, margins and taxes) must be entered for: - Fit-out, for items delivered as part of the primary building contract - Core services (mechanical, electrical, plumbing etc) required to run the core building services.

1.2– Report scope

The scope of this report is limited to the design documentation referenced in Section 2 of this report and the methodology employed as per Chapter 3 of the SB SEPP and amendments to Section 35B of the EP&A regulation and Section 10A of the EP&A (Development Certification and Fire safety) Regulation.

The proposed development is located at Lot 1 Magpie Hollow Road, South Bowenfels, NSW 2790.

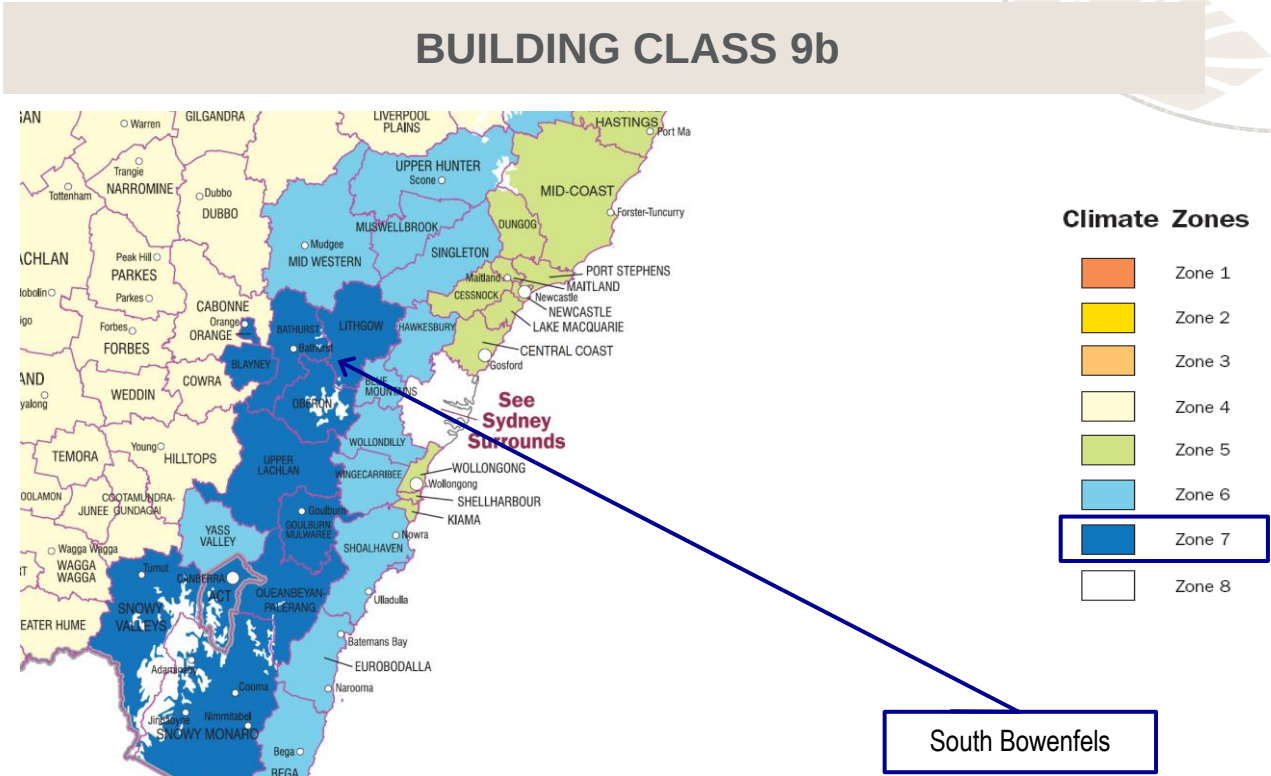
1.3 - Referenced Documents

The following documents and design plans have been referenced in compilation of this report:

1. Architectural Plans listed below provided by “Tim Pridham” and received by Certified Energy at 31/01/2024.
 - DACC 01, Cover page, Revision S, Dated 25/01/2024
 - DACC 02, Site plan, Revision S, Dated 25/01/2024
 - DACC 03, Floor plans, Revision S, Dated 25/01/2024
 - DACC 04-05, Site Elevations 1-4, Revision S, Dated 25/01/2024
 - DACC 06, Learning Centre - Ground Floor Plan, Revision S, Dated 25/01/2024
 - DACC 07, Learning Centre - First Floor Plan, Revision S, Dated 25/01/2024
 - DACC 08-09, Learning Centre, Elevation 1-4, Revision S, Dated 25/01/2024
 - DACC 10, Learning Centre – Sections AA & BB, Revision S, Dated 25/01/2024
 - DACC 11, Gymnasium - Ground Floor Plan, Revision S, Dated 25/01/2024
 - DACC 12, Gymnasium - First Floor Plan, Revision S, Dated 25/01/2024
 - DACC 13-14, Gymnasium – Elevations 1-4, Revision S, Dated 25/01/2024
 - DACC 15, Gymnasium - Sections AA & BB, Revision S, Dated 25/01/2024
 - DACC 17, Landscape Plan, Revision S, Dated 25/01/2024
 - DACC 18, Site Sections, Revision S, Dated 25/01/2024
 - IFC 3D Model – Dated 11/03/2024
2. Email correspondence and response to information request received from “Tim Pridham” in relation to the Proposed Development.

