

BRANZ

LCAQuick guide for ArchiCAD users V.1 2020

Using ArchiCAD to provide BIM data for . LCAQuick calculations

September

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LCAQuick is a life cycle assessment tool that calculates the environmental impacts of a building throughout its life cycle. Materials used in the building contribute to these environmental impacts. LCAQuick can use the ArchiCAD building information model (BIM) to obtain material quantities needed for the calculation.

LOD for LCAQuick

The level of development or LOD required from ArchiCAD for LCAQuick varies depending on the elements modelled between approximately LOD 200 and LOD 350.

https://www.biminnz.co.nz/s/NZ-BIM-Handbook-AppendixC-Levels-of-development-definitions-April-19.pdf

Some examples:

 LOD 200 would apply to a reinforced masonry wall with no coatings (LCAQuick includes the steel reinforcing).

ArchiCAD element required > Wall > Structure > Basic or composite / Building material.



Masonry block composite

 LOD 350 would apply for a wall assembly – for example, fibre-cement cladding, cavity battens, insulation, CLT, strapping battens, plasterboard.

ArchiCAD element required > Wall > Structure > Composite or complex profile > Building material.

The method of calculating the constituent layers is similar to the calculations for thermal performance where each element in each layer needs to be accounted for.

Refer LCAQuick sheet 1b Unit Converters.



FC wall assembly composite

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BIM in ArchiCAD for LCAQuick

LCAQuick uses codes to uniquely identify materials. These codes (and two other parameters) need to be added to the BIM elements' metadata.

Within ArchiCAD, there are a number of ways to assign the three required parameters for LCAQuick to the BIM. The approach taken in this document uses ArchiCAD's building materials attribute, which is described by Graphisoft as a:

"super attribute", a combination of multiple attributes having defined properties. Building Materials are defined globally, in the Building Materials dialog box, then applied to Construction Elements in their own Settings dialog boxes, or used as components of Composite Structures and Complex Profiles. Editing the Building Material attribute makes changes throughout the model.

The benefit of this approach is that it is topdown. An ArchiCAD BIM at an early stage of developed design can, with just the addition of some classification attributes and some schedules, generate sufficient data for LCAQuick.



Building materials dialogue

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The three parameters LCAQuick requires are:

- 1. LCAQuick material code
- 2. LCAQuick material name/description
- 3. LCAQuick unit quantity requirement.

Building materials have only a few properties that are user editable. You need to use all of these to add the three parameters above. Copy and paste these properties from LCAQuick sheet *1a For Ref - Material Codes*. You will need to add these three parameters to each building material to be calculated in your project.

The third parameter (LCAQuick unit quantity requirement) has four options:

- Volume dependent [LCIA/m3].
- Area dependent [LCIA/m2].
- Area dependent, to derive volume [m3/m2].
- Number of items dependent [LCIA/item].

It is best to use ArchiCAD construction elements for those elements that are to be scheduled and calculated by LCAQuick. Try wherever possible to model using walls, columns, beams and slabs rather than objects for building elements. If the model includes complex geometries, use of complex profiles, shells and morphs is preferred.

	<u> </u>	Intersection Priority:				710
		,	Weak			Strong
1		PROPERTIES				
± -		ID		PR_20_85_8_17_A		
2 -		 Manufacturer 		Volume dependent [LCIA/m3]		
<u> </u>		Description		Engineered wood, cross laminated t	timber (CLT) [from sustainable forest m	nanagement practices]
3		Participates in Collision De	etection			\checkmark
		PHYSICAL PROPERTIES				
	N N					1
	· · · · · · · · · · · · · · · · · · ·					

Building materials dialogue

1	2	3
PR_20_93_85_13_1_2	Masonry wall, incl. concrete block 20 series (17.5MPa OPC), grouted 22MPa (OPC), inc. steel reinforcing	Volume dependent [LCIA/m3]
PR_20_85_8_17_A	Engineered wood, cross laminated` timber (CLT) [from sustainable forest management practices]	Volume dependent [LCIA/m3]
PR_25_57_51_63_1	Membrane, polyvinyl chloride (PVC)	Area dependent, to derive volume [m3/m2]

Examples of the three required LCAQuick parameters in a schedule

Schedules for LCAQuick

Interactive schedules in ArchiCAD allow for the display of quantities and other parameters. They also allow for the editing of model data within the schedules themselves. The interactive nature of schedules is invaluable when auditing and editing the model information.

Interactive schedules are used to format the data that is transferred into three LCAQuick input columns: *1c INPUT - Material Quant., 1c INPUT - Window Mat. Quant., 1c INPUT - Mat. Quant. WASHING.*

For LCAQuick, these two types of interactive schedules are useful:

• Components schedule

This lists the components of elements – for example, the individual materials in a wall assembly composite. This is used to generate material schedules.

