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Green Building Calculator

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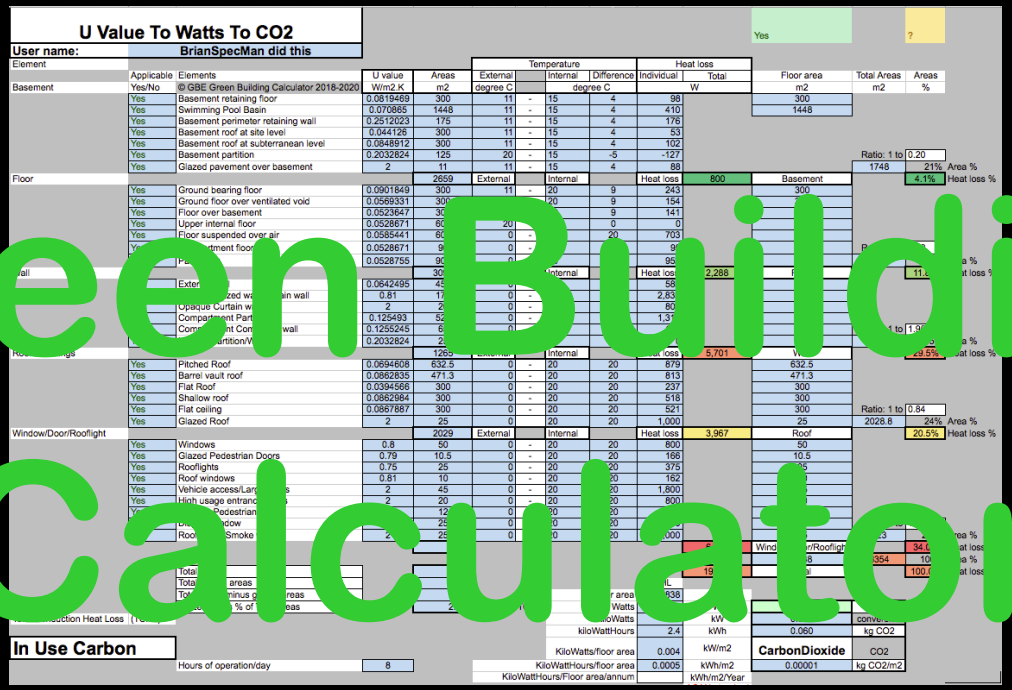

U Value To Watts To CO2													
User name:	BrianSpecMan did this												
Element					Temperature				Heat loss				
	Applicable	Elements	U value	Areas	External		Internal	Difference	Individual	Total	Floor area	Total Areas	Areas
Basement	Yes/No	© GBE Green Building Calculator 2018-2020	W/m2.K	m2	degree C		degree C		W		m2	m2	%
	Yes	Basement retaining floor	0.0819469	300	11	-	15	4	98		300		
	Yes	Swimming Pool Basin	0.070865	1448	11	-	15	4	410		1448		
	Yes	Basement perimeter retaining wall	0.2512023	175	11	-	15	4	176				
	Yes	Basement roof at site level	0.044126	300	11	-	15	4	53				
	Yes	Basement roof at subterranean level	0.0848912	300	11	-	15	4	102				
	Yes	Basement partition	0.2032824	125	20	-	15	-5	-127			Ratio: 1 to	0.20
	Yes	Glazed pavement over basement	2	11	11	-	15	4	88			1748	21% Area %
Floor				2659	External		Internal		Heat loss	800	Basement		4.1% Heat loss %
	Yes	Ground bearing floor	0.0901849	300	11	-	20	9	243		300		
	Yes	Ground floor over ventilated void	0.0569331	30			20	9	154				
	Yes	Floor over basement	0.0523647	30				9	141				
	Yes	Upper internal floor	0.0528671	60	20			0	0				
	Yes	Floor suspended over air	0.0585441	60	0	-		20	703				
	Yes	tment floo	0.0528671	9	0	-			9				
			0.0528755	90	0				95				a %
Wall				30			Internal		Heat loss	2,288			at loss %
		Exter	0.0642495	45	0				58				
		zed wa in wall	0.81	17	0	-			2.83				
		Opaque Curtain w	2	2	0	-			80				
		Compartment Part	0.125493	52	0	-			1.31				
		Com nt Co wall	0.1255245	6	0							1 to	1.9
		rtition/W	0.2032824	2					4				a %
Roo gs				1265			Internal		Heat loss	5,701			29.5% at loss %
	Yes	Pitched Roof	0.0694608	632.5	0	-	20	20	879		632.5		
	Yes	Barrel vault roof	0.0862835	471.3	0	-	20	20	813		471.3		
	Yes	Flat Roof	0.0394566	300	0	-	20	20	237		300		
	Yes	Shallow roof	0.0862984	300	0	-	20	20	518		300		
	Yes	Flat ceiling	0.0867887	300	0	-	20	20	521		300	Ratio: 1 to	0.84
	Yes	Glazed Roof	2	25	0		20	20	1,000		25	2028.8	24% Area %
Window/Door/Rooflight				2029	External		Internal		Heat loss	3,967	Roof		20.5% Heat loss %
	Yes	Windows	0.8	50	0	-	20	20	800		50		
	Yes	Glazed Pedestrian Doors	0.79	10.5	0	-	20	20	168		10.5		
	Yes	Rooflights	0.75	25	0	-	20	20	375		25		
	Yes	Roof windows	0.81	10	0	-	20	20	162		10		
	Yes	Vehicle access/Larg s	2	45	0	-	20	20	1,800		45		
	Yes	High usage entranc s	2	20	0	-	20	20	800		20		
		Pedestrian		12	0		20	20			12		
		ndow		25	0		20	20			25		
		Roo Smoke	2	25	0		20	20	1,000		25	2.3	rea %
											Windo /Rooflight		at loss
												354	10 a %
		Total								19			100.0 at loss
		Total areas							IL				
		Tot inus g reas							r area				
		% of eas		2					838 Watts				
duction Heat Loss (10									loWatts	kW		convec	
									kiloWatts	kWh	0.060	kg CO2	
In Use Carbon													
									KiloWatts/floor area	kW/m2	CarbonDioxide	CO2	
		Hours of operation/day	8						KiloWattHours/floor area	kWh/m2	0.00001	kg CO2/m2	
									KiloWattHours/Floor area/annum	kWh/m2/Year			

Green Building Calculator

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BrianSpecMan Murphy GBC Number-Cruncher

GBC V2 launch 1st March @ FutureBuild 2022 Digital Arena Stand L68

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Hemp in GBC:

- Hemp in GBC to IHBA Symposium
  - https://GreenBuildingCalculator.uk/?P=1635
- GBE CPD Hemp Construction
  - https://GreenBuildingEncyclopaedia.uk/?P=
- Go there for:
  - the latest update
  - GBC V Presented to different audiences
  - the whole presentation all of the hidden slides
  - other file formats:
    - Handout, Show, PDF, Go to GBE Shop for PPTX
  - Links to other related GBE CPD and related GBE content

Product Information Providers

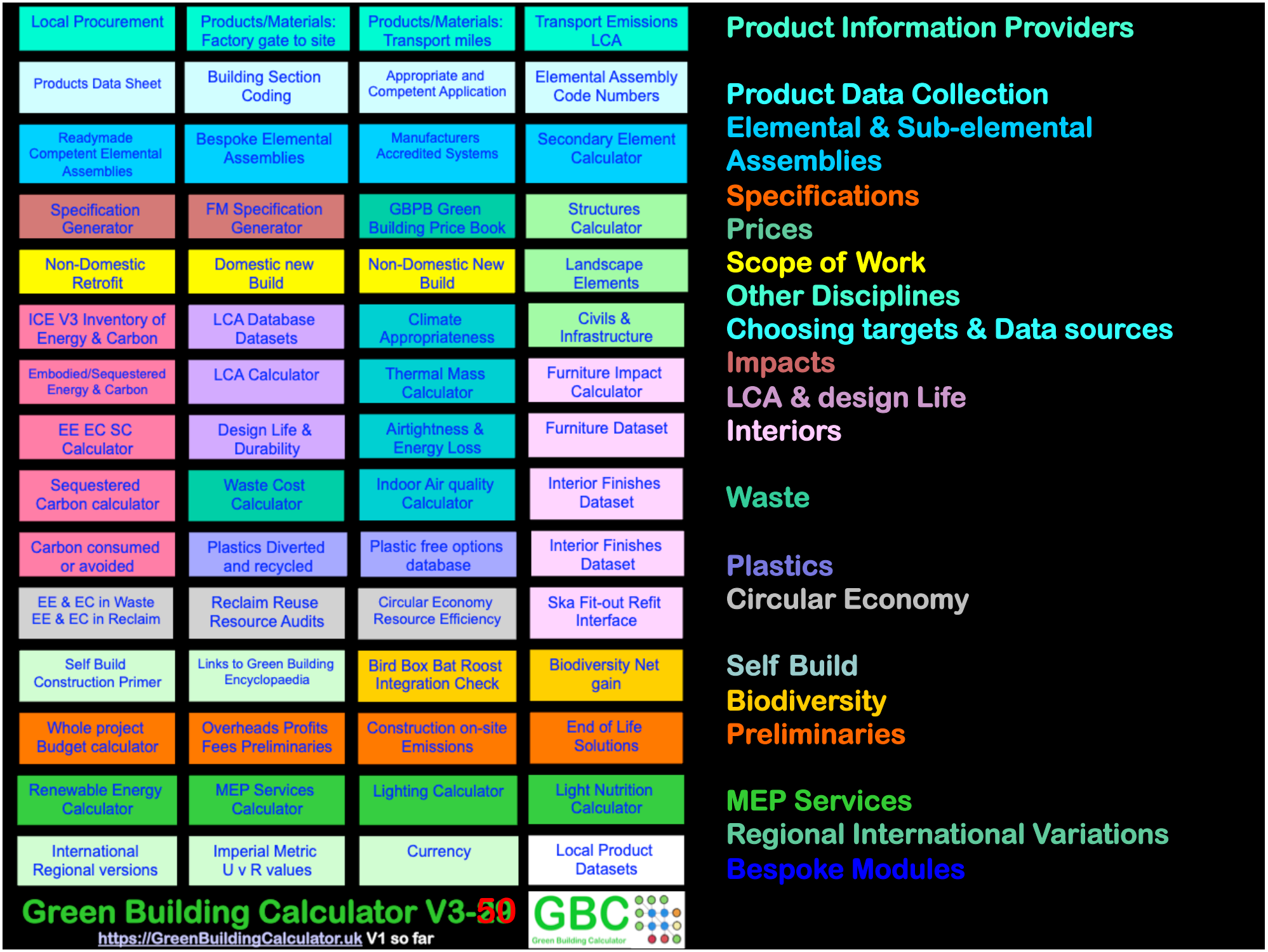
Product Data Collection

Excel mechanisms
Data Sources
Data inputs
Generic Materials Datasets
Choosing targets & Data sources
Option Switches for more detail
Choosing
Price Information

Chosen Elements
Choosing Components
Choosing Materials or Products
Automatic Number Crunching
Checking Targets Met or warnings

GBC Users

Dashboard
Summary Sheets
Purpose of Green Building Calculator


Local Procurement
Products/Materials: Factory gate to site
Products/Materials: Transport miles
Transport Emissions LCA
Products Data Sheet
Building Section Coding
Appropriate and Competent Application
Elemental Assembly Code Numbers
Readymade Competent Elemental Assemblies
Bespoke Elemental Assemblies
Manufacturers Accredited Systems
Secondary Element Calculator
Specification Generator
FM Specification Generator
GBPB Green Building Price Book
Structures Calculator
Non-Domestic Retrofit
Domestic new Build
Non-Domestic New Build
Landscape Elements
ICE V3 Inventory of Energy & Carbon
LCA Database Datasets
Climate Appropriateness
Civils & Infrastructure
Embodied/Sequestered Energy & Carbon
LCA Calculator
Thermal Mass Calculator
Furniture Impact Calculator
EE EC SC Calculator
Design Life & Durability
Airtightness & Energy Loss
Furniture Dataset
Sequestered Carbon calculator
Waste Cost Calculator
Indoor Air quality Calculator
Interior Finishes Dataset
Carbon consumed or avoided
Plastics Diverted and recycled
Plastic free options database
Interior Finishes Dataset
EE & EC in Waste
EE & EC in Reclaim
Reclaim Reuse Resource Audits
Circular Economy Resource Efficiency
Ska Fit-out Refit Interface
Self Build Construction Primer
Links to Green Building Encyclopaedia
Bird Box Bat Roost Integration Check
Biodiversity Net gain
Whole project Budget calculator
Overheads Profits Fees Preliminaries
Construction on-site Emissions
End of Life Solutions
Renewable Energy Calculator
MEP Services Calculator
Lighting Calculator
Light Nutrition Calculator
International Regional versions
Imperial Metric U v R values
Currency
Local Product Datasets
Green Building Calculator V3-50
https://GreenBuildingCalculator.uk V1 so far
GBC
Green Building Calculator
Product Information Providers
Product Data Collection
Elemental & Sub-elemental Assemblies
Specifications
Prices
Scope of Work
Other Disciplines
Choosing targets & Data sources
Impacts
LCA & design Life
Interiors
Waste
Plastics
Circular Economy
Self Build
Biodiversity
Preliminaries
MEP Services
Regional International Variations
Bespoke Modules

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GBC V2-V36 Planned Development

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Priorities to bring forward:

- GBC V2 Retrofit, Terraces, Community level, MEP Services,
- GBC V3 Decrement Delay, Form Factor refinements: dormers, bays, porches
- GBC V4 Building Section Coding, Competent Application,
- 892 ready made elements, Bespoke Assemblies, Accessories, Specification Generator
- GBC V5 Non-Domestic, Retrofit and Newbuild more refinement
- GBC V6 Embodied Energy, Carbon and Sequestered carbon; Non-external envelope elements
- GBC V7 Condensation Check, Thermal Bridge, Secondary Element Calculator, Thermal mass calculator
- GBC V8 LCA Calculator
- GBC V9 Landscape
- GBC V10 Civils and Infrastructure: scope Increased
- GBC V11 Waste Calculator using WasteCost®Lite
- GBC V12 Plastic free v Recycled Plastic
- GBC V13 Interiors: Scope increased, Ska fit-out. refit
- GBC V14 Circular economy: Reclaim Reuse
- GBC V15 Self-build Interface
- GBC V16 CAD BIM App
- GBC V17 Whole Project Budget Calculations, full Fee bid calculation based on cost plan
- GBC V18 EU and International versions
- GBC V19 Services Design Module: Occupancy level, Energy Sources and uses,
- GBC V20 Lighting Design Module: Health & Wellbeing, Light Nutrition
- GBC V21 Biodiversity Inclusion, Biodiversity Net Gain
- GBC V22 Local Climate Appropriate construction and materials
- GBC V23 Vernacular, local: materials, trades, economy
- GBC V24 GBPB Green Building Price Book
- GBC V25 O&MM Operation & Maintenance Manuals
- GBC V26 FM Specification
- GBC V27 Local Procurement, Transport to site, distance search facility
- GBC V28 On Site Construction Emissions
- GBC V29 Design Life, Durability and Competent Products
- GBC V30 Air tightness & Energy Loss
- GBC V31 Value Engineering Opportunities: in not out
- GBC V32 Healthy Building
- GBC V33 Screening Priorities
- GBC V34 Indoor Air Quality
- GBC V35 Natural Lighting Levels
- GBC V36 Demolition

B Bespoke

- GBC B1 Retrofit Window & Insulation Calculator
- GBC B2 Responsible retrofit Carbon Calculator
- GBC B3 Window Calculator
- GBC B4 Screeds Calculator
- GBC B5 QS interface

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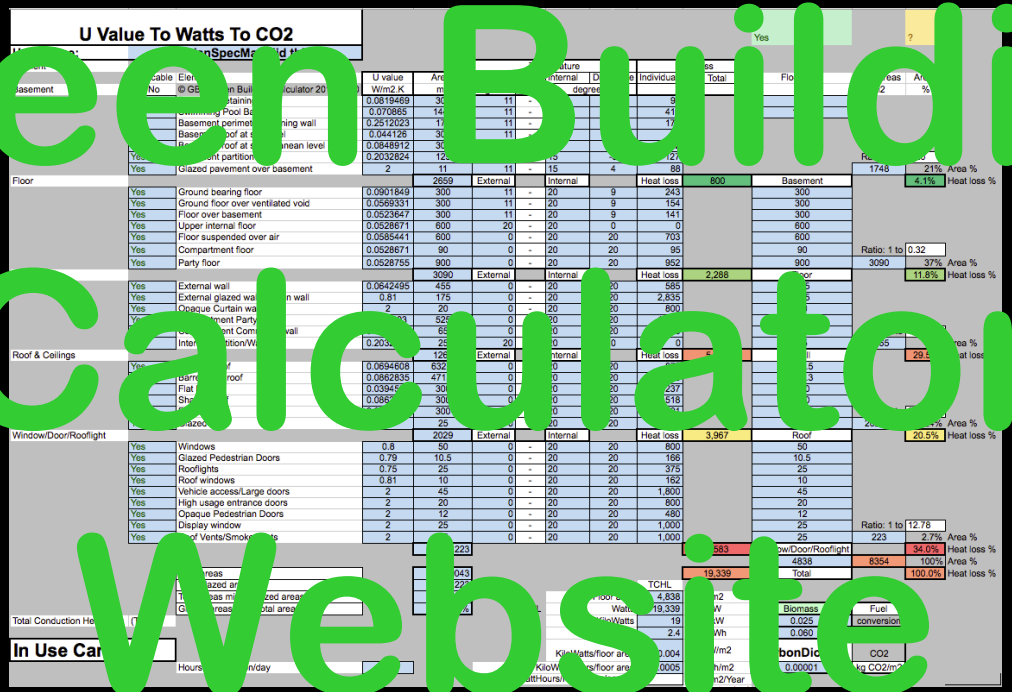

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GBC V2 Singular/Multiple Switches

Autofilled	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	To be completed by GBC user
User name:	BrianSpecMan did this									1		Autofilled
Practice Name:	Over type with Practice name											Autofilled
Client Name:	Over type with Client name											Autofilled
Project name:	Over type with Project name									4 Nominal Room	2	Autofilled
Project address:	Over type with Project address									3		Autofilled
Building Facility Fuction/Use:	Over type with Building User Activity or Purpose											Autofilled
Project Brief Employer Requirements or Architect's Proposal												
Whole Building		No.	No.	m	m	m2	m	m3	Yes/No	Hours	Degrees C	
Building(s)	**One or many Tall or short**	Number of buildings	Number of floors	Length(s)	Width(s)	Floor Area Ceiling Area Roof Area	Room heights	Volumes	Confirm achieved in Design	Operation	Internal Temperature	
© GBE Green Building Calculator 2011-2021		1 to 1000	1 to 50	1 to 1000	1 to 1000	1 to 1 million	2.4 to 10	1 to 10 million		1 to 24	-20 to +30	
Whole Building	All rooms	1	4	10	6	240	2.5	600	m3 Yes	8	20	Multiple
Terrace(s)	**One or many**	Number of terraces	Number of units in terrace	Depth front to back in terrace	Party wall to party wall	Position of single unit in terrace	Number of party walls	Number of end walls	Confirm achieved in Design	Season (sum…mer)	Winter	Choose
© GBE Green Building Calculator 2011-2021		1 to 1000	1 to 100	1 to 25	1 to 10	N/A, End or Mid						
		2	41	12	4	End	1	1	No. Yes			Multiple
	Other Geometry											
Circular Geometry	To be developed (prompted by the Video V0)											
										Swimming pool water	16	Yes
									All year	Subsoil	11	Review
	Options	Drop Down List										
									Winter	Unheated Communal Space	10	Yes
Rooms v Multible Rooms	Schedule of Accommodation: Room Functions v Room by Room Heat losses	Singular	Schedule of Accommodation: Room Functions v Room by Room Heat losses	To be deployed, developed elsewhere					Winter	Basement	15	Multible
Singular v Multiple sizes	When for example there are windows of a 'Singular' size or 'Multiple' sizes choose the appropriate item in the lists against each work section. They can be edited individually later.	Singular	Building Areas: Singular v Multiple Size Building Elements	To be deployed, developed elsewhere					Winter	Other Unheated Spaces	5	Multible
Sub-Element v Components	Prices and performance may be available as whole sub-elements (windows or doors) or can be worked out to a chosen specification	Sub-element	…dows, doors, rooflights, glazing as sub-elements v components	Deployed and developed elsewhere e.g. UvalueToWattsToCO3					Winter	Winter outdoors	0	Multible
Components costs v Elemental Cost Analysis	Prices and performance may be available as whole sub-elements (windows or doors) or can be worked out to a chosen specification	Choose	…emental/Component Bill of Materials v Elemental Cost Analysis	To be deployed and developed elsewhere later					Summer	Attic Loft	50	Multible
Seasons: Summer v Winter	Need to investigate the beuilding performance in winter with heating and summer overheating potential with/out cooling	Winter	Summer v Winter analysis	To be deployed, developed elsewhere								Choose
New Build v Refurb	To account for some components are existing, some are removed, replaced and others are new. Affects pricing and impacts	Pending	Elemental/Components: New Build, Refurbishment, Reclaimed, Reused	to be developed and deployed developed elsewhere								Choose
Generic Materials v Products	When assembling elements made of components choose between Generic materials, Products or Both	Pending	Elemental Components: Materials v Products	to be developed								Choose
Elements, Bespoke, Readymade	Engages Summary sheets with correct elments	Pending		to be developed								Choose
Domestic v Non-Domestic	Choose Structures MEP Services	Pending		to be developed								Choose

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GBC V2 Schedule of Accommodation

Schedule of Accommodation

NB: 'Room by Room Losses' table is right of this schedule

	Floor(s)	Room Functions	No.	No.	m	m	m2	m	m3	Yes/No	Hours	Degrees C
			Number of rooms	Number of floors	Length(s)	Width(s)	Floor Area Ceiling Area Roof Area	Room heights	Volumes	Achieved in Design	Room in use and temperature controlled hours per day	Design Desired Temperature
		© GBE Green Building Calculator 2017-2021	1 to 1000	1 to 50	1 to 1000	1 to 1000	1 to 1 million	2.4 to 10	1 to 10 million	Engage in Calculation	1 to 24	-20 to +30°
	Total of 4 subtotals below					Total	1,445	Total	125			
Yes	Basement floor(s)	Whole Basement	1	1	10	6	60	2.5	150	Yes	8	15
		Bedroom	1	1	5	5	25	2.5	63	Yes	8	15
		Play room	1	1	5	5	25	2.5	63	Yes	8	15
		Operating theatre	1	1	10	10	100	2.5	-		8	15
		WC	1	1	3	3	9	2.5	-		8	15
		Shower	1	1	1	3	3	2.5	-		8	15
		Garage	1	1	3	6	18	2.5	-		8	15
		Storeroom	1	1	10	5	50	2.5	-		8	15
		Kitchen	1	1	3	5	15	2.5	-		8	15
	Basement floor(s)	Room Subtotal					245		125			
Yes	Ground floor(s)	Whole Ground floor	1	1	10	6	60	2.5	150		8	20
		Bedroom	1	1	10	5	50	2.5	-		8	20
		Play room	1	1	10	5	50	2.5	-		8	20
		Operating theatre	1	1	10	5	50	2.5	-		8	20
		WC	1	1	10	5	50	2.5	-		8	20
		Shower	1	1	10	5	50	2.5	-		8	20
		Garage	1	1	10	5	50	2.5	-		8	15
		Storeroom	1	1	10	5	50	2.5	-		8	20
		Kitchen	1	1	10	5	50	2.5	-		8	20
	Ground floor(s)	Room Subtotal					400		-			
Yes	Upper floor(s)	Whole upper floors	1	1	10	6	60	2.5	150		8	20
		Bedroom	1	1	5	10	50	2.5	-		8	20
		Play room	1	1	5	10	50	2.5	-		8	20
		Operating theatre	1	1	5	10	50	2.5	-		8	20
		WC	1	1	5	10	50	2.5	-		8	20
		Shower	1	1	5	10	50	2.5	-		8	20
		Garage	1	1	5	10	50	2.5	-		8	20
		Storeroom	1	1	5	10	50	2.5	-		8	20
		Kitchen	1	1	5	10	50	2.5	-		8	20
	Upper floor(s)	Room Subtotal					400		-			
Yes	Top Floor(s) under Roof(s)	Whole top floor	1	1	10	6	60	2.5	150		8	20
		Bedroom	1	1	5	10	50	2.5	-		8	20
		Play room	1	1	5	10	50	2.5	-		8	20
		Operating theatre	1	1	5	10	50	2.5	-		8	20
		WC	1	1	5	10	50	2.5	-		8	20
		Shower	1	1	5	10	50	2.5	-		8	20
		Garage	1	1	5	10	50	2.5	-		8	20
		Storeroom	1	1	5	10	50	2.5	-		8	20
		Kitchen	1	1	5	10	50	2.5	-		8	20
	Top Floor(s)	Room Subtotal					400		-			

GBC V2 Roofs Parts

Roofs	Shapes	Which roof shape?	Roof Pitch	Ridge/Apex Height above eaves	Quantity	Width party wall to party wall	Length of roof surface front to back in terrace	Area	Total	Volume	Solar heat gain duration to be overcome by decrement delay	Solar heat gain maximum temperature
		Yes/No	Degrees	m	No.	m	m	m2	m2	m3	11	50
	22 Flat Roof (FR)	Yes	8	0.25	1	6	10.00	60.02		7.50	11	50
	23 Shallow Roof (SR)					6	10.01	60.07		15.02	11	
	24 Pitched Roof (PR)					6	10.44	62.64		93.96	11	
	25 Barrel Vault Roof (BVR)					6	9.43	56.56		133.32	11	50
	26 Domed Roof (DR)	Yes		3	1	6	9.43	84.83		56.56	11	50
	27 Hipped/Pyramid Roof (HPR)	Yes	35	3	1	6	10.44	62.64		93.96	11	50
	28 Mono-Pitched Roof (MPR)	Yes	30	3	1	6	10.44	62.64		93.96	11	50
	29.1 Mansards Roof Flat (MR:F))	Yes	8	0.25	1	6	9.75	58.52	74	147.19	11	50
	29.2 Mansard Roof Vertical (MR:V)	Yes	80	2.5	1	6	2.51	15.07				
	33 Other Geometry Roof (OGR)	Yes	?	3	1	6	13	80.50		120.75	11	50
Dormers	Parts	Dormers or not?	Roof Pitch	Ridge/Apex Height above eaves	Quantity	Width party wall to party wall	Depth	Area				
		Yes/No	Degrees	m	No.	m	m	m2				
	30 Dormer Flat Roofs (DFR)	Yes	8		1	6	3.5	21			11	50
	31 Dormer Side Wall (DSW)	Yes			2		3.5	18			11	50
	32 Dormer Window Wall (DWW)				1	6		15			11	50
Parapets	Positions	Parapets	Roof Pitch	Parapet height above roof	Quantity		Length of roof surface front to back in terrace	Area				
		Yes/No	Degrees	m	No.		m	m2				
	66 Eaves Parapet Walls (EPW)	Yes	35	0.6	3		12	2203.2				50
	67 Party Wall Parapet (PWP)	Yes	35	0.6			20	1800				50
	68 End of terrace Gable Wall Parapet (GWP)	Yes	35				20	72				50
Overhangs	Positions	Overhangs	Roof Pitch	Distance of overhang	Quantity	Width party wall to party wall		Area				
		Yes/No	Degrees	m	No.	m		m2				
	Eaves overhang	Yes	30	0.3	6	7.8		14.04				
	Verge overhang	Yes	35	0.3	6		11.8	21.24				
Gable Walls	Positions	Gable wall	Roof Pitch	Ridge/Apex Height above eaves	Quantity		Length of roof surface front to back in terrace	Area				
		Yes/No	Degrees	m	No.		m	m2				
	Gable wall upper triangle (Roof)	Yes	35	3	6		20	180				
Party Walls	Positions	Party Wall	Roof Pitch	Ridge/Apex Height above eaves	Quantity		Length front to back of terrace	Area				
		Yes/No	Degrees	m	No.		m	m2				
	Party wall roof triangles	Yes	35	3	150		10	2250				
			Not used in calcs so far									