2 - Project Details

2.1 – Project Classification and Climate Zone



CLIMATE	COLOUR	SUBURB
ZONE 7	DARK BLUE	SOUTH BOWENFELS

Climate Characteristics of Zone 7

Cool Temperate

- Low humidity, high diurnal (day-night) temperature range
- Four distinct seasons: summer and winter exceed human comfort range; highly variable spring and autumn conditions (range increasing with climate change)
- Cold to very cold winters with majority of rainfall (decreasing with climate change)
- Hot dry summers (increasing with climate)

Key Design Objectives

- Maximise the use north-facing walls and passively shaded glazing
- Minimise external wall areas, especially east and west

2.2 – Proposed Development and building elements nomenclature

The following construction elements are being proposed in the building design according to architectural plans and design documents referenced in this report:

Structure:

1. Concrete in-situ: >10 MPa to ≤20 MPa, >20 MPa to ≤32 MPa, >32 MPa to ≤40MPa, >50 MPa to ≤60 MPa
2. Reinforcing steel: Bar & mesh
3. Structural steel: Hot Rolled, Cold rolled

Envelope:

1. Roof cladding: Profiled steel
2. Wall cladding: Mortar and Render, Profiled steel
3. Windows and doors: Aluminium frame Single glazed, Others: Opaque doors
4. Insulation: Glass wool / fibreglass
5. Other:
 - a. Opaque Louvre,
 - b. Aluminium Louvre blades,
 - c. Louvre Frame,
 - d. Plasterboard ceiling,
 - e. Internal stairs balustrade Handrails,
 - f. Internal stairs balustrade glazed panels,
 - g. Tilt-up panels,
 - h. Prefinished Cladding,
 - i. Selected Cladding

Permanent internal walls and doors:

1. Internal walls: Steel (light framing), Plasterboard
2. Other:
 - a. Aluminium opaque Doors,
 - b. Windows
 - c. Commercial Vinyl
 - d. Carpet tiles

Services:

1. Mechanical services
2. Vertical transportation
3. Electrical services
4. Plumbing/hydraulic services
5. Fire services
6. Other:
 - a. Storm water treatment

External works:

1. Concrete in-situ: >10 MPa to ≤20 MPa, >20 MPa to ≤32 MPa, >32 MPa to ≤40 MPa
2. Reinforced steel: Bar & mesh
3. Structural steel
4. Other:
 - a. Fences,
 - b. Metal screen for stairs,
 - c. Stairs handrails,
 - d. Downpipes,
 - e. Gutter,
 - f. Fascia Board

Building scope Note:

 Legend: Scope of this report

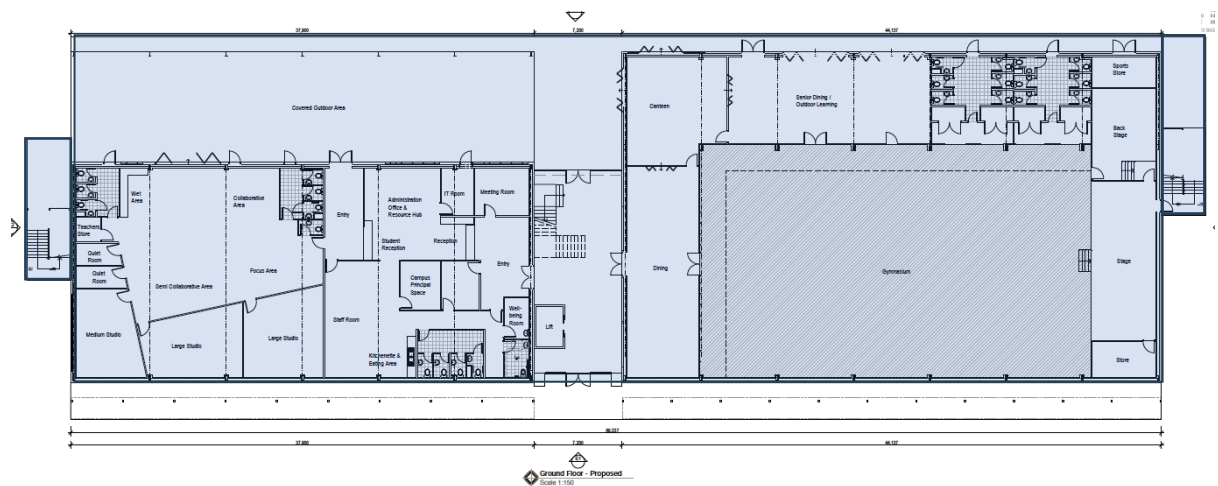


Figure 1 – New Construction - Proposed Ground floor plan

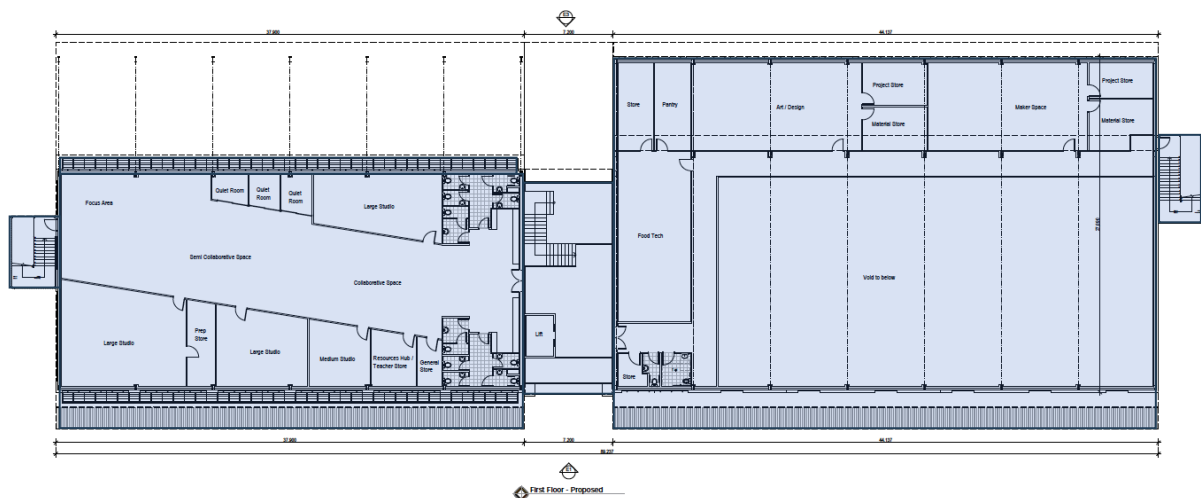


Figure 2 – New Construction - Proposed First floor plan

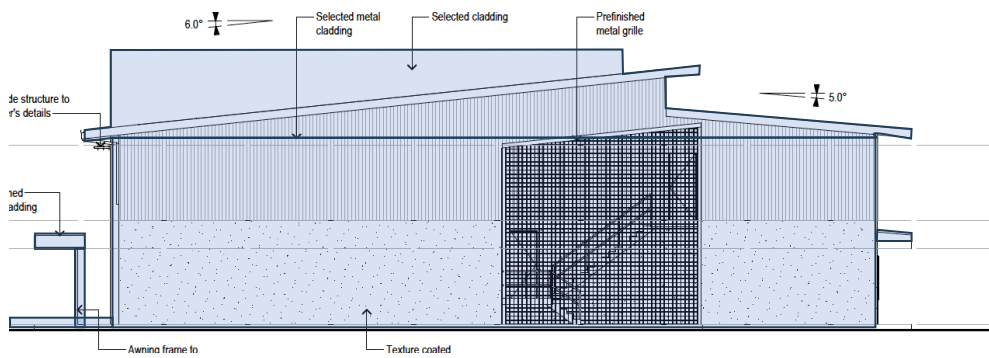


Figure 3 – New Construction – Site Elevation 4



Figure 4 – New Construction – Landscape plan

3 - Embodied Emissions Material Form

3.1 – Work Sheet 1 – Building Information

Step 1: About the building

Fill out blue cells

Building location and site data	Value	Unit
Building address	Lot 1 Magpie Hollow Road South Bowenfels	
Postcode	2790	
Town/city	BEN BULLEN + 44 other localities	
Distance to nearest major city/town	137	km
Project stage	Development Application	
New build or major renovation?	New build	
Brownfield or greenfield site?	Greenfield	