E	ana Sabadula !!-	ader										
Fre	eze schedule He	ader		. 150	250			350			100	
-		r · · · · · · · · · · · ·		100		1	1			1	00 · · · · ·	<u> </u>
·-		1	1	LCA Quick BB Schedule of Material Qua	ntities EXPORT copy 1							
:	Туре	Building Material / Composite / Profile / Fill	Product/Material Code	Product/Material Description	Required Building Material Quantities	Custom text 10	Custom text 9	Custom text 8	Custom text 7	Custom text 6	Surface Area	Volume M3
1	Wall	EXT: Block - 10 Series	PR_20_93_85_13_1_2	Masonry wall, incl. concrete block 20 series (17.5MPa OP	Volume dependent [LCIA/m3]						49	4.57
٦.	Wall	EXT: Block - 20 Series	PR_20_93_85_13_1_2	Masonry wall, incl. concrete block 20 series (17.5MPa OP	Volume dependent [LCIA/m3]						884	170.98
-	Slab	Floor: CLT Deck Tiles	PR_25_57_51_63_1	Membrane, polyvinyl chloride (PVC)	Area dependent, to derive volume [m3/m2]						194	0.82
-	Slab	Floor: CLT Deck Tiles	PR_35_93_96_19	Tiles (ceramic)	Area dependent [LCIA/m2]						194	3.93
8	Slab	Floor: CLT Deck Tiles									194	19.59
-	Slab	Floor: CLT Deck Tiles	PR_20_85_8_17_A	Engineered wood, cross laminated timber (CLT) [from sust	Volume dependent [LCIA/m3]						194	44.14
٠ī	Slab	Floor: CLT Deck Timber	PR_20_76_88_12_A	Timber structural framing, soft wood, sawn kiln-dried, exte	Volume dependent [LCIA/m3]						1,406	20.69
-1	Slab	Floor: CLT Deck Timber									2,109	89.59
-1	Slab	Floor: CLT Deck Timber	PR_25_57_51_63_1	Membrane, polyvinyl chloride (PVC)	Area dependent, to derive volume [m3/m2]						703	2.70
-	Slab	Floor: CLT Deck Timber	PR_20_85_8_17_A	Engineered wood, cross laminated timber (CLT) [from sust	Volume dependent [LCIA/m3]						703	155.12
	Slab	Floor: CLT Ground Floor			Area dependent, to derive volume [m3/m2]						1,094	8.78
1	Slab	Floor: CLT Ground Floor	PR 25 71 97 42 1 A	Hardwood (dressed, kiln dried) floor [from sustainable fore	Volume dependent [LCIA/m3]						1,094	13.21
2	Slab	Floor: CLT Ground Floor	PR 25 71 13 1	Insulation, polystyrene extruded (XPS)	Volume dependent [LCIA/m3]						1.094	54.84
٩.	Slab	Floor: CLT Ground Floor	PR 20 85 8 17 A	Engineered wood, cross laminated timber (CLT) (from sust	Volume dependent [LCIA/m3]						1.094	246.74
-	Slab	Eloor: CLT Inter-Tenancy	PR 35 31 66 94 1	Paint, water-based acrylic primer/undercoat (Dulux acrylic	Area dependent [LCIA/m2]						3.260	0.32
Η.	Slab	Floor: CLT Inter-Tenancy	PR 35 31 22 94 2 4 1	Paint, water-borne, walls (Dulux Wash&Wear low sheen	Area dependent [LCIA/m2]						3.260	0.32
-	Slab	Floor: CLT Inter-Tenancy	PB 25 57 51 37 1	Membrane (DPM), polyethylene underslab, vapour barrier	Area dependent, to derive volume [m3/m2]						3.260	0.42
4	Slab	Eloor: CLT Inter-Tenancy	PB 20 76 88 13 A	Timber structural framing, soft wood, sawn kiln-dried, inter-	Volume dependent [LCIA/m3]						3,260	16.27
۰.	Slab	Floor: CLT Inter-Tenancy	PR 25 71 97 42 1 A	Hardwood (dressed, kiln dried) floor (from sustainable fore	Volume dependent [LCIA/m3]						3 260	39.20