Legend	
	User Input cell feeds into calculations
	Calculator results that the user can overwrite
	Calculator Results using user inputs
	Select from drop down list
	Row or Column titles
No	Not complete by BRM: Users ignore this row
?	Awaiting information or User to interrogate
Yes	Completed by BRM, to be completed by Users

GBC V2 Schedule of accommodation: Future

- Other Geometries: Circular, etc.
- Stepped/staggered Terraces
- Demolition only impacts
- Clothing dictates temperatures (GBC B2)

GBC V2: Other Roof Geometry

User name:	**BrianSpecMan did this**
Project name:	**Over type with Project name**
Project address:	**Over type with Project address**

Other Geomerty Roofs	Which roof?	Roof Pitch	Ridge/Apex Height above eaves	Quantity	Width	Length	Area	Volume
	Yes/No	Degrees	m	No.	m	m	m2	m3
22 Flat Roof (FR)	Yes	8	0.25	1	6	10.00	60.02	7.50
23 Shallow Roof (SR)	Yes	15	1	1	6	10.01	60.07	15.02
24 Pitched Roof (PR)	Yes	35	3	1	6	10.44	62.64	93.96
25 Barrel Vault Roof (BVR)	Yes		7.5	1	6	9.43	56.56	133.32
26 Domed Roof (DR)	Yes		7.5	1	6	9.43	84.83	56.56
27 Hipped/Pyramid Roof (HPR)	Yes	35	3	1	6	10.44	62.64	93.96
28 Mono-Pitched Roof (MPR)	Yes	30	3	1	6	10.44	62.64	93.96
29.1 Mansards Roof Flat (MR:F))	Yes	8	0.25	1	6	9.75	58.52	147.19
29.2 Mansard Roof Vertical (MR:V)	Yes	80	2.5	1	6	2.51	15.07	0.00
41 Other Geometry Ceiling (OGC)		?	3	1	6	13.42	80.50	121
41.1 Conical		30	5	1	6	15.62	93.72	?
41.2 Hyperbolic Parabaloid		30	3	1	6	16.97	101.82	?
41.3 Diagonal Butterfly		30	3	1	6	13.42	80.50	?
41.4 Truncated Conical		30	3	1	6	13.42	80.50	?
41.5 Inverted Truncated Conical		30	3	1	6	13.42	80.50	?
41.6 Secant Plan		30	3	1	6	13.42	80.50	?
41.7 Circular/Oval Plan		30	3	1	6	13.42	80.50	?
41.8		30	3	1	6	13.42	80.50	?
		Not used in calculations so far				Not used in calculations so far	Not used in calculations so far	Not used in calculations so far

Legend	
	User Input cell feeds into calculations
	Calculator results that the user can overwrite
	Calculator Results using user inputs
	Select from drop down list
	Row or Column titles
No	Not complete by BRM: Users ignore this row
?	Awaiting information or User to interrogate
Yes	Completed by BRM, to be completed by Users

GBC V2 Form Factor

To be completed by GBC user														To be completed by GBC user
	Yes	Yes	Auto-filled	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Auto-filled	Auto-filled	Auto-filled		
		User name:	Over type with user name											Auto-filled
		Project name:	Over type with Project name											Auto-filled
		Project address:	Over type with Project address											Auto-filled
		Building Facility Function/Use:	Over type with Building User Activity or Purpose											Auto-filled
		Project Brief Employer Requirements or Architect's Proposal												
	GBC V2	Form Factor		No.	No.	m	m	m2	m	m3				
		Building(s)	Room Functions	Number of buildings	Number of floors	Length(s)	Width(s)	Floor Area Ceiling Area Roof Area	Room heights	Volumes				
		© GBE Green Building Calculator 2011-2022		1 to 1000	1 to 50	1 to 1000	1 to 1000	1 to 1 million	2.4 to 10	1 to 10 million				
		Whole Building	All rooms	1	4	10	6	240	2.5	600	m3	Volume		Auto-filled
		Terrace(s)	One or many	Number of terraces	Number of units in terrace	Depth front to back in terrace	Party wall to party wall	Position of single unit in terrace	Number of party walls	Number of end walls				
		© GBE Green Building Calculator 2011-2022		1 to 1000	1 to 100	1 to 25	1 to 10	N/A, End or Mid						
				3	51	10	6	End	1	1	No.			Auto-filled
				Number of buildings	Number of floors	Length(s)	Width(s)	Floor Area Ceiling Area Roof Area	Room heights					
		External wall		1	4	80	48	1280	2.5					Auto-filled
		Ground floor footprint		1		10	6	60						Auto-filled
		Ground or upper Floor suspended over external air		1	1	10	6	60						Multiple
				Number of buildings	Number of floors	Length(s)	Width(s)	Roof Area	Roof height	Roof Volume				
	Yes	Roof area, Roof shape and Attic volume	22 Flat Roof (FR)	1	1	10	6	60	0.25	0	m3			Multiple
	Yes		23 Shallow Roof (SR)	1	1	10	6	60	0.5	15	m3			Multiple
	Yes		24 Pitched Roof (PR)	1	1	10	6	60	3	90	m3			Multiple
	Yes		25 Barrel Vault Roof (BVR)	1	1	10	6	60	3	283	m3			Multiple
	Yes		26 Domed Roof (DR)	1	1	10	6	60	3	113	m3			Multiple
	Yes		27 Hipped/Pyramid Roof (HPR)	1	1	10	6	60	3	45	m3			Multiple
	Yes		28 Mono-Pitched Roof (MPR)	1	1	10	6	60	3	90	m3			Multiple
	Yes		29 Mansard Roof (MR)	1	1	10	6	60	0.25	14	m3			Multiple
	Yes		33 Other Geometry Roof (OGR)	1	1	10	6	60	3	121	m3			Multiple
				No.	Number of floors	Depth	Width	Floor/Roof Area	Height	Volume		Heat Loss Surface Area		
		Terraced House Rear Extension		1	1	5	3.5	17.5	2.5	43.75	m3	51	m2	Multiple
		Weather Porch		1	1	2	2	4	3	12	m3	25	m2	Multiple
		Conservatory/Sun Space		1	1	3	5.5	16.5	5	82.5	m3	73.5	m2	Multiple
		Bay window		1	1	1	3	3	2.5	7.5	m3	16.5	m2	Multiple
		Oriel Window (upper floor bay window)		1	1	1	3	3	2.5	7.5	m3	16.5	m2	Multiple
		28-30 Dormer roof/window		1	1	4	5.5	22	2	44	m3	37.5	m2	Multiple
		Heat Loss Surface Area	SA	1				1766	m2	797.25	m3	220	m2	Auto-filled
		Treated Floor Area	TFA	1	4	10	6	240	m2					Auto-filled

	Form Factor (FF) range	0	1	2	3	4	5	6	7	8	9	10		
	Form Factor (FF) =	SA/TFA					8.28	Used by Zero Carbon Hub's Designer's Manual						Auto-filled
		Typology/Shape ology					FF		Target U values	Y/N	Unit			
	Target Form Factor FF	Apartment Block or uniform terrace					<2	1	0.2 to 0.15	N	W/m2.K	4		Auto-filled
		Semi-detached or compact detached houses					2 to 3	2	0.15 to 0.12	N	W/m2.K	3		Auto-filled
		Less compact detached houses or compact detached bungalows					3 to 4	3	0.12 to 0.10	N	W/m2.K	2		Auto-filled
		Complex shaped detached bungalows					>4	4	<0.1	Y	W/m2.K	1		Auto-filled
	Passivhaus Heat Loss Factor (HLF)	0.7	1.1	1.5	2	2.4	2.8	3	3.3	3.7	4	4.5	No.	
0.038	Stone wool insulation (mm)	70	110	150	200	240	280	300	330	370	400	450	mm	Auto-filled
alue	Equals U values of:	0.54	0.35	0.25	0.19	0.16	0.14	0.13	0.12	0.10	0.10	0.08	U	Auto-filled
0.16	Calcium Silicate	463	632	842	1011	1179	1263	1389	1389	1558	1684	1895	mm	Choose
		Rule of thumb: Halve the heat loss area, halve the insulation thickness												

GBC V2>V3 Development: Scope: Building Elements: Hemp

- Readymade Elemental Assemblies
- Manufacturer's Accredited Assemblies
- Hemp & Hemp-lime Methods of Construction

GBC V2>V3 Manufacturer Accredited Assemblies: Hemp Scope & Additional Quantities

	Readymade Elemental Assemblies			
	Generic Elemental Assemblies	To be developed in Version 3 & 4		
	250	No	DropDownList	Choose
	Manufacturer Accredited Assemblies	To be developed in Version 3 & 4		
	1000 UKCW '22 Zero Zone MMC Modular CE Hemp External Wall	Yes	DropDownList	Choose
	1001 UKCW '22 Zero Zone MMC Modular CE Hemp Internal Partition	Yes	DropDownList	Choose
	1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	Yes	DropDownList	Choose
	1003 Inditherm LTF Light timber frame External Wall	No	DropDownList	Choose
	1004 EB '06 LimeTech HempHouse Tradical Insitu LTF Hemp External Wall	No	DropDownList	Choose
	1005 EB '06 LimeTech HempHouse Tradical Insitu LTF Hemp Pitched Roof	No	DropDownList	Choose
	1006 EB '06 LimeTech HempHouse Sumatra HL Brick Internal Partition	No	DropDownList	Choose
	1007 Green Core Construction LTF Hemp External Wall	No	DropDownList	Choose
	1008	Yes	DropDownList	Choose
	1009	Yes	DropDownList	Choose

	Readymade Elemental Assemblies				From Readymade Elements Library			
	Generic Elemental Assemblies							
Yes	250							
	GREA Generic Refurbishment Elemental Assemblies							
Yes	500							
	Manufacturer Accredited Assemblies							
Yes	1000 UKCW '22 Zero Zone MMC Modular CE Hemp External Wall		m			Singular	DropDownList	Choose
	Number of Buildings with External Walls (EW)	1	No.		Area of External Walls (EW)	80.000	m2	Auto-filled
	Length of External Walls (EW)	32	m		Total Area of External Walls (EW)	80.000	m2	Auto-filled
	Height of External Walls (EW)	2.5	m		Total Area Multiple sizes of External Walls (EW)	19.000	m2	Auto-filled
					Total Area of External Walls (EW) (chosen single or multiple)	80.000	m2	Auto-filled
Yes	1001 UKCW '22 Zero Zone MMC Modular CE Hemp Internal Partition	(Probably non-loadbearing, not in basements)				Singular	DropDownList	Choose
	Number of Building with Internal Partitions (IP)	5	No.		Area of Internal Partitions (IP)	50.000	m2	Auto-filled
	Thickness of Internal Partitions (IP)	0.15	m		Total Area Internal Partitions (IP)	250.000	m2	Multiple
	Length of Internal partitions	20	m		Total Area Internal Partitions (IP)	258.000	m2	Multiple
	Height of Internal partitions	2.5	m		**Total Area Internal Partitions (IP) (chosen single or multiple)**	250.000	m2	Auto-filled
					Volume of Internal Partitions (IP)	7.500	m3	Auto-filled
					Total Volume of Internal Partitions (IP)	37.500	m3	Auto-filled
Yes	1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	(excluding ground and top floor)				Singular	DropDownList	Choose
	Number of Upper Floors (UF)	1	No.		Area of Upper Floors (UF)	60.000	m2	Auto-filled
	Width of Upper Floors (UF)	6	m		Total areas of Upper Floors (UF)	60.000	m2	Auto-filled
	Length of Upper Floors (UF)	10	m		Total areas Multiple sizes of Upper Floors (UF)	29.000	m2	Auto-filled
					Total areas of Upper Floors (UF) (chosen single or multiple)	60.000	m2	Auto-filled
No	1003 Inditherm LTF Light timber frame External Wall		m					
No	1004 EB '06 LimeTech HempHouse Tradical Insitu LTF Hemp External Wall		m					
Yes	1005 EB '06 LimeTech HempHouse Tradical Insitu LTF Hemp Pitched Roof		m					
Yes	1006 EB '06 LimeTech HempHouse Sumatra HL Brick Internal Partition		m					
Yes	1007 Green Core Construction LTF Hemp External Wall		m					
Yes			m					
Yes			m					

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Green Building Readymade Elemental Assemblies