Floor area by NCC building classification	Gross (GFA)	Net (NLA/NSA/UFA)	Unit
Please enter all floor areas relevant to your building. Leave areas blank if not applicable. Please enter Gross Floor Area (GFA) for all building classifications. Please also enter the corresponding net area (Net Lettable Area, Net Sellable Area or Usable Floor Area) where it is commonly used for that building classification.			
Class 1a: Detached residential buildings			m²
Class 1b: Boarding houses and hostels			m²
Class 2: Multi-unit residential buildings			m²
Class 3: Other residential buildings			m²
Class 4: Residential inside non-residential			m²
Class 5: Office buildings			m²
Class 6: Retail buildings			m²
Class 7a: Carparks	1	1,963	m²
Class 7b: Warehouse-type buildings			m²
Class 8: Industrial buildings			m²
Class 9a: Healthcare buildings			m²
Class 9b: Civic buildings	1	2,762	m²
Class 9c: Aged care and personal care buildings			m²
Class 10a: Non-habitable buildings			m²
Class 10b: Miscellaneous structures			m²
Class 10c: Bushfire shelters			m²
Total	2	4,725	m²

Project information	Value	Unit
Total cost of project	10,000,000	AUD excl. GST
Building design life	50	years
Estimated envelope life	50	years
Estimated replacement cycle for mechanical services	20	years
Estimated replacement cycle for vertical transportation	50	years

Dimensions of the building and the site	Value	Unit
Site area	11,000	m²
Shared services or infrastructure	No	
Building footprint area	2,792	m²
Typical floor area (if different to building footprint area)	0	m²
Typical floor perimeter	235	m
Area of external carpark (not included in GFA)	1,963	m²
Area of external hardstand (not included in GFA)	864	m²
Area of other hard landscaping (not included in GFA)	0	m²
Number of floors/storeys above ground, including ground floor	2	no.
Number of floors/storeys below ground	0	no.
Number of floors/storeys of car parking	1	no.
Total height above ground	10	m

Structural material choices	Value	Unit
Foundation type	Slab-on-ground	
Frame type (dominant)	Steel	
Suspended floor type (typical)	Reinforced concrete	
Describe low carbon materials specified in your building (e.g. green concrete, low carbon bricks)		
Describe recycled content specified in your building (e.g. recycled steel)		

3.2 – Work sheet 2 – Quantity of Materials



Step 2: Quantity of materials

Complete all blue cells that are applicable to the building. **Leave items that aren't applicable blank.**