4	Slab	Floor: CLT Inter-Tenancy	PR 25 71 52 37	Plasterboard (generic)	Volume dependent [LCIA/m3]						6 520	76.50
4	Slab	Floor: CLT Inter-Tenancy	PR 25 71 97 60 1 A	Particleboard (floor) [from sustainable forest management	Volume dependent [LCIA/m3]						3 260	58.85
2	Slah	Floor: CLT Inter-Tenancy	PR 15 31 26 6	Sand	Volume dependent [LCIA/m3]						3 260	196.09
-	Slab	Floor: CLT Inter-Tenancy	PP 25 57 6 30 1 2 3 5	Insulation (accustic wall) Rink Batte Silencer 75 mm (gla	Volume dependent [LCIA/m3]						6 520	470.46
-	Slab	Floor: CLT Inter-Tenancy	11(_23_37_0_30_1_2_3_3	Inisulation (acoustic, wait), Fink batts offender 75 min (gia	Volume dependent [Ecovino]						3 360	212.69
-	Clab	Floor, CLT Inter-Tenancy	DD 20 95 9 17 A	Engineered wood, green leminated timber (CLT) from such	Velume dependent II CIA/m21						3,200	444.44
4	Clab	Floor, CLT Mid Floor	FR_20_05_0_17_A	Engineered wood, cross laminated timber (CET) [irom sust	Volume dependent [ECIAVIII3]						3,200	441.41
-	olub	Floor: CET Mid-Floor									940	7.00
-	Clab	Floor, CLT Mid-Floor	DD 25 57 44 64 2 2	Construction to the down in the same line in the sector of	Area dependent, to derive volume [m3/m2]						940	1.00
-	olub	Floor: CET Mid-Floor	PR_35_57_11_64_2_2	Carpet - tuited waii-to-waii (pile material 1300 - 1400 g/m2	Area dependent [LCIA/m2]						940	11.40
-	Slab	Floor: CLT Mid-Floor	PR_20_85_8_17_A	Engineered wood, cross laminated timber (CLI) (from sust	volume dependent [LCIA/m3]						940	127.20
-	Olub	Floor: Concrete 125+50mm Insul	PR_20_5/_51_3/_1	wembrane (DPM), polyethylene underslab, vapour barrier	Area dependent, to derive volume [m3/m2]	-					0/0	2.03
-	Siab	Floor: Concrete 125+50mm Insul	PR_25_/1_13_1	Insulation, polystyrene extruded (XPS)	volume dependent [LCIA/m3]						876	43.76
-	Olish	Floor: Concrete 125+50mm Insul	PR_10_31_26_6	Sano	Volume dependent [LCIA/m3]	-					0/0	43.72
-	Siab	Floor: Concrete 125+50mm Insul	PR_20_31_16_3_2_2_2_3	Reinforced concrete, 25 MPa, in-situ, inc. 100 kg/m3 steel	volume dependent [LCIA/m3]						876	109.42
-	Slab	Floor: Concrete 125+50mm Insul	PR_15_31_26_33	Granular fill	Volume dependent [LCIA/m3]						876	131.15
-	Roof	Roof: CLT									2,799	0.27
-	Roof	Root: CLT	PK_15_57_30_47_1	Membrane, building wrap, polyethylene (PE)	Area dependent, to derive volume [m3/m2]						5,598	5.62
·	Roof	Roof: CLT	PR_25_71_51_5_2_1	Aluminium, primary (powder coated finish, one side 0.08	Area dependent, to derive volume [m3/m2]						2,799	111.96
²⁸⁹	Roof	Roof: CLT	PR_25_71_13_1	Insulation, polystyrene extruded (XPS)	Volume dependent [LCIA/m3]						2,799	279.76
·	Roof	Roof: CLT	PR_20_85_8_17_A	Engineered wood, cross laminated timber (CLT) [from sust	Volume dependent [LCIA/m3]						2,799	615.97
·_	Roof	Roof: CLT Deck Earth									92	11.56
- I	Roof	Roof: CLT Deck Earth	PR 25 57 51 37 1	Membrane (DPM) polyethylene underslab yapour barrier	Area dependent, to derive volume [m3/m2]	1	1		1	1	46	0.05