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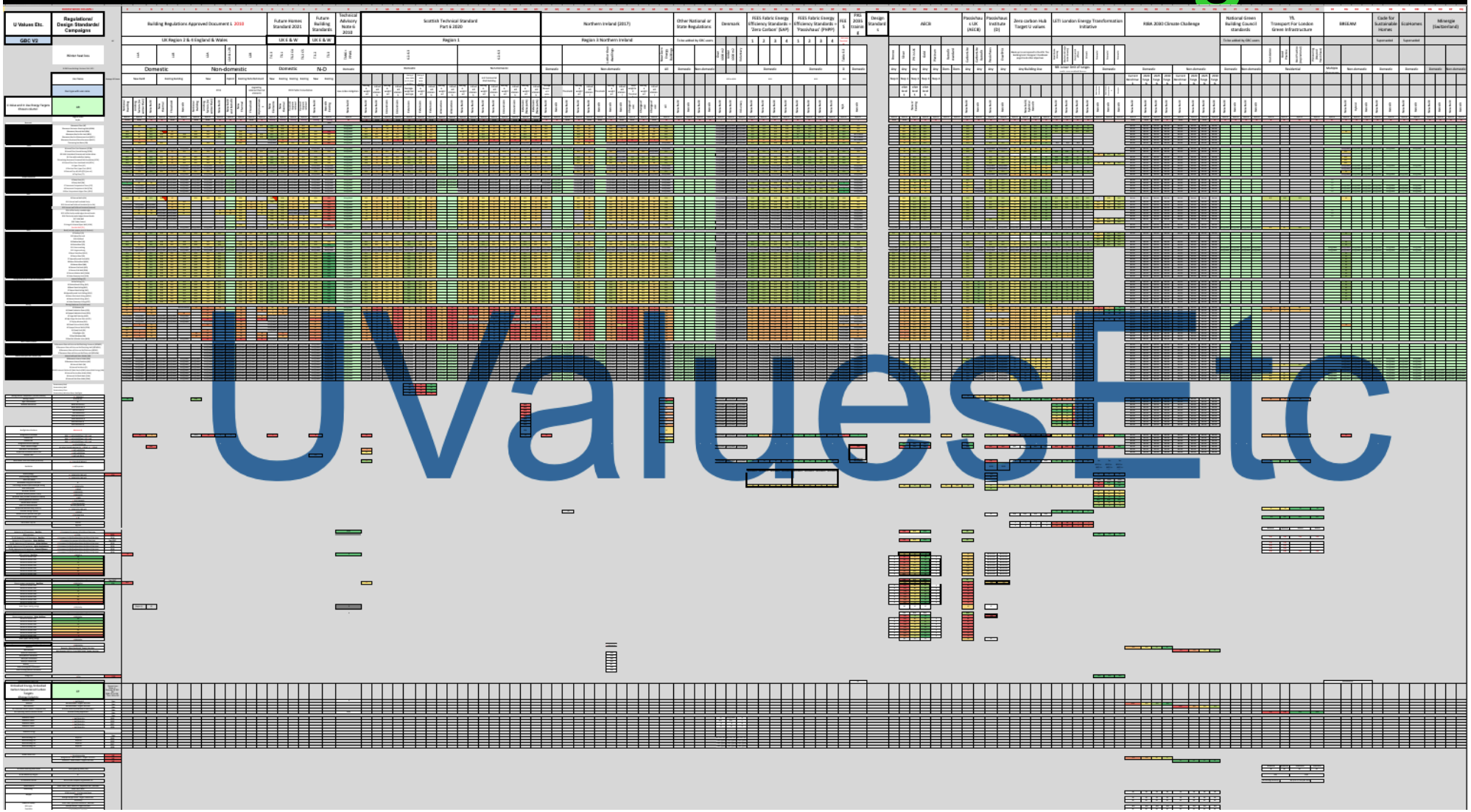
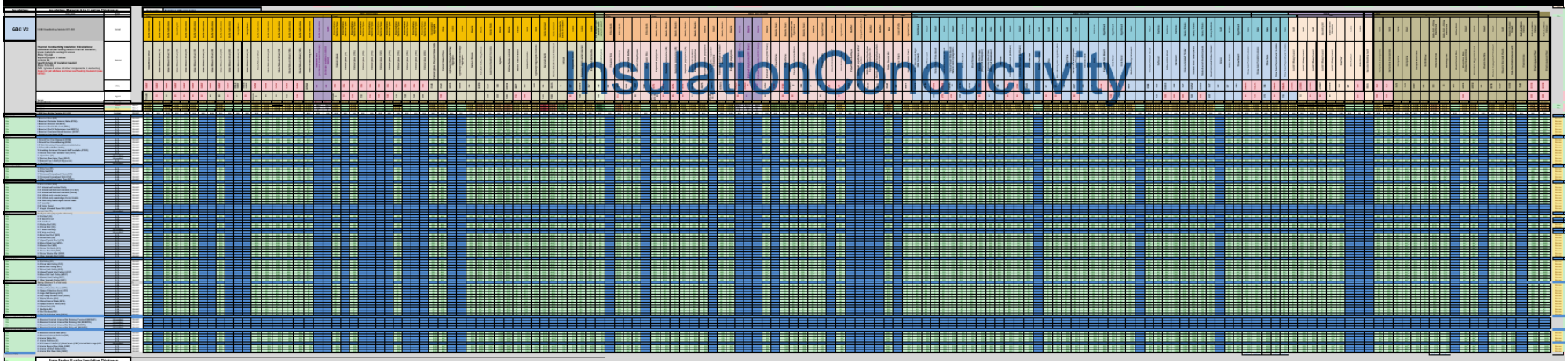
GBC V2 U values Etc. Targets



GBC V2 Thermal Insulation Conductivities

- Violet columns: Violet materials: do not use:
  - (asbestos, ceramic fibre, CFC, HCFC plastics)
- Dark blue columns: need more properties



>150 Materials/formats > k values > U values > Thickness

Chosen column:		Group			Mainly mineral based																
AB		Form			Fibre					Foam											
		Material			Glass Mineral Wool	Stone Mineral Wool	Blast Furnace Slag wool	Asbestos fibre (yes its used in eastern europe)	Ceramic Fiber (no longer available in UK/EU market)	Cellular glass	Cellular glass / Recycled Glass balls	Cellulat glass chips	Lightweight Expanded clay Aggregate	Lightweight Expanded Sewage Aggregate	Calcium Silicate	Extruded Hollow Clay Blocks	Autoclaved Aerated Concrete	Hollow Dense concrete block	Aerated Concrete	Lightweight aggregate concrete	
		Initials			GMW	SMW	BFSW	AF	CF	CG	CGB	CGC	LECA	LESA	CS	EHCB	AAC	HDCB	AC	LAC	
	k values	Worst	W/m.K		0.045	0.045	0.040	Don't	Don't	0.060	0.060	0.100			0.059	0.390	0.110	0.550	0.160	0.230	
	k values	Best	W/m.K		0.031	0.031	0.031	Use	Use	0.037	0.039	0.100			0.059	0.270	0.110	0.550	0.160	0.120	
	k values	Average	W/m.K		0.038	0.038	0.036	It	It	0.049	0.050	0.100	0.000	0.000	0.059	0.330	0.110	0.550	0.160	0.175	
Floor	© GBE Calculator 2018	U values	W/m2.K		mm	mm	mm	mm		mm	mm		mm	mm	mm		mm		mm	mm	
Yes	Basement Floor	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Swimming Pool Basin	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Upper floors (including ground floor over basement)	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Ground floor over ground	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Ground floor over ventilated void	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Floor with underfloor heating	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	External floor over air	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Compartment Floor	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Party Floor	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Walls		0.00																			
Yes	Basement Perimeter Wall	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Basement internal Wall/Partitions	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	External wall	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
No	External wall Insulated Cavity	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
No	External wall Solid wall insulated (Int or Ext)	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Internal partition/wall	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Compartment Wall	0.30	W/m2.K		127	127	118			162	165	333			197	1100	367	1833	533	583	
Yes	Party Wall	0.30	W/m2.K		127	127	118			162	165	333			197	1100	367	1833	533	583	
No	Solid Wall	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
No	Unfilled cavity unsealed edges	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
No	Unfilled cavity sealed edges thermal breaks	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
No	Filled cavity sealed edges thermal breaks	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Roof	Roofs (includes opaque parts of dormers)	0.00																			
Yes	Flat roof	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Shallow roof	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Pitched roof (insulation at rafter)	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Loft ceiling (insulation at ceiling)	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Barrel Vault roof	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Domed Roof	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Eaves overhang	Unregulated	W/m2.K																		
Yes	Verge overhang	Unregulated	W/m2.K																		
Yes	Basement roof at site level	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Yes	Basement roof at subterranean level	0.15	W/m2.K		253	253	237			323	330	667			393	2200	733	3667	1067	1167	
Glazing	Glazing (Maximum % of total area)	0.00	%																		
Yes	Windows (whole window value)	0.95	W/m2.K		40	40	37			51	52	105			62	347	116	579	168	184	
Yes	Glazed Pedestrian Doors	0.95	W/m2.K		40	40	37			51	52	105			62	347	116	579	168	184	
Yes	Vehichle access and similar large doors	0.75	W/m2.K		51	51	47			65	66	133			79	440	147	733	213	233	
Yes	High usage entrance doors	0.75	W/m2.K		51	51	47			65	66	133			79	440	147	733	213	233	
Yes	Opaque Door	0.75	W/m2.K		51	51	47			65	66	133			79	440	147	733	213	233	
Yes	Rooflights	0.95	W/m2.K		40	40	37			51	52	105			62	347	116	579	168	184	
Yes	Roof windows	0.95	W/m2.K		40	40	37			51	52	105			62	347	116	579	168	184	
Yes	Roof ventilation including smoke vents	0.75	W/m2.K		51	51	47			65	66	133			79	440	147	733	213	233	
Yes	Glazed roof	0.95	W/m2.K		40	40	37			51	52	105			62	347	116	579	168	184	

GBC V2>V3 Insulation: Added Hemp, Hemp+ & Hemp-Lime

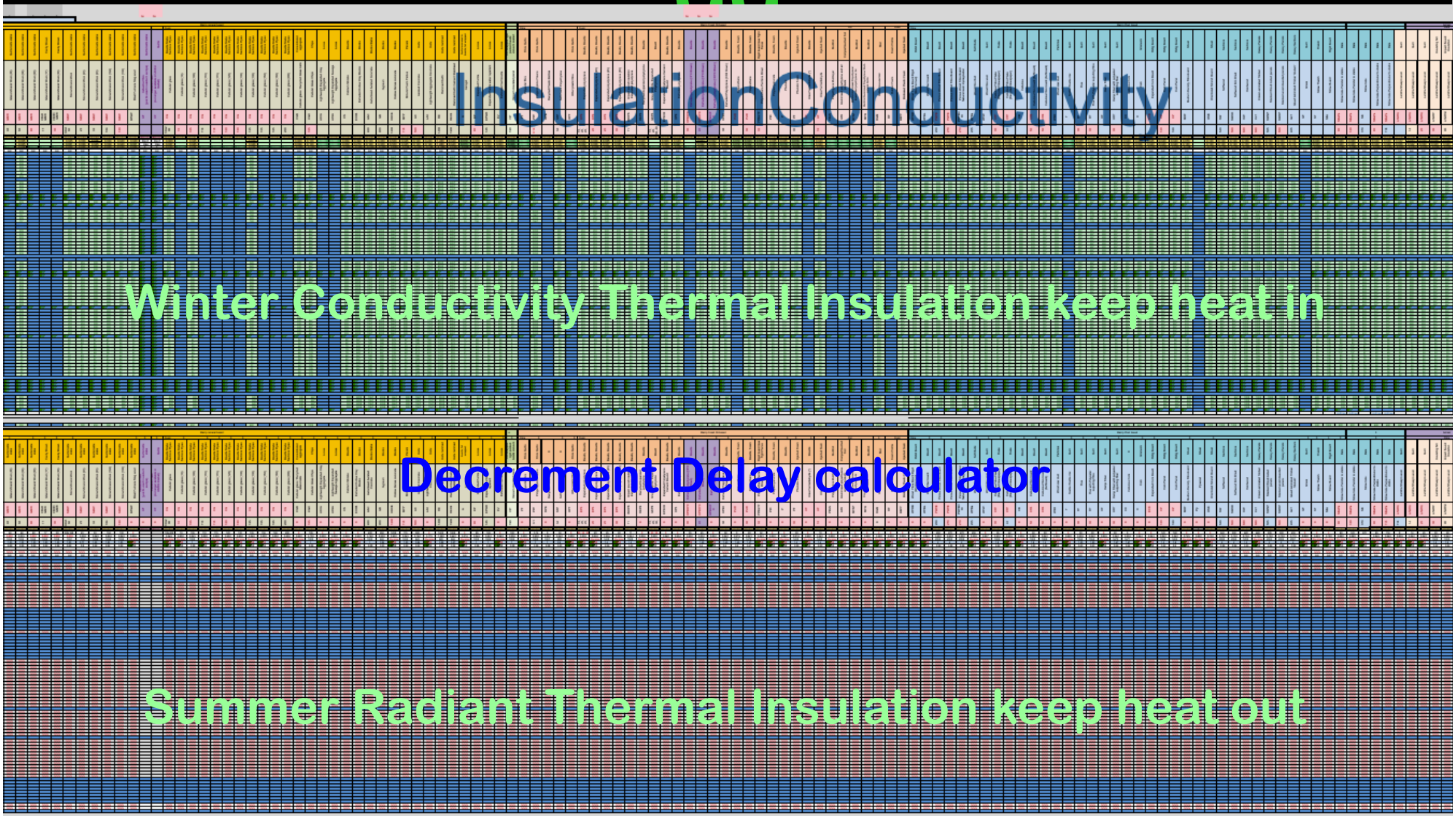
Completed by GBC		No	Yes	Yes & Later	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
To be completed by GBC user		Yes	Yes	Yes													
V1	V2	**Insulation**	**Insulation Material k to U value Thickness**														
1	4		Chosen column:	Group					Mainly Plant based					Mixed			
2	5		AR	Form												Mineral-plant	
3	6	**GBC V2.1**	© GBE Green Building Calculator 2011-2022	Format		Quilt	Quilt	Batt	Batt		Insitu	Insitu	Spray	Block	Block	Block	Structural Cob
4	7		**Thermal Conductivity Insulation Calculations:** Addresses winter heating season thermal insulation, Gives material's average k values (Row 13) and required project U values (column D) See thickness of insulation needed (Row 15 to 60) (NB: Ignores k value of other components in elements) Does not yet address summer overheating insulation (see below)	Material		Hemp fibre	Hemp Fibre with polyester supporting fibre	Hemp fibre	Hemp and Flax fibre	Cellulose Cork	Hemp-lime (Hempcrete)	Hemp-lime (Hempcrete)	Hemp-lime	Hemp-lime	Hemp & wood fibre	Earth-Straw	Plant Fibre Reincorced Insitu-Soil
5	8			Initials		HFQ	HFPQ	HFB	HFFB	CC	HLI	HLI	HLS	HLB	HWFB	ESB	PFRISSC
	9			kg/m3	Density		30	45	45		350						
	10			Used in Project	Yes or No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
6	11			k values	Worst	W/m.K	0.040	0.040	0.040	0.038	0.040	0.120	0.070	0.070	0.070	0.038	0.066	0.410
7	12			k values	Best	W/m.K	0.038	0.040	0.040	0.038	0.037	0.070	0.070	0.070	0.070	0.038	0.066	0.410
8	13			k values	Average	W/m.K	0.039	0.040	0.040	0.038	0.039	0.095	0.070	0.070	0.070	0.038	0.066	0.410
12	14		© GBE Green Building Calculator 2011-2022	U values		W/m2.K	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
	15	Basement																
13	16	Yes	1 Basement Floor (BF)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
23	17	Yes	2 Basement Perimeter Retaining Walls (BPRW)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
	18	Yes	3 Basement External Wall (BEW)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
45	19	Yes	4 Basement Roof at Site Level (BRSL)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
46	20	Yes	5 Basement Roof at Subterranean level (BRSTL)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
60	21	Yes	6 Basement Overhead Glazed Pavement (BOGP)	0.75		W/m2.K	52	53	53	51	51	127	93	93	93	51	88	547
14	22	Yes	7 Swimming Pool Basin (SPB)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
	23	Floors																
15	24	Yes	8 Ground Floor Over Basement (GFOB)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
16	25	Yes	9 Ground Floor Ground Bearing (GFGB)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
	26	Yes	9.0 Solid Uninsulated: Excavate and insulate below	0.00		W/m2.K												
18	27	Yes	9.1 Floor with underfloor heating	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
	28	Yes	78 Insulating Permanent Formwork Raft Foundation (IPFRF)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
17	29	Yes	10 Ground Floor Over Ventilated Void (GFOV)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
	30	Yes	11 Upper Floor (UF)	Unregulated		W/m2.K												
	31	Yes	12 Services Riser Upper Floor (SRUF)	Unregulated		W/m2.K												
19	32	Yes	13 External Floor & Soffit (EFS) (over air)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
	33	Yes	14 Top Floor (TF)	Unregulated		W/m2.K												
	34	Compartmentation																
21	35	Yes	15 Party Floor (PF)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
31	36	Yes	16 Party Wall (PW)	0.30		W/m2.K	130	133	133	127	128	317	233	233	233	127	220	1367
20	37	Yes	17 Communal Compartment Floors (CCF)	0.15		W/m2.K	260	267	267	253	257	633	467	467	467	253	440	2733
30	38	Yes	18 Communal Compartment Wall (CCW)	0.30		W/m2.K	130	133	133	127	128	317	233	233	233	127	220	1367
	39	Yes	19 Riser Compartment Upper Floor (RCUF)	0.30		W/m2.K	130	133	133	127	128	317	233	233	233	127	220	1367