Fill out blue cells

Material category	Sub-category 1	Sub-category 2	Sub-category 3	Value	Unit of measure	Comment	AQIS ACMM Code	ICMS3 (Level 3 Codes Construction)
Structure								
The structural parts of the building that are below ground (substructure) and above ground (superstructure). This includes fill below the substructure, foundations, basement levels, suspended floors, wall structure, roof structure, stairs, lift shafts and balconies. It excludes external areas such as handstands, carparks, pawns, etc.								
Coverage of structural material spend	-	-	-	80	%	Required: Coverage of <u>aggr</u> for structural elements entered below Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Concrete in-situ	<10 MPa	-	-	m ³		Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>10 MPa to <20 MPa	-	-	14.2	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>20 MPa to <32 MPa	-	-	547.2	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>32 MPa to <40 MPa	-	-	277.7	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>40 MPa to <50 MPa	-	-		m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>50 MPa to <60 MPa	-	-	15.7	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>60 MPa to <80 MPa	-	-		m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>80 MPa to <100 MPa	-	-		m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>100 MPa	-	-		m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete pre-cast panel	-	-	-		m ²	Please enter reinforcing steel in relevant line items below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB or 02-11	02 or 03
Concrete block	Hollow core	-	-		m ³	Enter as <u>public metres</u> , calculated as (area in m ²) * (thickness in mm / 1000). Please include all block fill concrete and all reinforcing steel in relevant line items above/below.	01_SB	02 or 03
Concrete block/brick	Solid	-	-		m ³	Enter as <u>public metres</u> , calculated as (area in m ²) * (thickness in mm / 1000)	01_SB	02 or 03
Concrete block/brick	Solid AAC	-	-		m ³	Solid Aerated Autoclaved Concrete (AAC) block.	01_SB	02 or 03
Mortar	-	-	-		kg	Enter as <u>public metres</u> , calculated as (area in m ²) * (thickness in mm / 1000).	01_SB	02 or 03
Reinforcing steel	Bar & mesh	-	-	100 699	kg	Include all reinforcing steel bar/mesh in the building's structure in this row. Usually this is calculated as kg/m ² per concrete element and then summed. Example: 10 m ² of 40 MPa concrete @ 100 kg/m ² = 3 m ³ of 50 MPa concrete @ 150 kg/m ² = 1 750 kg reinforcing steel.	01_SB or 02-11	02 or 03
Reinforcing steel	Fibre & strand	-	-		kg	Include all steel fibre reinforcing and steel strand in the building's structure in this row.	01_SB or 02-11	02 or 03
Structural steel	Hot rolled structural	-	-	37	t	Examples include universal beams, universal columns and welded beams	01_SB	02 or 03
Structural steel	Cold formed structural	-	-	0.6	t	Examples include C purlins, Z purlins and all light gauge steel framing	01_SB	02 or 03
Structural steel	Other welded structural	-	-		t		01_SB	02 or 03
Structural steel	Plate	-	-		t		01_SB	02 or 03
Structural steel	Sheet	-	-		t	Include any allowance for connections here	01_SB	02 or 03
Stainless steel	-	-	-		t		02_11	02 or 03
Reinforced concrete piles	Concrete	-	-		m ³	Primarily for engineered timber structure connections Please enter reinforcing steel in the line below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Reinforced concrete piles	Steel reinforcing	-	-		kg	If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Steel piles	-	-	-		t	Where concrete and reinforcing steel are also used, enter these in the rows above.	01_SB	02 or 03
Timber poles/piles	-	-	-		t	Where concrete and reinforcing steel are also used, enter these in the rows above.	01_SB	02 or 03
Timber (solid)	Sawn softwood	-	-		m ³	Where concrete and reinforcing steel are also used, enter these in the rows above.	02_11	02 or 03
Timber (solid)	Sawn hardwood	-	-		m ³		02_11	02 or 03
Timber (engineered)	CLT	-	-		m ³		02_11	02 or 03
Timber (engineered)	Glulam	-	-		m ³		02_11	02 or 03
Timber (engineered)	LVL	-	-		m ³		02_11	02 or 03
Timber (engineered)	OSB	-	-		m ³	Enter as <u>public metres</u> , calculated as (area of wall in m ²) * (thickness in mm / 1000)	02_11	02 or 03
Brick	Heat cured	-	-		m ³	Enter as <u>public metres</u> , calculated as (area of wall in m ²) * (thickness in mm / 1000)	02_11	02 or 03
Structural Insulated Panel (SIP)	Steel outer	-	-		m ²		01_SB	02 or 03
Structural Insulated Panel (SIP)	Aluminium outer	-	-		m ²		01_SB	02 or 03
Structural Insulated Panel (SIP)	Engineered timber outer	-	-		m ²		01_SB	02 or 03
Fill	-	-	-		t	Include purchased material only. Exclude site-won material.	01_SB	01
Sand & gravel	-	-	-		t	Include purchased material only. Exclude site-won material.	01_SB	01
Waterproofing membrane	Bituminous	-	-		m ²	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	01_SB	01 or 02 or 03
Waterproofing membrane	Polyethylene	-	-		m ²		01_SB	01 or 02 or 03
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Envelope								
The skin of the building that separates the internal building from the external environment. This includes the roof cladding, wall cladding, windows, doors and internal/external shading. It also includes insulation and the internal wall lining of envelope walls.								
Coverage of envelope material spend	-	-	-	80	%	Required: Coverage of <u>aggr</u> for the envelope items you have entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Roof cladding	Profiled steel	-	-	2 778	m ²	Enter as m ² of roof area. Exclude allowances for overlap in the roofing sheets. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanneal steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	05_RF	03 or 04
Roof cladding	Profiled aluminium	-	-		m ²	Enter as m ² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted aluminium sheets.	05_RF	03 or 04
Roof cladding	Profiled zinc	-	-		m ²	Enter as m ² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted zinc sheets.	05_RF	03 or 04
Roof cladding	Membrane	-	-		m ²	Enter as m ² of roof area. Exclude allowances for overlap in the membrane sheets.	05_RF	03 or 04
Roof cladding	Tiles (traditional clay)	-	-		m ²	Enter as m ² of roof area. Exclude allowances for overlap between the tiles.	05_RF	03 or 04
Roof cladding	Tiles (concrete)	-	-		m ²	Enter as m ² of roof area. Exclude allowances for overlap between the tiles.	05_RF	03 or 04
Roof cladding	Other (Please describe >>)		-		m ²	Please enter a description for any roofing that does not fit a predefined classification	05_RF	03 or 04
Wall cladding	Bricks (heat cured)	-	-		m ²	Enter as m ² of wall area. Heat-cured bricks use a kiln or furnace to raise the brick temperature above ambient temperature during curing process.	06_EW	03 or 04
Wall cladding	Bricks (air dried)	-	-		m ²	Enter as m ² of wall area. Air-dried bricks are cured using ambient temperature.	06_EW	03 or 04
Wall cladding	Bricks (under fired)	-	-		m ²	Enter as m ² of wall area.	06_EW	03 or 04
Wall cladding	Bricks (concrete)	-	-		m ²	Enter as m ² of wall area.	06_EW	03 or 04
Wall cladding	Mortar and render	-	-	18 540	kg	Enter as m ² of wall area.	06_EW	03 or 04
Wall cladding	Profiled steel	-	-		m ²	Enter as m ² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanneal steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	06_EW	03 or 04
Wall cladding	Profiled aluminium	-	-	725.79	m ²	Enter as m ² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted aluminium sheets.	06_EW	03 or 04
Wall cladding	Profiled zinc	-	-		m ²	Enter as m ² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted zinc sheets.	06_EW	03 or 04
Wall cladding	GRC cladding	-	-		m ²	Enter as m ² of wall area. GRC = Glass Reinforced Concrete.	06_EW	03 or 04
Wall cladding	Timber weatherboards	-	-		m ²	Enter as m ² of wall area. Exclude allowances for overlap between weatherboards, offcuts, etc.	06_EW	03 or 04
Wall cladding	Fibre cement board	-	-		m ²	Enter as m ² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Terra-cotta	-	-		m ²	Enter as m ² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Brick tiles / veneers	-	-		m ²	Enter as m ² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Plasterboard	-	-		m ²	Enter as m ² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Plywood	-	-		m ²	Enter as m ² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Other (Please describe >>)		-		m ²	Please enter a description for any wall cladding that does not fit a predefined classification	06_EW or 12_WF	03 or 04
Windows & doors	Aluminium frame	Single glazed	-	410	m ²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Double glazed	-		m ²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Triple glazed	-		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Single glazed	-		m ²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Double glazed	-		m ²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Triple glazed	-		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Single glazed	-		m ²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Double glazed	-		m ²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Triple glazed	-		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Single glazed	-		m ²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Double glazed	-		m ²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Triple glazed	-		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Other (Please describe >>)	Opaque Doors	-	7	m ²	Please enter a description for any windows or doors that do not fit a predefined classification	07_WW or 08_ED	03 or 04
Curtain wall	Single skin façade	Glazed panel	Single glazed		m ²	Please declare all single-skin façade area in this section. All double-skin façade area should be entered in the next section. Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Double glazed		m ²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Aluminium cladding		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	GRC cladding		m ²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Insulated shadow box		m ²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Brick cladding		m ²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Stone cladding		m ²		06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Single glazed		m ²	Please declare all double-skin façade area in this section. Please declare as the area of the curtain wall and do not enter the inner and outer skins twice.	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Double glazed		m ²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Triple glazed		m ²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Aluminium cladding		m ²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	GRC cladding		m ²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Insulated shadow box		m ²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Brick cladding		m ²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Stone cladding		m ²		06_EW	03 or 04
Curtain wall	Other (Please describe >>)				m ²	Please enter a description for any curtain wall that does not fit a predefined classification	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Single glazed		m ²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Double glazed		m ²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Triple glazed		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Aluminium cladding		m ²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	GRC cladding		m ²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Insulated shadow box		m ²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Brick cladding		m ²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Stone cladding		m ²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Single glazed		m ²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Double glazed		m ²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Triple glazed		m ²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Aluminium cladding		m ²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	GRC cladding		m ²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Insulated shadow box		m ²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Brick cladding		m ²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Stone cladding		m ²		06_EW	03 or 04