Components schedule – building materials

Sty 2

• Elements schedule

This lists the characteristics of individual components – for example, the area of window frame for the window schedule or the areas of different zones.

If you are unfamiliar with creating schedules in ArchiCAD, the online help menu has extensive documentation on this topic.

https://helpcenter.graphisoft.com/user-guidechapter/85111/

(!) Site Key Plan	1:2000 [1. Site L1]		🗍 (3D /	Selection, Story 1] [] (!) LCAQUICK Window Schedule (of Quan											
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Show Headline	Edit						• • • 400 • •		1 · 500 · . · ·		. • 600 • •		700	1	800 .	
oly Format Options to:		Ξŕ		1	1		Window Schedule Of (Duantities	· ·						<u> </u>	
tire Schedule			Type	Frame Surface Outside	Glass Surface	CBI Classification	CBI Classification Description	Glass Thickness	Number of Glass Dayle	ht Total Area	Cross Sectional Area	Multion Spacing	Transom Spacing Hei	tht Width	Element Documentation	Custom text
v Heights: M	12.0000 mm		Nindow	Auminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	CODE (CCAQUICK)	(LCAQUICK)	(m) (CCAQUICK)	1.2544	1.4400	(mz) (LCAQUICK)	(m) (ECAQUICK)	(H) (CCAQUICK) 1,21	0 1,200	NORS (LCAUDICK)	
Text Style			Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass				2.8440	4.0800			2,4	0 1,700		1
> Arial			Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass				4.7655	16.3200 6.2400			2,4	0 2,600		4
I 3.5000 mm	V 1 I∎ +		Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass				38.1240	49.9200 7.2000			2,4	0 3,000	1	8
3 / U ∓	☆ 100 0 %	ę,	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	22.4780 1 0.2496	28.8000 0.4800			1,2	0 400		4
	∆_^ 100 0 %	13	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	0.2495	0.4800			800	600		1
Wrap text			Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4.5056	7.6800			800	800		16
Border		-	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	3.2768 1 0.5104	5.1200 0.7200			300	2,400	1	8
I Border:		E.	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2.0416	2.8800			450	2,000		4
lid Line	2 ↓ 1		Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1.2408	1.8000			1,41	0 1,260	-	2
Print Footer & Format	t Change	1	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	27.1980 1 1.7664	35.2800 2.0000			2,0	0 1,000		20
do/Redo	2.2		Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	21.1968 1 1.9136	24.0000			2,0	0 1,200		12
mat Change:	B/- B/-	1	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2 0.2358	2.4000 2.0640			2,4	0 860	-	1
	-	- F	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4.7160 2 1.3020	41.2800			1,31	0 1,300		20
			Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	26.0400 2 1.7541	33.8000 2.1600			1,41	0 1,800		20
		300	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2 1.8976	43.2000 2.3188			1,2	0 1,855		20
		-	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	60.7232 2 2.5460	74.2016 3.0000			1,5	0 2,000		32
		F.	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	96.7480 3 1.9062	2.3771			2,4	0 990		38
		-	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	11.4372 3 1.9272	14.2626 2.4000			2,4	0 1,000		6
		E.	Nindow	Auminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4 3.8544 4	4.8000			2,4	0 1,800		2
			Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	91.5376 4 4.8389	120.9600 5.6628			2,4	0 2,359		28
		60	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4 4.8840	16.9884 5.7120			2,4	0 2,380		3
			Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	117.216 5 4.3984	5.8273			2,4	0 2,428		24
			Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	140.748 5 5.5584	3 186.4736 7.1314			2,4	0 2,971		32
		. T	Window	Aluminium (powder costed finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	22.2336 5 7.6589	28.5256 9.5049			2,41	0 3,950		4
		-	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	153.178 6 1.9178	2.8500			1.54	0 1,900		20
		8	Nindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	61.3696 7 3.3155	91.2000 5.5445			1,4	0 3,960	-	32
		11							66.3100	110.8900				+		20

Elements schedule – windows

Building materials schedule

The building materials schedule contains the most information for use in LCAQuick and typically requires the most auditing to ensure that the information is correct.

It is suggested to create two schedules for this: one that is used for auditing the BIM (Detailed) and one that is used for exporting the data to LCAQuick (Export).

Criteria are used in schedules to ensure that only the required elements are scheduled. All criteria need to be customised based on your project and office BIM standards. You may not need all or any of the criteria illustrated here. It is best to start with no criteria or a very small set and add to these selectively to include only elements that are required.