GBE

GBC

Green Building Calculator

GBC V3 Insulation k density She dd



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GBC V2>V3 Elements: Hemp

- U Value Elements, Other Elements, Accessories, Systems
- Readymade Manufacturer Accredited Assemblies: Hemp
  - Project specific additional finishes: Above below in out
- Component rows: Yes, No
- Choose: New, Retrofit, Demolition
- Choose: Generic materials, Products
- Components: Choose materials

Multiple	Choose	Choose	Yes	Yes	Yes	Choose	Yes	Yes	Multiple	Auto-filled	Auto-filled	Yes	Yes	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Check
			© GBE Green Building Calculator 2011-2022																
GBC V2.1	Elements		Elemental U values Component k values & thicknesses		User name:	Over-type with User name													
Yes/No	New Build or Refurbishment Actions	Generic material or Product or Accessory	Component Function	Manufacturer	Product Reference	Component Material	Density	Thermal Conductivity	Thickness	Thickness	Thermal Resistance	size: width or thickness (solid)	Spacing or cavity (void)	Fraction of area or section	Thermal Resistance	Calculated Total U value	Target Elemental U value	Difference	Pass, PassU or Fail
Yes			1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	text	text	Choose from Drop Down List	kg/m3	W/m.K	mm	m	m2.K/W	mm	mm	%	m2.K/W	W/m2.K	W/m2.K	W/m2.K	Auto
Yes			0								0.00				0.000				
Choose	New	Generic Material	Floor decoration			Internal Decoration: Lacquer	1000	1	0.1	0	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Floor finish			Timber: FSC, Softwood Boarded floor	630	0.13	25	0	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Internal acoustic lining/decking			Internal Lining: Gypsum Fibreboard	1180	0.36	48	0	0.000	1	1	100%	0.000				
Yes	New	Generic Material	Structure Skin:			Timber composite modular cassette: OSB		1	10	0.01	0.010	400	600	67%	0.007				
Yes	New	Generic Material	Structure zone Acoustic insulation			Thermal Insulation: Wood fibre, 50mm	180	0.042	300	0.3	7.143	1	1	100%	7.143				
Yes	New	Generic Material	Divider:			MDF Medium Density Fibreboard		1	10	0.01	0.010	1	1	100%	0.010				
Yes	New	Generic Material	Structure zone Thermal insulation			Thermal Insulation: Hempcrete	350	0.07	100	0.1	1.429	1	1	100%	1.429				
Yes	New	Generic Material	Structure frame:			Timber composite modular cassette: softwood		1	100	0.1	0.100	50	600	8%	0.008				
Yes	New	Generic Material	Structure Skin:			Timber composite modular cassette: OSB		1	10	0.01	0.010	400	600	67%	0.007				
Yes	New	Generic Material	Acoustic lining, vapour control layer (VCL) and thermal mass			Cement particle board		1	12	0.012	0.012	1	1	100%	0.012				
Choose	New	Generic Material	Services Batten Zone Thermal Insulation		IndiTherm	Thermal Insulation: Hemp, 40mm	38	0.04	25	0.00	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Service zone Battens			Timber: FSC, Softwood, Sawn	610	0.13	25	0.00	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Services Zone			Air		1	25	0.00	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Ceiling lining		BreathAboard	Internal Lining: Gypsum plasterboard foil faced, 12.5mm	900	0.25	12.5	0.00	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Ceiling finish		BreathAplasta	Plaster Skim	600	0.180	3	0.00	0.000	1	1	100%	0.000				
Choose	New	Generic Material	Ceiling decoration		Graphenestone	Internal Decoration: Lime Graphene Paint	1000	1	0.1	0.00	0.000	1	1	100%	0.000				
Yes			0					Potential	705.7		0.00				0.000				Check
								Actual	542	0.542					8.615	0.116	0.00	0.116	Fail
									Overall thickness mm	Overall thickness m					Total elemental R value	Total elemental U value	Target elemental U value	Difference	Pass, PassU or Fail

GBC GBC B2 Elemental Assembly > 4 Bill of Materials Quantities Costs

Yes/No	Exiting Previous Proposed	Component Function	Manufacturer	Product Reference	Material	Area GIFA	Labour Rate	Labour Cost	Accessories Rate	Accessories Cost	Products or Materials Rate	Products or Materials Cost	Preliminaries, Overheads, Profits Rate	Preliminaries, Overheads, Profits Cost	Total Rate	Total Cost
No		**Ground Bearing Solid Floor (GBSF) Bill of MQLAPMOC**				m2	£/m2	£	£/m2	£	£/m2	£	£/m2	£	£/m2	£
Yes						0.00										
No	Proposed	Internal Floor Decoration	0	0	Lacquer	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Proposed	Internal Floor Finish	0	0	Hardwood flooring	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Proposed	Internal Decking	0	0	Gypsum fibreboard	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Proposed	Internal Thermal Insulation	0	0	Wood fibre	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Previous	Internal Floor Decoration	0	0	Lacquer	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Previous	Internal Floor Finish	0	0	Softwood	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Previous	Internal Decking	0	0	Chipboard	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Previous	Internal Thermal insulation	0	0	Mineral wool, rock	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Previous	Internal Vapour control layer	0	0	PE foil Polyethylene	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Existing	Floor wearing surface	0	0	Ceramic Tile	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Existing	Levelling/Bedding	0	0	Screed	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Existing	Solid Ground Floor	0	0	Softwood	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
No	Existing	Undisturbed Subsoil	0	0	Undisturbed Soil	0.00	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0	£0.00	£0
Yes																
						£0.00	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
						Elemental Cost/m2	Elemental Labour Rate/m2	Elemental Labour Cost	Elemental Accessories rate/m2	Elemental Accessories Cost	Elemental Material Rate/m2	Elemental Material Costs	Elemental Preliminaries, Overheads, Profits Rate	Elemental Preliminaries, Overheads, Profits Cost/m2	Total Elemental Intervention: Materials Accessories & Labour Rate	Elemental Intervention Cost: Materials Accessories & Labour

- Retrofit bespoke development
- Existing, previous & proposed interventions
- Individual rates or overall rates

GBE

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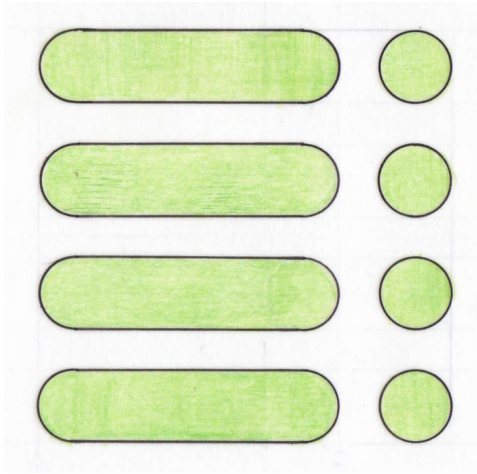
GBC

Green Building Calculator

https://GreenBuildingCalculator.uk

GBPB

Green Building Price Book



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Green Building Calculator

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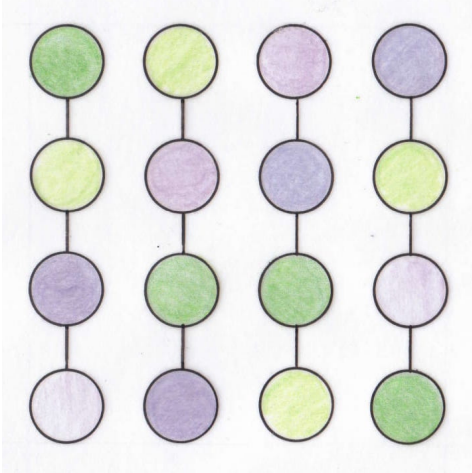
GBPDC

Green Building Product Data Collection



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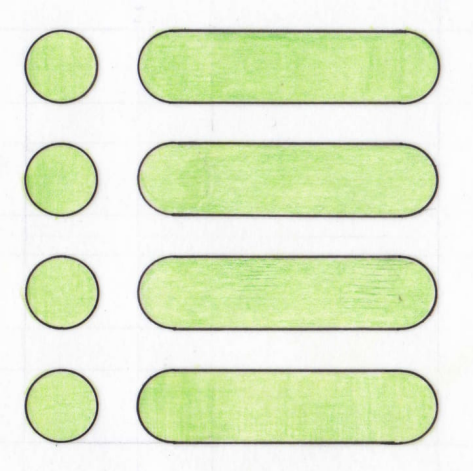
GBS

Green Building Specification



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GBREAMS

Green Building Readymade Elemental Assemblies

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GBC V2>V3

Element EE EC & SC: Hemp

Embodied Energy Embodied Carbon Sequestered Carbon

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Whole Building Embodied Energy Embodied Carbon Sequestered Carbon

Hide

Component Function	Length	Width	Height	Component Thickness	Quantity	Areas	Volume	Primary or all Materials
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Auto-filled				Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled
1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	m	m	m	m	No.	m2	m3	0
						0.000		
Floor decoration				0	1	60.000	0	Internal Decoration: Lacquer
Floor finish				0	1	60.000	0	Timber: FSC, Softwood Boarded floor
Internal acoustic lining/decking				0	1	60.000	0	Internal Lining: Gypsum Fibreboard
Structure Skin:				0.01	1	60.000	0.6	Timber composite modular cassette: OSB
Structure zone Acoustic insulation				0.3	1	60.000	18	Thermal Insulation: Wood fibre, 50mm
Divider:				0.01	1	60.000	0.6	MDF Medium Density Fibreboard
Structure zone Thermal insulation				0.1	1	60.000	6	Thermal Insulation: Hempcrete
Structure frame:				0.1	1	60.000	6	Timber composite modular cassette: softwood
Structure Skin:				0.01	1	60.000	0.6	Timber composite modular cassette: OSB
Acoustic lining, vapour control layer (VCL) and themal mass				0.012	1	60.000	0.72	Cement particle board
Services Batten Zone Thermal Insulation				0	1	60.000	0	Thermal Insulation: Hemp, 40mm
Service zone Battens				0	1	60.000	0	Timber: FSC, Softwood, Sawn
Services Zone				0	1	60.000	0	Air
Ceiling lining				0	1	60.000	0	Internal Lining: Gypsum plasterboard foil faced, 12.5mm
Ceiling finish				0	1	60.000	0	Plaster Skim
Ceiling decoration				0	1	60.000	0	Internal Decoration: Lime Graphene Paint