Stick-framed wall system	Other (Please describe >>)		-	m ²	Please enter a description for any wall system that does not fit a predefined classification	06_EW	03 or 04
Wall louvre system	Aluminium	-	-	m ²		06_EW	03 or 04
External shading system	Aluminium frame	Aluminium cladding	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	GRC cladding	-	m ²	GRC = Glass-fibre Reinforced Concrete. Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Terraotta cladding	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Stone cladding	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Pre-cast concrete	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Timber	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Glass (opaque)	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Steel	-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Other (Please describe >>)		-	m ²	Please enter as m ² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
Roller doors	Steel profile	-	-	m ²	Please note unit is <u>square metres</u> , not quantity	06_ED	03 or 04
Roller doors	Hardwood over steel	-	-	m ²	Please note unit is <u>square metres</u> , not quantity	06_ED	03 or 04
Roller doors	Softwood over steel	-	-	m ²	Please note unit is <u>square metres</u> , not quantity	06_ED	03 or 04
Revolving doors	Glass/aluminium/steel	-	-	no.		06_ED	03 or 04
Fire-rated doors	Engineered timber	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	06_ED	03 or 04
Fire-rated doors	Steel	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	06_ED	03 or 04
Fire-rated doors	Aluminium/glass	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	06_ED	03 or 04
Insulation	Glass wool / fibreglass	-	-	6 291,0 m ²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Stone wool	-	-	m ²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Polyester	-	-	m ²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Expanded polystyrene	-	-	m ²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Other (Please describe >>)		-	m ²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Other (Please describe and add unit >>)	Opaque Louvre	-	-	25,9 m ²	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Aluminium Louvre blades	-	-	160 kg	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Louvre Frame	-	-	80 kg	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Plasterboard ceiling	-	-	2 194 m ²	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Internal stairs balustrade Handrails	-	-	234 kg	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Internal stairs balustrade glazed panel	-	-	193 kg	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Tilt-up Panies	-	-	240 m ²	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Prefinished Cladding	-	-	135 m ²	Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Selected Cladding	-	-	81 m ²	Please enter a description for any envelope material that does not fit a predefined classification		