				AL OUANTITIES SET							
ID 🔺		CRITERIA / LCA QUIC	K SCHEDULE OF MATERI	AL QUANTITIES DET.	AILED						
	Name		Criteria	Va	lue)	and/or					
	Door deneulle	Element Type	is	Wall		r					
	Electrical Legend	Element Type	is	[] Column		r					
	Electrical Schedule	Element Type	is	🖾 Beam		r i					
	House Room Sizes	Element Type	is	Slab		r 🛛					
	Lot Sizes	Element Type	is	A Roof		nd					
	Object Inventory	Home Story	2	-1. Basement		nd					
	SB6 Lot 1	Home Story	s	6. Site Roof		nd 🔸				1	
	SB6 Lot 1 Site	Layer	is not	Des: Site Struc	tures	nd					
	Total Building GFA - Apartment A	¢ Layer	is not	Misc: Hidden		nd					
	Total Building GFA - Maisonettes D	Laver	is not	Misc: Solid Ope	erators	nd					
	Total Building GFA - Plant P	Laver	is not	Des: 3D only bi	its	nd					
	Total Building GFA - Te Kopu Hub B	= Laver	is not	Des: Site Pavin	0	nd					
	Total Building GFA - Walkups	t Laver	is not	Des: Site Pord		nd					
	Total Development GFA		is not	ARCHICAD Law							
	Unit GFA - A 1 Bed	+ Layer	is not	ARCHICAD Lay	er)					
	Unit GFA - A 2 Bed										
	Unit GFA - A Commercial	Add Criteria	✓ Remove								
	Unit GFA - C										
	Unit GFA - C wedge	• FIELDS / LCA QUICK	SCHEDULE OF MATERIAL	QUANTITIES DETAIL							
	Unit GFA - D lower	Name			↓ Σ	A					
	Unit GFA - D upper	≎ № Туре									
	Wall List	Building Material /	Composite / Profile / Fill		Ļ						
	Window Schedule	÷ 🞒 ID									
	Zone List	🕈 🎒 Name					Sche	me Settings			
QUICK	Window Schedule Of Quantities	Description					V CRITE	RIA / LCA QUICK	SCHEDULE OF MATE	RIAL QUANTITIES EXPORT	
PONEN	TS	Manufacturer							Criteria	Value) and/o
	All Components	\$ Kin/Component	/olume	ID 🔺	Name		•	Element Type	is	💭 Wall	or
	Bill of Quantities	C Net Surface Area	on the Inside Face	87772	Building C1 Floor Areas	Init 1	÷ 1	Element Type	is	Column	or
	Components by Layers	Net Surface Area	on the Outside Face	2222	Building D Floor Areas L	nit 01	•	lement Type	is	S Beam	or
Quick	Schedule of Material Quantities detailed	+ E Conditional Surfac	e Area of the Top	82223	Building D Floor Areas U	nit 02		lement Type	is	Slah	or
Quick	Schedule of Material Quantities EXPORT	Conditional Curfa	the Area of the Pottern	22223	Composites			lement Type	ie	A Poof	and
Quick	Schedule of Wall Areas	Conditional Surrad	ce Area of the Bottom	87772	Default BIMx IES			tement type	13	C/4 ROOI	and
Quick	Totals	A Net Surface Area	of the Top	8772	Door Schedule			Home Story	2	-1. Basement	and
FACES	101010	Conditional Botton	m Surface Area	1772	Electrical Legend		•	Home Story	\$	6. Site Root	and
AOLO	All Einishes			7772	Electrical Schedule		•	.ayer	is not	Des: Site Structures	and
	Einishes by Elements	Keep Components tog	ether in the Schedule	1772	House Room Sizes		+	ayer	is not	Misc: Hidden	and
	Finishes of Openings	Add Fields	 Remove 	8772	Lot Sizes		•	ayer	is not	Misc: Solid Operators	and
	Pinishes of Openings			87773	Object Inventory		- •	ayer	is not	Des: 3D only bits	and
	Delete 🔁 🍃			87773	SB6 Lot 1		- • ·	ayer	is not	Des: Site Paving	and
New				82222	CDC Las 1 Cita		- + I	aver	is not	Des: Site Roads	
New				W.2.2.23	200 110 1200			i a j a i			and
New	Dotailad building m	atoriale cebodi	la cottinge	77773	Total Building GEA - Apa	tment A	- • I	.ayer	is not	ARCHICAD Layer	and
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Export building materials schedule settings

The criteria

The criteria for the detailed and export schedules needs to be identical. Therefore it is best to create the detailed one first and duplicate this once everything is working correctly. In the example shown, three criteria types are employed.

- 1. Element type: This filters out objects and focuses on the elements used in the BIM required for LCAQuick.
- 2. Home storey: This filters out other elements located outside this storey range. Elements not required in the schedule may include template parts, working models, hot-linked modules or discarded options located on other storeys.
- 3. Layer: This filters out layers containing elements that are not part of LCAQuick calculations. It also filters out hidden and other non-building elements.

	(Criteria	Value) and/o
\$	Element Type	is	💭 Wall	or
÷	Element Type	is	Column	or
+	Element Type	is	🟹 Beam	or
\$	Element Type	is	<> Slab	or
	Element Type	is	A Roof	and
	Home Story	≥	-1. Basement	and
÷	Home Story	≤	6. Site Roof	and
÷	Layer	is not	Des: Site Structures	and
•	Layer	is not	Misc: Hidden	and
- +	Layer	is not	Misc: Solid Operators	and
+	Layer	is not	Des: 3D only bits	and
- +	Layer	is not	Des: Site Paving	and
- +	Layer	is not	Des: Site Roads	and
- ÷	Layer	is not	ARCHICAD Layer	

Detailed building materials schedule criteria

Views

It is worthwhile setting up a plan view and a 3D view in the view map using the same filtering criteria as in the schedule as this will help speed up the creation of the filters and the auditing of the model.

- 1. Element type
- 2. Home storey
- 3. Layer

•••	View Settings	Filter and Cut Elements in 3	3D
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		Limited: To 6. Site Roof	
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🗗 3D Style:	Simple Shading	🗈 Slab	Ø
🖾 Rendering Scene:	Outdoor Daylight Medium (Physical)	Mesh	
	Engine: CineRender by MAXON	Shell	
⊡ Size: ←	→ 2160 ‡ 1236 px > 72 dpi :	· Curtain Wall 말 Zone	
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Image settings are stor - 3D Projection/Camera - Custom Sun Position	ad with the view: settings (including zooming)	Stair Railing	
- 3D Cutaway and Cutti	ng Planes	Cancel	ОК

Data verification

At the top of the interactive schedule are two buttons: Select on Floor Plan and Select in 3D. These allow you to quickly go to drawing windows and identify elements from the schedule. It is always best to visually check the correct materials have been used to model the elements.