Component Function	Information Source	Embodied Energy	Embodied Energy	Embodied Energy	Area or section	m2	Embodied Carbon	Embodied Carbon Dioxide	Embodied Carbon Dioxide	Embodied Carbon Dioxide	Density	Weight	Embodied Energy	Embodied Carbon Dioxide	Required in building?	Embodied Energy Building	Embodied Carbon Building	Is the material Bio-based or contain Biogenic carbon?	Sequestered carbon	Total Carbon	
	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	0 Completed by GBC
	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Auto-filled	Yes	Auto-filled	Auto-filled	To be completed by GBC user
															Grand...s	#N/A	#N/A	#N/A	#N/A	#N/A	
1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	0	Mj/m3	MJ/m2	MJ/Item	m2	m2	kg C/kg	kg CO2/kg	kg CO2/m2	kg CO2/Item	kg/m3	kg/m2	MJ/m3	kg CO2/m3	Yes/No	MJ	kg CO2	Yes/No	kg CO2	Kg CO2	
Floor decoration	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Choose	0	0	No	0	0	Auto-filled
Floor finish	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	720	0	0	0	Choose	0	0	Yes	0	0	Auto-filled
Internal acoustic lining/decking	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Choose	0	0	No	0	0	Auto-filled
Structure Skin:	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Yes	0	0	?	0	0	Auto-filled
Structure zone Acoustic insulation	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Yes	0	0	?	0	0	Auto-filled
Divider:	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	2700	0	0	0	Yes	0	0	No	0	0	Auto-filled
Structure zone Thermal insulation	ICE V 3.0 Beta	0	0	0	0		0	1.35	0	0	12	0	336	16.2	Yes	2,016	97	No	0	97	Auto-filled
Structure frame:	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Yes	0	0	?	0	0	Auto-filled
Structure Skin:	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Yes	0	0	?	0	0	Auto-filled
Acoustic lining, vapour control layer (VCL) and themal mass	E-CT	0	0	0	0		0	4.2	0	0	1850	0	247900	7770	Yes	178,488	5,594	No	0	5,594	Auto-filled
Services Batten Zone Thermal Insulation	ICE V 3.0 Beta	0	0	0	0		0	1.35	0	0	12	0	336	16.2	Choose	0	0	No	0	0	Auto-filled
Service zone Battens	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	720	0	0	0	Choose	0	0	Yes	0	0	Auto-filled
Services Zone	ICE V 3.0+V2 HE	0	0	0	0		0	0	0	0	2000	0	0	0	Choose	0	0	No	0	0	Auto-filled
Ceiling lining	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Choose	0	0	No	0	0	Auto-filled
Ceiling finish	ICE V 3.0 Beta	0	0	1305	1		0	0	0	67	0	0	1305	67	Choose	0	0	No	0	0	Auto-filled
Ceiling decoration	ICE V 3.0 Beta	0	0	0	0		0	0	0	0	0	0	0	0	Choose	0	0	No	0	0	Auto-filled
																180,504	5,692		0	5,692	Auto-filled

GBE

https://GreenBuildingEncyclopaedia.uk

GBC V2

GBC

Green Building Calculator

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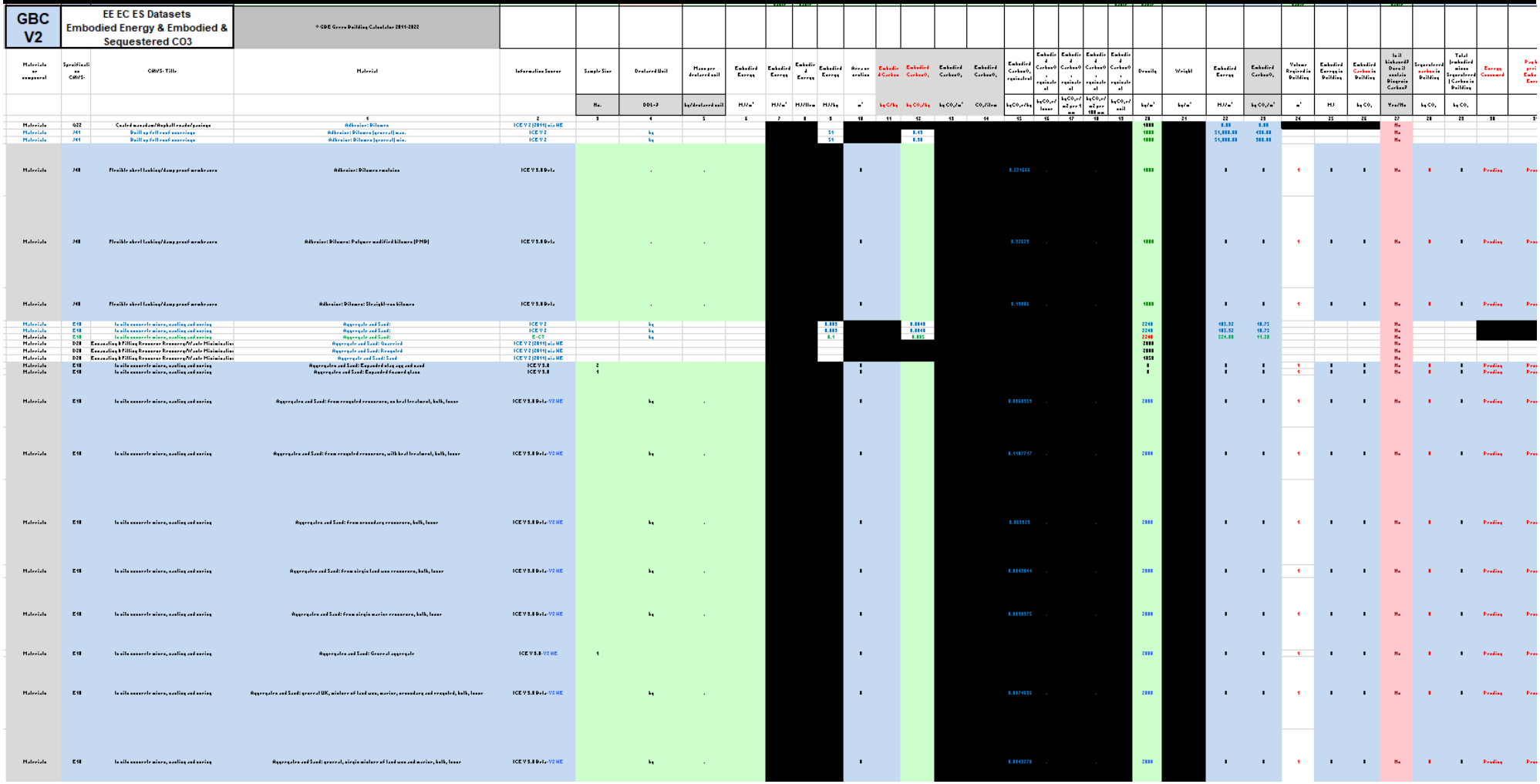
EE EC SC Look Up Table

More datasets needed



GBC V2	EE EC ES Datasets Embodied Energy & Embodied & Sequestered CO3	© GBE Green Building Calculator 2011-2022																														
Materials or component	Specification CAWS-	CAWS- Title	Material	Information Source	Sample Size	Declared Unit	Mass per declared unit	Embodied Energy	Embodied Energy	Embodied Energy	Embodied Energy	Average variation	Embodied Carbon	Embodied CarbonO_2	Embodied CarbonO_2	Embodied CarbonO_2	Embodied CarbonO_2	Embodied CarbonO_2, equivalent	Embodied CarbonO_2 equivalent	Embodied CarbonO_2 equivalent	Embodied CarbonO_2 equivalent	Embodied CarbonO_2 equivalent	Density	Weight	Embodied Energy	Embodied CarbonO_2	Volume Required in Building	Embodied Energy in Building	Embodied Carbon in Building	Is it biobased? Does it contain Biogenic Carbon?	Sequestered carbon in Building	Total Embodied minus Sequestered Carbon in Building	Energy Assessed	Peak per Embo Ener
					No.	DDL-7	kg/declared unit	MJ/m²	MJ/m²	MJ/kg	MJ/kg	m³	kg C/kg	kg CO_2/kg	kg CO_2/m³	CO_2/litre		kg CO_2,e/kg	kg CO_2,e/kg lower	kg CO_2,e/kg mEp pre 5 ave	kg CO_2,e/kg 150 ave	kg CO_2,e/kg unit	kg/m³	kg/m³	MJ/m²	kg CO_2/m²	m³	MJ	kg CO_2	Yes/No	kg CO_2	kg CO_2		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Materials	Q22	Coated membrane/Asphalt roofing/pavings	Adhesive: Bitumen	ICE V 2 (2011) xls ME																		1000		0.00	0.00				No				
Materials	J41	Built up felt roof coverings	Adhesive: Bitumen (general) max.	ICE V 2		kg					51			0.43								1000		51,000.00	430.00				No				
Materials	J41	Built up felt roof coverings	Adhesive: Bitumen (general) min.	ICE V 2		kg					51			0.38								1000		51,000.00	380.00				No				
Materials	J40	Flexible sheet lashing/damp proof membranes	Adhesive: Bitumen emulsion	ICE V 3.0 Dets		.	.					0					0.221655					1000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	J40	Flexible sheet lashing/damp proof membranes	Adhesive: Bitumen: Polymer modified bitumen (PMB)	ICE V 3.0 Dets		.	.					0					0.32623					1000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	J40	Flexible sheet lashing/damp proof membranes	Adhesive: Bitumen: Straight-run bitumen	ICE V 3.0 Dets		.	.					0					0.19886					1000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand:	ICE V 2		kg					0.005			0.0048								2240		105.92	10.75				No				
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand:	ICE V 2		kg					0.005			0.0048								2240		105.92	10.75				No				
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand:	C-CT		kg					0.1			0.095								2240		224.00	11.20				No				
Materials	D20	Excavating & Filling Resources Resources/Waste Minimisation	Aggregate and Sand: Quarried	ICE V 2 (2011) xls ME																		2000							No				
Materials	D20	Excavating & Filling Resources Resources/Waste Minimisation	Aggregate and Sand: Recycled	ICE V 2 (2011) xls ME																		2000							No				
Materials	D20	Excavating & Filling Resources Resources/Waste Minimisation	Aggregate and Sand: Sand	ICE V 2 (2011) xls ME																		1850							No				
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: Expanded slag, clay and sand	ICE V 3.0	2							0										0		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: Expanded foamed glass	ICE V 3.0	1							0										0		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: from recycled resources, as bulk bituminous, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.0868959					2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: from recycled resources, with bituminous, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.1187747					2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: from secondary resources, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.065328					2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: from virgin land won resources, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.0845844					2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: from virgin marine resources, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.0858975					2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: Gravel aggregate	ICE V 3.0 V2 ME	1							0										2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: gravel UK, mixture of land won, marine, secondary and recycled, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.0874035					2000		0	0	1	0	0	No	0	0	Pending	Pen
Materials	E10	In situ concrete mixes, casting and curing	Aggregate and Sand: gravel, virgin mixture of land won and marine, bulk, loose	ICE V 3.0 Dets V2 ME		kg	.					0					0.0845278					2000		0	0	1	0	0	No	0	0	Pending	Pen

ICE 3.0 database carbon reporting options

Mass/Declared Unit	kg/Declared Unit
Embodied Energy only	
Embodied CarbonO2 (only)	kgCO2/kg
Embodied CarbonO2 (only)	kgCO2/m2
Embodied CarbonO2 equivalent	kgCO2e/kg
Embodied CarbonO2 equivalent	kgCO2e/tonne
Embodied CarbonO2 equivalent	kgCO2e/m2 per 1 mm
Embodied CarbonO2 equivalent	kgCO2e/m2 per 100 mm
Embodied CarbonO2 equivalent	kgCO2e/unit
Module A1-3, Embodied Carbon	kg CO2e/kg
Module D, Carbon	kg CO2e/kg
Module A-D, Embodied Carbon	kg CO2e/kg