Permanent internal walls and doors

Walls and doors within the building that are either structural or designed to be permanent.

Coverage of material spend on permanent internal walls and doors				80 %	Enter the % coverage of <u>items</u> for the items you have entered below. There is no minimum requirement entered below. This should include all structural walls. <i>Please hand</i>	09_NW	03 or 04
Interior wall (permanent)	Steel (light framing)	-	-	3,8 t		09_NW	03 or 04
Interior wall (permanent)	Timber framing	-	-	m ³		09_NW or 12_WF	03 or 04
Interior wall (permanent)	AMC panel (reinforced)	-	-	m ²	Panels of autoclaved aerated concrete (AAC) with reinforcing steel. E.g., Hebel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Concrete-filled steel panel	-	-	m ²	Panels made from a steel sheet outer with an aerated concrete core. E.g., Speedpanel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plasterboard	-	-	2 104 m ²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plywood	-	-	m ²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Fibre cement sheet	-	-	m ²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Insulation	-	-	m ²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Glass	-	-	m ²		11_NO	03 or 04
Interior wall (permanent)	Other (Please describe >>)		-	m ²	Please enter a description for any internal wall that does not fit a predefined classification	11_NO	03 or 04
Internal door (permanent)	Aluminium/glass	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_NO	03 or 04
Internal door (permanent)	Timber/glass	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_NO	03 or 04
Internal door (permanent)	Timber solid lightweight	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_NO	03 or 04
Internal door (permanent)	Fire resistant	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_NO	03 or 04
Internal door (permanent)	Steel	-	-	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_NO	03 or 04
Internal door (permanent)	Other (Please describe >>)		-	no.	Please enter a description for any internal door that does not fit a predefined classification		
Other (Please describe and add unit >>)	Aluminium opaque Doors	-	-	100,0 no.	Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Windows	-	-	12,0 no.	Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Commercial Vinyl	-	-	128,8 m ²	Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and add unit >>)	Carpet Tiles	-	-	118,1 m ²	Please enter a description for any material that does not fit a predefined classification		

Services

				Unit of measure			
Warning: Services included within the main building contract are the building components that are the subject of the development application or the construction certificate for the base building only, then only enter these items. If you cannot split services by type, please enter them all in the "Other services" category at the bottom. Enter all values as Mechanical services						28_SS	05
Vertical transportation	-	-	-	20 000 AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05
	-	-	-	70 000 AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_LP	05
Electrical services	-	-	-	50 000 AUD excl. GST	includes services including the main power supply, backup generators, security and	28_LP_LPGP	05
Solar photovoltaic installations	-	-	-	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	19_PD and 19_WVS	05 or 06
Plumbing/hydraulic services	-	-	-	40 000 AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	25_FPS04 or 39_XWAW_03 or 41_XF	05
Fire services	-	-	-	20 000 AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	29_SS or multiple	
Other services (Please describe)	Storm water treatment	-	-	10 000 AUD excl. GST	Please group all other services here, meaning that coverage will always be return for services. <i>Please only the material costs (including labour, plant, equipment, margins and taxes)</i>		