		-				
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▲ = = :: A ₄ A 100 0 %	- s	ilab	Floor: CLT Deck Tiles	PR_20_85_8_17_A	Timber - CLT	Engir
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Proview	- s	ilab	Floor: CLT Deck Timber	PR_20_76_88_12_A	Timber - Batten Exterior	Timbe

Schedules select in plan

💾 (!) 1. LCAQuick [1. Site L1]		🗍 LCAQuick	(3D / All]	of Material Quant	
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■ / LL ∓ ^{‡∴A} 100 0%	1	Slab	Floor: CLT Deck Tiles		Air Space
↔ 100 0 %	8	Slab	Floor: CLT Deck Tiles	PR_25_57_51_63_1	Membrane - Waterproof
	-11	Plah	Electr OLT Dock Tiles	DD 20 05 0 17 A	Timber OLT

Schedules select in 3D

Туре	Building Material / Composite / Profile / Fill	Product/Material Code	Name	
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Wall	EXT: Concrete 200	EXT: Block - 10 Series	Cp crete - Structural	
Slab	Floor: CLT Deck Tiles	EXT: Block - 20 Series	The Floor	Tiles (ceram
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Slab	Floor: CLT Deck Tiles	WE-10 CLT PIR ST ex only		Engineered
Slab	Floor: CLT Deck Timber	WE-14 CLT PIR Steel Cladding	Toper - Floor	Timber struc
Slab	Floor: CLT Deck Timber	WI-01 WI-12 GIB CLT Brace		Timber struc

Interactive schedule editing

Pg 12

Editing data

Trust, but verify!

Once elements that require building material reassignment have been identified, the interactive functionality of the schedule makes it easy to edit the BIM to make corrections.

🖽 Header Options 💙 📘 🛱

Pg 13

F	reeze Schedule Hea	ader											
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		LCA modules Schedule of Quantities											
	Туре	Building Material / Composite / Profile / Fill	Product/Material Code	Name	Product/Material Description	Required Building Material Quantities							
17	Wall	EXT: Block - 10 Series	PR_20_93_85_13_1_2	Masonry Block - Structural	Masonry wall, incl. concrete block 20 series (17.5MPa OP	Volume dependent [LCIA/m3]							
10	Wall	EXT: Concrete 200 📀		Concrete - Structural									
	Slab	Floor: CLT Deck Tiles	PR_35_93_96_19	Tile - Floor	Tiles (ceramic)	Area dependent [LCIA/m2]							
	Slab	Floor: CLT Deck Tiles		Air Space									
60	Slab	Floor: CLT Deck Tiles	PR_25_57_51_63_1	Membrane - Waterproof	Membrane, polyvinyl chloride (PVC)	Area dependent, to derive volume [m3/m2]							
	Slab	Floor: CLT Deck Tiles	PR_20_85_8_17_A	Timber - CLT	Engineered wood, cross laminated timber (CLT) [from sust	Volume dependent [LCIA/m3]							
· [-]	Slab	Floor: CLT Deck Timber	PR_20_76_88_12_A	Timber - Floor	Timber structural framing, soft wood, sawn kiln-dried, exte	Volume dependent [LCIA/m3]							

Editing in schedules before

🖽 Header Options 🔸 📘 🎁 Freeze Schedule Header антария в 100 страна в 100 страна страна в 100 LCA modules Schedule of Quantities Building Material / Composite / Profile / Fill Product/Material Code Required Building Material Quantities Туре Product/Material Description Name EXT: Block - 10 Series Wall PR_20_93_85_13_1_2 Masonry Block - Structural Masonry wall, incl. concrete block 20 series (17.5MPa OP... Volume dependent [LCIA/m3] Wall EXT: Block - 20 Series PR_20_93_85_13_1_2 Masonry Block - Structural Masonry wall, incl. concrete block 20 series (17.5MPa OP... Volume dependent [LCIA/m3] Slab Floor: CLT Deck Tiles PR_35_93_96_19 Tile - Floor Tiles (ceramic) Area dependent [LCIA/m2] Slab Floor: CLT Deck Tiles Air Space ^g Slab Floor: CLT Deck Tiles PR_25_57_51_63_1 Membrane - Waterproof Membrane, polyvinyl chloride (PVC) Area dependent, to derive volume [m3/m2] - Slab Floor: CLT Deck Tiles PR_20_85_8_17_A Timber - CLT Engineered wood, cross laminated timber (CLT) [from sust... Volume dependent [LCIA/m3] - Slab Floor: CLT Deck Timber PR_20_76_88_12_A Timber - Floor Timber structural framing, soft wood, sawn kiln-dried, exte... Volume dependent [LCIA/m3]

Editing in schedules after

Building materials V.1 2020 schedule

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Exporting data

The export building materials schedule should be formatted to easily cut and paste data straight into the LCAQuick spreadsheet. This can be achieved by adding custom text fields in the schedule as spacer columns to align with the unused parameters in LCAQuick.