GBC B2 ICE Database EC datasets: more calculations to enable comparison

EE EC SC Datasets Embodied Energy & Embodied & Sequestered CO2			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Materials or component	Specification CAWS	CAWS Title	Material	Information Source	Embodied Energy	Embodied Energy	Embodied Energy	Area or section	m2	Embodied Carbon	Embodied Carbon Dioxide	Embodied Carbon Dioxide	Embodied Carbon Dioxide	Density	Weight	Embodied Energy	Embodied Carbon Dioxide	Volume Reqired in Building	Embodied Energy in Building	Embodied Carbon in Building	Is it biobased? Does it contain Biogenic Carbon?	Sequestered carbon in Building	Total Carbon in Building
					MJ/m3	MJ/m2	MJ/Item	m2	m2	kg C/kg	kg CO2/kg	kg CO2/m2	kg CO2/Item	kg/m3	kg/m2	MJ/m3	kg CO2/m3	m3	MJ	kg CO2	Yes/No	kg CO2	Kg CO2
Materials	F10	Brick/block walling	Aerated block	ICE 1 & 2	3.5						0.3			750		2,625.00	225.00	1.00	2625	225.00	No	0.00	225.00
Materials	F10	Brick/block walling	Aerated block	ICE 1 & 2	3.5						0.3			750		2,625.00	225.00	1.00	2625	225.00	No	0.00	225.00
Materials	E10	Concrete	Aggregate	ICE 2	0.083						0.0048			2240		185.92	10.75	1.00	185.92	10.75	No	0.00	10.75
Materials	E10	Concrete	Aggregate	ICE 2	0.083						0.0048			2240		185.92	10.75	1.00	185.92	10.75	No	0.00	10.75
Materials	E10	Concrete	Aggregate	ICE 1	0.1						0.005			2240		224.00	11.20	1.00	224	11.20	No	0.00	11.20
Materials	D20	Excavation & Filling	Aggregate Quarried	ICE 2 (2011) via HE										2000				1.00	0	0.00	No	0.00	0.00
Materials	D20	Excavation & Filling	Aggregate Recycled	ICE 2 (2011) via HE										2000				1.00	0	0.00	No	0.00	0.00
Materials	E10	Concrete	Aggregates	E-CT	0.1					0.005				2240		224.00	0.00	1.00	224	0.00	No	0.00	0.00
Materials	Z11	Metals	Aluminium (general & incl 33% recycled)	ICE 1 & 2	155						8.24			2700		418,500.00	22,248.00	1.00	418500	22,248.00	No	0.00	22248.00
Materials	Z11	Metals	Aluminium (general & incl 33% recycled)	ICE 1 & 2	155						8.24			2700		418,500.00	22,248.00	1.00	418500	22,248.00	No	0.00	22248.00
Materials	H11	Metals	Aluminium (recycled)	E-CT	27					1.69				2700		72,900.00	0.00	1.00	72900	0.00	No	0.00	0.00
Materials	H11	Metals	Aluminium (virgin)	E-CT	154.3					11.46				2700		416,610.00	0.00	1.00	416610	0.00	No	0.00	0.00
Component	L10	Windows	Aluminium / timber frame double casement 1200 x 1200 2x glazed, air or argon filled	ICE 2			1460	1.44	m2				75			2,102.40	108.00	1.00	2102.4	108.00	%	0.00	108.00
Components	L10	Windows	Aluminium / timber frame double casement 1200 x 1200 2x glazed, krypton filled	ICE 2			1970	1.44	m2				101			2,836.80	145.44	1.00	2836.8	145.44	%	0.00	145.44
Components	L10	Windows	Aluminium / timber frame double casement 1200 x 1200 2x glazed, xeon filled	ICE 2			5960	1.44	m2				304			8,582.40	437.76	1.00	8582.4	437.76	%	0.00	437.76
Components	L10	Windows	Aluminium clad timber frame 1200 x 1200 2x glazed, air or argon filled	ICE 2			950	1.44	m2				48			1,368.00	69.12	1.00	1368	69.12	%	0.00	69.12
Components	L10	Windows	Aluminium clad timber frame 1200 x 1200 2x glazed, krypton filled	ICE 2			1460	1.44	m2				74			2,102.40	106.56	1.00	2102.4	106.56	%	0.00	106.56
Components	L10	Windows	Aluminium clad timber frame 1200 x 1200 2x glazed, xeon filled	ICE 2			5450	1.44	m2				277			7,848.00	398.88	1.00	7848	398.88	%	0.00	398.88
Components	L10	Windows	Aluminium clad timber, 2x glazed, argon filled, window	ICE 1			1200	1	m2				61			1,200.00	61.00	1.00	1200	61.00	%	0.00	61.00
Components	L10		Aluminium clad timber, 2x glazed, argon filled, window	ICE 1			1200	1					61			1,200.00	61.00	1.00	1200	61.00	%	0.00	61.00
Components	L10	Windows	Aluminium frame 1200 x 1200 2x glazed, air or argon filled	ICE 1 & 2			5470	1.44	m2				279			7,876.80	401.76	1.00	7876.8	401.76	No	0.00	401.76
Components	L10	Windows	Aluminium frame 1200 x 1200 2x glazed, krypton filled	ICE 2			5980	1.44	m2				305			8,611.20	439.20	1.00	8611.2	439.20	No	0.00	439.20
Components	L10	Windows	Aluminium frame 1200 x 1200 2x glazed, xeon filled	ICE 2			9970	1.44	m2				508			14,356.80	731.52	1.00	14356.8	731.52	No	0.00	731.52
Materials	Z11	Metals	Aluminium: general	ICE 2 (2011) via HE										2700		0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	Q22	Asphalt Paving	Asphalt	ICE 2 (2011) via HE										1700		0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	Q22	Asphalt Paving	Asphalt paving	ICE 1	2.41						0.14			2100		5,061.00	294.00	1.00	5061	294.00	No	0.00	294.00
Materials	Q22	Asphalt Paving	Asphalt paving	ICE 1	2.41						0.14			2100		5,061.00	294.00	1.00	5061	294.00	No	0.00	294.00
Materials	Q22	Asphalt Paving	Bitumen	ICE 2 (2011) via HE										1000		0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	Q20		Bitumen (general)	ICE 1	47						0.48					0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	J41	Built up felt roofing	Bitumen (general) max.	ICE 2	51						0.43					0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	J41	Built up felt roofing	Bitumen (general) min.	ICE 2	51						0.38					0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	F30	Brick/block walling	Bituminous Damp Proof Course	E-CT	134					4.2				1850		247,900.00	0.00	1.00	247900	0.00	No	0.00	0.00
Materials	F10	Brick/block walling	Brick Standard	ICE 2 (2011) via HE										2.30	tonnes / 1000 bricks			1.00	0	0.00	No	0.00	0.00
Materials	F10	Brick/block walling	Bricks	E-CT	3					0.22				1700		5,100.00	0.00	1.00	5100	0.00	No	0.00	0.00
Materials	F10	Brick/block walling	Bricks (common)	ICE 2	3						0.24			1700		5,100.00	408.00	1.00	5100	408.00	No	0.00	408.00
Materials	F10	Brick/block walling	Bricks (common)	ICE 2	3						0.24			1700		5,100.00	408.00	1.00	5100	408.00	No	0.00	408.00
Materials	F10	Brick/block walling	Bricks (common)	ICE 1	3						0.22			1700		5,100.00	374.00	1.00	5100	374.00	No	0.00	374.00
Materials	F10	Brick/block walling	Bricks (facing)	ICE 1	8.2						1.46			1700		13,940.00	2,482.00	1.00	13940	2,482.00	No	0.00	2482.00
Materials	F10		Bricks (facing)	ICE 1	8.2						1.46			1700		13,940.00	2,482.00	1.00	13940	2,482.00	No	0.00	2482.00
Materials	M50	Flexible floor coverings	Carpet Nylon	ICE 1	67.90 - 149						3.55 – 7.31					#VALUE!	#VALUE!	1.00	#VALUE!	#VALUE!	No	0.00	#VALUE!
Materials	M50	Flexible floor coverings	Carpet tiles, nylon (Polyamide), pile weight 770g/m2	ICE 2		279						13.7			4.6	1,283.40	63.02	1.00	1283.4	63.02	No	0.00	63.02
Materials	P10	Proofing: Insulation	Cellular glass insulation	ICE 1 & 2	27											0.00	0.00	1.00	0	0.00	No	0.00	0.00
Materials	P10	Proofing: Insulation	Cellulose insulation (loose fill)	ICE 1 & 2	0.94									43		40.42	0.00	1.00	40.42	0.00	Yes	0.00	0.00
Materials	P10	Proofing: Insulation	Cellulose insulation (loose fill)	ICE 2	3.3									43		141.90	0.00	1.00	141.9	0.00	Yes	0.00	0.00
Materials	Z21	Mortar	Cement mortar (1:3)	ICE 2	1.33						0.208					0.00	0.00	1.00	0	0.00	No	0.00	0.00

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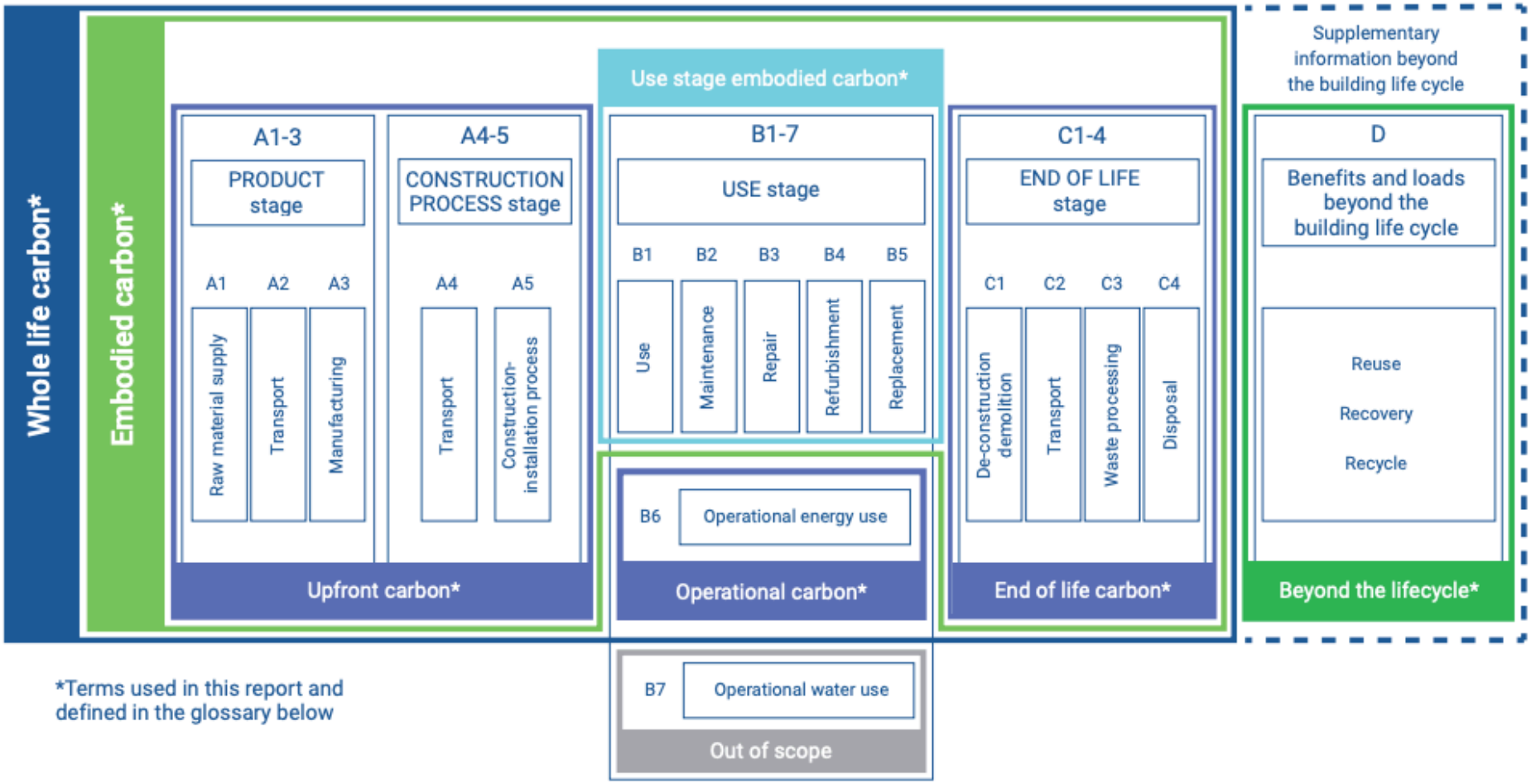

*Terms used in this report and defined in the glossary below

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GBC V2>V3 LCA EPD: Hemp

Whole Building Life Cycle Analysis LCA Environmental Building Declaration EBD	BS EN 15804:2012	A1	A2	GWP	ODP	AP

Yes/No	Component Material	Length	Width	Height	Component Thickness	Quantity	Areas	Volume	Global warming potential (GWP)	Product: Raw Materials Supply	Product: Transport	Product: Manufacturing	Construction: Transport	Construction: Installation	Use: Use	Use: Maintenance	Use: Repair	Use: Replacement	Use: Refurbishment	Use: Energy	Use: Water	EndOfLife: Deconstruction Demolition	EndOfLife: Transport	EndOfLife: Waste Processing	EndOfLife: Disposal	Beyond Building Life Potential: Reuse Recovery Recycling	Ozone Depletion Potential (ODP) of the stratospheric ozone layer	Product: Raw Materials Supply	Product: Transport	Product: Manufacturing	Construction: Transport	Construction: Installation	Use: Use	Use: Maintenance	Use: Repair	Use: Replacement	Use: Refurbishment	Use: Energy	Use: Water	EndOfLife: Deconstruction Demolition	EndOfLife: Transport	EndOfLife: Waste Processing	EndOfLife: Disposal	Beyond Building Life Potential: Reuse Recovery Recycling	Acidification potential (AP) of soil & water	Product: Raw Materials Supply	Product: Transport	Product: Manufacturing	Construction: Transport	Construction: Installation	Use: Use	Use: Maintenance	Use: Repair	Use: Replacement	Use: Refurbishment	Use: Energy	Use: Water	EndOfLife: Deconstruction Demolition	EndOfLife: Transport	EndOfLife: Waste Processing	EndOfLife: Disposal	Beyond Building Life Potential: Reuse Recovery Recycling
Yes	1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	m	m	m	m	No.	m2	m3	kg CO2 equiv	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kg CFC 11 equiv	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kg SO2 equiv	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							0.00		0																		0																			0																					
Choose	Internal Decoration: Lacquer				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Timber: FSC, Softwood Boarded floor				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Internal Lining: Gypsum Fibreboard				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	Timber composite modular cassette: OSB				0.0100	1	60.00	0.6	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	Thermal Insulation: Wood fibre, 50mm				0.3000	1	60.00	18	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	MDF Medium Density Fibreboard				0.0100	1	60.00	0.6	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	Thermal Insulation: Hempcrete				0.1000	1	60.00	6	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	Timber composite modular cassette: softwood				0.1000	1	60.00	6	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	Timber composite modular cassette: OSB				0.0100	1	60.00	0.6	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Yes	Cement particle board				0.0120	1	60.00	0.72	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Thermal Insulation: Hemp, 40mm				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Timber: FSC, Softwood, Sawn				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Air				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Internal Lining: Gypsum plasterboard foil faced, 12.5mm				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Plaster Skim				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0
Choose	Internal Decoration: Lime Graphene Paint				0.0000	1	60.00	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0											0	0	0	0	0