External works

The materials associated with hard landscaping and outbuildings on the site but outside the building envelope. This includes handstands, carports, driveways, covered walkways, decks, patios, awnings, fences, gates, etc. Soft landscaping should be excluded.							
Coverage of spend on external works	-	-	-	80 %	<u>Required: Coverage of items for external works (excluding soft landscaping) entered below. Minimum requirement = 80%. Exclude hard construction materials and services.</u>	33_XR	07
Asphalt	-	-	-	t		33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	<10 MPa	-	-	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>10 MPa to <20 MPa	-	-	244,2 m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>20 MPa to <32 MPa	-	-	284,9 m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>32 MPa to <40 MPa	-	-	12,7 m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>40 MPa to <50 MPa	-	-	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>50 MPa	-	-	m ³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR	07
Pavers, bricks and blocks	Concrete	-	-	m ²		33_XR	07
Pavers, bricks and blocks	Clay	-	-	m ²		33_XR or 34_XN or 35_XB or 36_XL	07
Reinforcing steel	Bar & mesh	-	-	51 622 kg	Include all reinforcing steel bar/mesh in the external works in this row. Usually this is	33_XR or 34_XN or 35_XB or 36_XL	07
Reinforcing steel	Fibre & strand	-	-	kg	Include all steel fibre reinforcing and steel strand in the external works in this row.	02_11	07
Structural steel	-	-	-	4,2 t		35_XB	07
Structural aluminium	-	-	-	t	Includes structures, louvre systems, etc.	35_XB	07
External roof/wall cladding	Polycarbonate	-	-	m ²	Enter as profiled polycarbonate sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	PVC	-	-	m ²	Enter as profiled PVC sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Blumen sheet	-	-	m ²	Enter as blumhouse sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Steel profile	-	-	m ²	Enter as profiled steel sheet that would ordered, including allowance for overlap	33_XR or 34_XN or 35_XB or 36_XL	07
Fill	-	-	-	t	Include purchased material only. Exclude site-won material.	33_XR or 34_XN or 35_XB or 36_XL	07
Sand & gravel	-	-	-	t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	33_XR or 34_XN or 35_XB or 36_XL	07
Timber (solid)	Sawn softwood	-	-	m ³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (solid)	Sawn hardwood	-	-	m ³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	CLT	-	-	m ³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	Glulam	-	-	m ³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	LVL	-	-	m ³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	OSB	-	-	m ³		35_XB or 36_XL	07
Fabric (awning/sunshade)		-	-	m ²			
Other (Please describe and add unit >>)	Fences	-	-	3,2 t	Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)	Metal Screen stairs	-	-	9,8 t	Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)	Handrails stairs	-	-	2,1 t	Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)	Downpipes	-	-	349,0 kg	Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)	Gutter	-	-	320,1 kg	Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)	Fascia Board	-	-	413,7 kg	Please enter a description for any external works that does not fit a predefined classification		

3.3 – Work sheet 3 – Certifier Details



Step 3: Certifier details

Fill out blue cells

The material quantities must be determined through an itemised list of building materials (such as a bill of quantities) and certified by a quantity surveyor, designer, engineer or NABERS Assessor.

Person that completed this form	Value
Name	Tom Chen
Company	Certified Energy
ABN	
Profession	ESD Consultant
Qualification or registration	B.Arch

Person that certified the details in this form	Value
Name	Jamie Bonnefin
Company	Certified Energy
ABN	
Profession	ESD Consultant/NABERS assessor
Qualification or registration	Registered NABERS assessor No. 90269

Confirmation of certification	Value
Are 80% of material costs captured for the building's structure, envelope and external works?	Yes
If no - why not?	

Additional comments from data provider

Additional comments of certifier

Attach this Excel spreadsheet to your development application or construction certificate application.

4 - Report Recommendations

The following are recommended strategies at critical design stage that can lower the embodied emissions and demonstrate leadership.

Use salvaged or recycled materials whenever possible to eliminate the emissions associated with manufacturing new materials.

Optimise systems for material efficiency -Specify higher grade options, such as higher-grade strength steel, to reduce material quantity. Don't use material if it isn't needed.

Specify low carbon concrete – choose concrete that replaces the carbon-intensive Portland cement component with lower carbon cementitious alternatives such as fly ash and ground granulated blast furnace slag (GGBFS).

Specify materials that naturally sequester carbon – Consider timber for the superstructure. Materials such as timber naturally sequester carbon and store it for their useful life.

Specify materials manufactured with renewable energy - Materials manufactured with renewable energy, such as aluminium produced with renewable electricity, have a greatly reduced embodied carbon impact as compared to materials manufactured with fossil fuel energy.

Design for durability - Use the appropriate product to withstand the wear and tear of the space to ensure that the material will last the lifespan of the building.

Get to know the supply chain for your specific project - Understand where the materials for your project come from and the carbon implications of their manufacturing and transportation. Design to use the lowest carbon systems and materials. Seek Environmental Product Declarations (EPDs) where available.

Source locally where possible - Knowing what materials are available in your region is key to specifying local materials. Additionally, using local resources and materials reduces transportation emissions.

5 - Statement of Embodied Emissions reporting

This NABERS embodied Emissions report have captured minimum 80% of materials for the proposed development. The material quantities have been determined through an itemised list and that the attached Embodied Emission Material Form in Excel Format is suitable for DA and CC submissions to the principle certifying authority (PCA).

Completed by:

Tom Chen

B.Arch Certified PassivHaus designer

Checked by:



Jamie Ian Bonnefin

BSc(Arch) MArch Cert IV (NatHERS Assessment)

NAERBS Assessor License Number: 90369



CERTIFIED ENERGY

Leading Local Sustainability