- 🖽 Manutacturer -

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e as spacer	2222	Building D Floor Areas Unit 02		÷	Element Type	is	<> Slab		or
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	2222	Door Schedule		÷	Home Story	≤	6. Site Roof		and
	2222	Electrical Legend		÷	Laver	is not	Des: Site Structures		and
	2222	Electrical Schedule			Laver	is not	Misc: Hidden		and
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	2222	Lot Sizes			Layer	is not	Des: 3D only hits	,	and
	2222	Object Inventory			Layer	is not	Des: SD only bits		and
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Export building materials schedule settings

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Windows schedule

The windows schedule needs to calculate both the frame area and the glazing area. In the example shown, these parameters are daylight area and total area (i.e. subtract the glazing from the total area to get the frame area).

(!) Site Key F	Plan 1:2000 [1. Site L1]		🗍 [3D	/ Selection, Story 1] ICAQUICK Window Schedule C	f Quan													
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Entire Schedule			Type	Frame Surface Outside	Glass Surface	CBI Classification	CBI Classification Description	Glass Thickness	Number of Glas	s Daylight	Total Area	Cross Sectional Area	Mullion Spacing	Transom Spaci	ng Heigh	Width	Element Documentation	Custom text
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Arial	<u> </u>	10	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame.	Heat Strengthened Glass					4 7655	6 2400				2 400	2 600		4
M[]1 3.5000 mm	v ↓ 1 🔳	10		2.0mm BMT						38.1240	49.9200							8
	1 Å 100 0 %		Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass					5.6195	7.2000				2,400	3,000		
B / U ∓	A 100 1%	18	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame,	Heat Strengthened Glass	4521	Aluminium windows and doors	008	1	0.2496	0.4800			1	1 200	400		4
				2.0mm BMT						0.2496	0.4800				.,			1
_	34° 100 U %		Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	0.2816	0.4800				800	600		
Wrap text		ι	Mindow	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame.	Haat Strengthened Clare	4524	Aluminium windows and doors	0.08		4.5056	7.6800				800	200	+	16
▷ Preview		\sim	WEIGOW	2.0mm BMT	near overganned Grazz	400.1		.000		3.2768	5.1200				000	000		8
			Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	0.5104	0.7200				300	2,400		
Cell Border:		13		Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame,	11-11-01-1-11-01-1-1	1701	Alternative scientisms and denors	000		2.0416	2.8800				400	0.000		4
Solid Line		-	WINDOW	2.0mm BMT	Heat openginened Glass	4021	Auminium windows and doors	.008		1.2408	1.8000				450	2,000		2
		-	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	1.3599	1.7640				1,400	1,260		
Print Footer & Fo	rmat Change	2		Aluminium (cowder coated finish, one side 0.08 mm), extruded olazing frame.						27.1980	35.2800							20
Enable Print Foot	er Edit	1.2	Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	21.1968	2.0000				2,000	1,000		12
Undo/Redo	00	11	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	1.9138	2.4000				2,000	1,200	1	-
Format Change:	B/- B/-	19		Atuminium (muerter materi finish, one side 0.08 mm), extraded election frame						1.9136	2.4000							1
		1.2	Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2	4 7160	2.0640				2,400	088	- '	20
	1	1-7	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2	1.3020	1.6900				1,300	1,300		
		- 4		Atuminium (mediar coated finish, one side 0.08 mm), extracted claring frame						26.0400	33.8000							20
		1.4	Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2	1.7541	2.1600				1,400	1,800		20
		8	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2	1.8976	2.3188				1,250	1,855	1	
		1		Aluminium (counter coulted finish, one side 0.08 mm), extended claring frame						60.7232	74.2016				+			32
		-	Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	2	2.5460	3.0000				1,500	2,000	'	38
		1.7	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2 0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	3	1.9062	2.3771				2,400	990		
		1.2		Number of the second se						11.4372	14.2626				-			6
			Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	3	1.9272	2.4000				2,400	1,000		
		1.5	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4	3.2692	4.3200				2,400	1,800	1	
				2.0000 period						91.5376	120.9600				-			28
			Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4	4.8389	5.6628				2,400	2,359		
		8-	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame,	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	4	4.8840	5.7120				2,400	2,380	+	3
				2.0mm bM1						117.2160	137.0880							24
			Window	Auminium (powder coated tinish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	5	4.3984	5.8273				2,400	2,428	'	
		1.2	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame,	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	5	5.5584	7.1314				2.400	2.971	+	34
				2.0mm BM I					-	22.2336	28.5256				-			4
			Window	Auminium (powder coated finish, one side 0.08 mm), extruded glazing frame. 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	5	7.6589	9.5049				2,400	3,960		
		-	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame,	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	6	153.1780	190.0980				1.500	1.900	+	20
				2.0mm 8M1						61.3696	91.2000						+	32
		200	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame. 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	7	3.3155	5.5445				1,400	3,960		
										66.3100 1040.5663	110.8900 1383.8878							382

Windows schedule



Additional parameters are available for library parts such as doors and windows. In this example, the exterior joinery is modelled with Cadimage windows. These additional parameters are available from the **Add Fields...** drop-down menu.

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HE Q	μ				LCAQUIC		V SCHEDULE OF QU	ANTITIES			
				(Criteri	a		Value)	and/or
TELEMENTS	▲ Name		¢	Elem	ent Type		is	🖽 Window			
2222	All Openings Schedule										
2222	Building A Floor Areas										
2222	Building C Floor Areas Unit 1										
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2222	Building D Floor Areas Unit 02										
2222	Composites										
2222	Conditioned Spaces										
2222	Default BIMx IES										
2222	Door Schedule										
17772	Electrical Legend										
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Windows schedule additional parameters

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Browse to locate the required parameters. Use the drop-down menu at the top and select **Folder View (used Objects only)** as this will reduce the search dramatically.

Some further editing and calculation of the data in a spreadsheet application will be necessary before taking it into LCAQuick. This is because a window is not modelled in ArchiCAD exactly as it will be formed in construction. This is especially the case with aluminium windows with their complex extruded profiles. After the schedules are populated and exported to a spreadsheet, the window frame surface area will need to be multiplied by a multiplier to get the actual volume of aluminium used.

One way to calculate that multiplier is to take the cross-sectional area of the aluminium profile(s), multiply it by 4,000 mm (for the volume of a 4 m long section of aluminum) and divide it by the frame surface area from a 1 m x 1 m ArchiCAD window.

Alternatively, LCAQuick features a tool that can be used to build up schedules for windows and doors. It is located in the *INPUT - Window Door Builder* sheet.



Windows schedule additional parameters

Washing schedule

Both the materials schedule and windows schedule are used to generate area data for the washing schedule.

The external wall, roof and floor faces can be extracted from the building materials schedule.

The external surfaces for the window frames and glass are extracted from the windows schedule.

			Scheme Settings			
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1110	Electrical Legend	÷	Element Type	is	Column	or
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222	SB6 Lot 1	\$	Home Story	5	6. Site Roof	and
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Detailed building materials schedule settings

(!) Site Key Plan 1:2000	0 [1. Site L1]	[] [3D	/ Selection, Story 1] (!) LCAQUICK Window Schedule C	f Quan													
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Row Heights: M 12.	.0000 mm	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass		(00.000.00)			1.2544	1.4400	<u>,, (</u>		1.9122.229	1,200	1,200		
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☆> Arial			At minimum (excepted fields, see aids 0.08 mm) auto-dad alaxies frame.						11.3760	16.3200							4
		Window	2.0mm BMT	Heat Strengthened Glass					4.7655	6.2400				2,400	2,600		
M_I 3.5000 mm U	1		Al seletion descented distances and distances and distances and distances and distances for the						38.1240	49.9200				_			8
t-A	100 0 %	- Window	2.0mm BMT	Heat Strengthened Glass					5.6195	7.2000				2,400	3,000		
B/UT ***									22.4780	28.8000							4
	100 0 %	Window	Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame, 2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	0.2496	0.4800				1,200	400		
	100 0 %		Aluminium (powder coated finish, one side 0.08 mm), extruded glazing frame.						0.2496	0.4800							1
		Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	0.2816	0.4800				800 0	600		
Wrap text		-	Aluminium (nourier costed finish, one side 0.08 mm), extruded playing frame						4.5056	7.6800							16
▶ Preview		Window	2.0mm BMT	Heat Strengthened Glass	4521	Aluminium windows and doors	.008	1	0.4096	0.6400				800 8	800		
- Austra			Aluminium (exurder cented fields, one side 0.08 mm), autouted alaxies frame						3.2768	5.1200							8
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									26 0400	33,8000							120

Windows schedule

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Area schedules

Area schedules derived from zones will also be required for LCAQuick. Use the different zone construction methods to create zones for the interior NLF and GFA calculations, then set up a zone area schedule as shown here.



Zone area schedule

Export

Schedules are exported as Excel workbooks (.xlsx) (*File* > *Save as...*). They can also be exported as PDF and tabbed text as well as other formats.

It is best to export these to a folder and then make a copy to another folder for further calculations to avoid the files being overwritten when they are exported again.

The exporting of schedules can be automated using the publisher.

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1 1	Slab	Floor: Concrete 125+50m	SS Dronhov									876	109.42
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Export file