GWP	ODP	AP

- Each row is a component of an element (3 to 20 components make up an element)
  - (framing, insulation, linings, etc.)
- Each group of components makes an element (up to 39 make up a building)
  - (partition, wall, floor, roof, glazing, etc.)
- Each column is an EN 15804 stage A-D or subdivision column
- Each group of columns is an environmental impact (7 groups 7 impacts 1 is carbon)

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GBC V2>V3 LCA EPD: Hemp

Whole Building Life Cycle Analysis LCA Environmental Building Declaration EBD	BS EN 15804:2012	A1	A2

Yes/No	Component Material	Length	Width	Height	Component Thickness	Quantity	Areas	Volume
Yes	1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	m	m	m	m	No.	m2	m3
							0.00	
Choose	Internal Decoration: Lacquer				0.0000	1	60.00	0
Choose	Timber: FSC, Softwood Boarded floor				0.0000	1	60.00	0
Choose	Internal Lining: Gypsum Fibreboard				0.0000	1	60.00	0
Yes	Timber composite modular cassette: OSB				0.0100	1	60.00	0.6
Yes	Thermal Insulation: Wood fibre, 50mm				0.3000	1	60.00	18
Yes	MDF Medium Density Fibreboard				0.0100	1	60.00	0.6
Yes	Thermal Insulation: Hempcrete				0.1000	1	60.00	6
Yes	Timber composite modular cassette: softwood				0.1000	1	60.00	6
Yes	Timber composite modular cassette: OSB				0.0100	1	60.00	0.6
Yes	Cement particle board				0.0120	1	60.00	0.72
Choose	Thermal Insulation: Hemp, 40mm				0.0000	1	60.00	0
Choose	Timber: FSC, Softwood, Sawn				0.0000	1	60.00	0
Choose	Air				0.0000	1	60.00	0
Choose	Internal Lining: Gypsum plasterboard foil faced, 12.5mm				0.0000	1	60.00	0
Choose	Plaster Skim				0.0000	1	60.00	0
Choose	Internal Decoration: Lime Graphene Paint				0.0000	1	60.00	0

EP	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Eutrophication Potential (EP)	Product: Raw Materials Supply	Product: Transport	Product: Manufacturing	Construction: Transport	Construction: Installation	Use: Use	Use: Maintenance	Use: Repair	Use: Replacement	Use: Refurbishment	Use: Energy	Use: Water	End Of Life: Deconstruction Demolition	End Of Life: Transport	End Of Life: Waste Processing	End Of Life: Disposal	Beyond Building Life Potential: Reuse Recovery Recycling
kg (PO4)3-equiv	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0																	
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0
0	0	0	0	0	0									0	0	0	0

EP	POCP	ADP Elements
Photochemical Tropospheric Ozone creation: (POCP)	Abiotic Depletion Potential for non-fossil fuel resources	
kg Ethane equiv	kg Sb equiv	
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

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GBC V2>V3 LCA EPD: Hemp

Whole Building Life Cycle Analysis LCA Environmental Building Declaration EBD	BS EN 15804:2012	A1	A2

Yes/No	Component Material	Length	Width	Height	Component Thickness	Quantity	Areas	Volume
Yes	1002 UKCW '22 Zero Zone MMC Modular CE Hemp Upper Floor	m	m	m	m	No.	m2	m3
							0.00	
Choose	Internal Decoration: Lacquer				0.0000	1	60.00	0
Choose	Timber: FSC, Softwood Boarded floor				0.0000	1	60.00	0
Choose	Internal Lining: Gypsum Fibreboard				0.0000	1	60.00	0
Yes	Timber composite modular cassette: OSB				0.0100	1	60.00	0.6
Yes	Thermal Insulation: Wood fibre, 50mm				0.3000	1	60.00	18
Yes	MDF Medium Density Fibreboard				0.0100	1	60.00	0.6
Yes	Thermal Insulation: Hempcrete				0.1000	1	60.00	6
Yes	Timber composite modular cassette: softwood				0.1000	1	60.00	6
Yes	Timber composite modular cassette: OSB				0.0100	1	60.00	0.6
Yes	Cement particle board				0.0120	1	60.00	0.72
Choose	Thermal Insulation: Hemp, 40mm				0.0000	1	60.00	0
Choose	Timber: FSC, Softwood, Sawn				0.0000	1	60.00	0
Choose	Air				0.0000	1	60.00	0
Choose	Internal Lining: Gypsum plasterboard foil faced, 12.5mm				0.0000	1	60.00	0
Choose	Plaster Skim				0.0000	1	60.00	0
Choose	Internal Decoration: Lime Graphene Paint				0.0000	1	60.00	0

ADP Fossil Fuels	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Abiotic Depletion Potential of resources-fossil fuels	Product: Raw Materials Supply	Product: Transport	Product: Manufacturing	Construction: Transport	Construction: Installation	Use: Use	Use: Maintenance	Use: Repair	Use: Replacement	Use: Refurbishment	Use: Energy	Use: Water	EndOfLife: Deconstruction Demolition	EndOfLife: Transport	EndOfLife: Waste Processing	EndOfLife: Disposal	Beyond Building Life Potential: Reuse Recovery Recycling
MJ, net calorific value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0													0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0
	0	0	0	0	0									0		0	0

ADP Fossil Fuels	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D

Completed by GBC	To be completed by GBC user	Completed by GBC	Updated	Initials	Comments/Notes/ Future Development Aide Memoir
		Yes	28/02/21	BRM	
		Yes	28/02/21	BRM	
		Yes	03/03/21	BRM	
		Yes	11/10/22	BRM	
Auto-filled		Yes	11/10/22	BRM	
Auto-filled		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
Multiple		Yes	11/10/22	BRM	
		Yes	11/10/22	BRM	
		Yes	11/10/22	BRM	
		Yes	11/10/22	BRM	

- Each row is a component of an element (3 to 20 components make up an element)
  - (framing, insulation, linings, etc.)
- Each group of components makes an element (up to 39 make up a building)
  - (partition, wall, floor, roof, glazing, etc.)
- Each column is an EN 15804 stage A-D or subdivision column
- Each group of columns is an environmental impact (7 groups 7 impacts 1 is carbon=)

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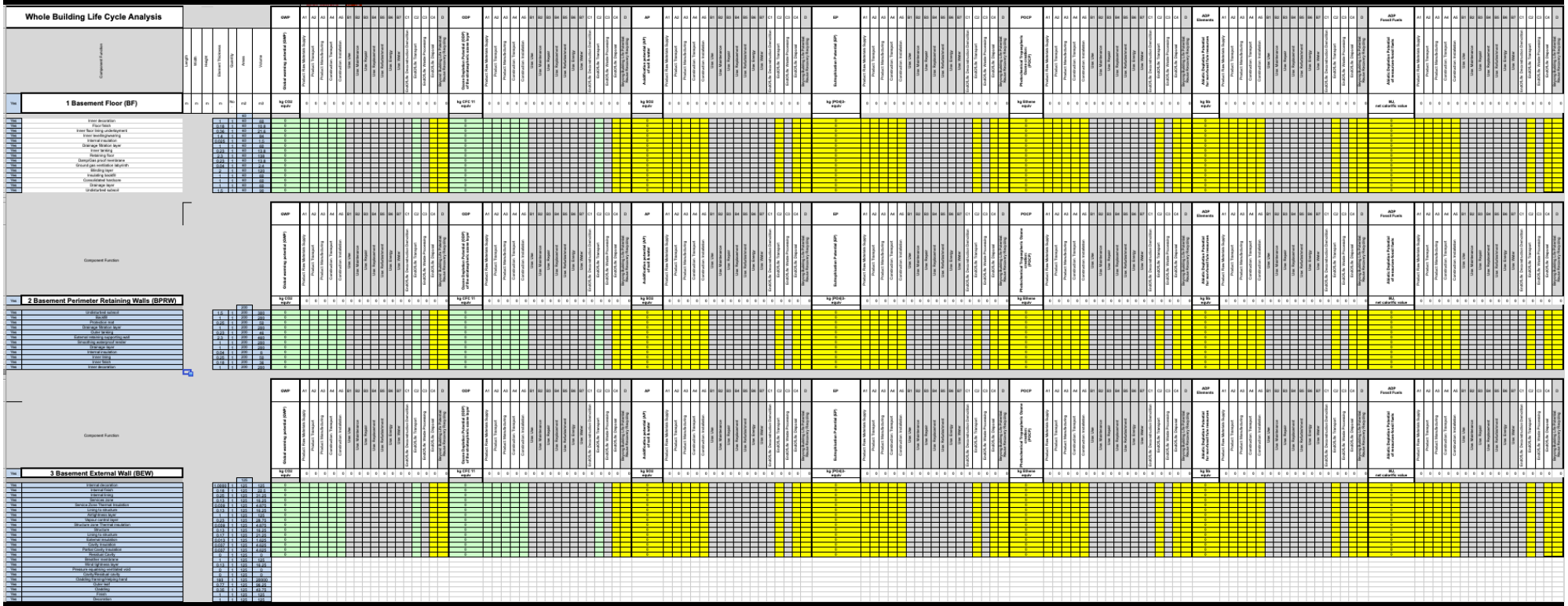
GBC V3 LCA EPD



- Each row is a component of an element (3 to 20 components make up an element)
  - (framing insulation lining)
- Each group of components makes an element (up to 39 make up a building)
  - (partition, wall, floor, roof)
- Each column is an EN 15804 stage A-D or subdivision column
- Each group of columns is an environmental impact (7 groups 7 impacts 1 is carbon=)

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GBC V2 Conductivities right columns inconsistent format Reformatted

	Choose	Choose	Choose	Choose	Multiple	Multiple	Multiple									
0	**Conductivities**	© GBE Green Building Calculator 2011-2021								Note: If available, certified test values should be used in preference to those in this table						
CAWS	Element	Component	Primary Function	Generic Material/Product	Manufacturer	Product Reference	Product Code	Initials	Format	Common Building Materials	Density ρ	Thermal Conductivity λ	Thickness	Thickness	Resistivity	U value
0	Wall/Floor/Roof/Etc.	Position/Application	Insulation/Structure/VCL/BM		Company name	Product Name	Model No.	individual codes	Quilt/Batt/Foam/Board/Block/etc.	Wood fibre/Sheep's wool/Fired clay/straw board/etc.	kg/m³	W/m.K	mm	m	m2.K/W	W/m2.K
	Choose from Drop Down List	Choose from Drop Down List	Choose from Drop Down List	Choose from Drop Down List	Type information below	Type information below	Type information below									
K10	20 External Walls (EW)	Choose	Choose	Sector Generic material	Not applicable	Not applicable	Not applicable		Boards	Gypsum plasterboard	900	0.250	12.5	0.0125	#REF!	#REF!
K10	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Boards/Linings	Gypsum plasterboard	900	0.160	12.5	0.0125	#REF!	#REF!
K13	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Boards/Linings/Patrass	Gypsum fibre reinforced board		0.360	12.5	0.0125	#REF!	#REF!
F10	20 External Walls (EW)	Outer leaf	Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Brick/Wall	Brickwork (outer leaf)	1700	0.770	102	0.102	#REF!	#REF!
F10	20 External Walls (EW)	Outer leaf	Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Brick/Wall	Brickwork (inner leaf)	1700	0.560	102	0.102	#REF!	#REF!
F10	20 External Walls (EW)		Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Block/Wall	Concrete block (medium density)	1400	0.570	100	0.1	#REF!	#REF!
F10	20 External Walls (EW)		Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Block/Wall	Concrete block (low density)	600	0.180	100	0.1	#REF!	#REF!
F10	20 External Walls (EW)	Inner leaf	Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Block/Wall	Concrete (medium density) (inner leaf)	1800	1.130	100	0.1	#REF!	#REF!
F10	20 External Walls (EW)	Inner leaf	Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Block/Wall	Concrete (medium density) (inner leaf)	2000	1.330	100	0.1	#REF!	#REF!
F10	20 External Walls (EW)	Inner leaf	Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Block/Wall	Concrete (medium density) (inner leaf)	2200	1.590	100	0.1	#REF!	#REF!
E10	20 External Walls (EW)		Structure	Sector Generic material	Not applicable	Not applicable	Not applicable		Insitu cast	Concrete (high density)	2400	1.930	600	0.6	#REF!	#REF!
E10	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Insitu cast	Reinforced concrete (1% steel)	2300	2.300	300	0.3	#REF!	#REF!
E10	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Insitu cast	Reinforced concrete (2% steel)	2400	2.500	300	0.3	#REF!	#REF!
Z21	20 External Walls (EW)	inner leaf mortar bedding		Sector Generic material	Not applicable	Not applicable	Not applicable		Joints	Mortar (protected) (inner leaf)	1750	0.880	100	0.1	#REF!	#REF!
Z21	20 External Walls (EW)	inner leaf mortar bedding		Sector Generic material	Not applicable	Not applicable	Not applicable		Joints	Mortar (exposed) (outer leaf)	1750	0.940	100	0.1	#REF!	#REF!
M20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Plaster coat	Gypsum lightweight	600	0.180	13	0.013	#REF!	#REF!
M20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Plaster coat	Gypsum (medium density)	900	0.300	13	0.013	#REF!	#REF!
M20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Plaster coat	Gypsum (dense)	1200	0.430	13	0.013	#REF!	#REF!
F20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Blocks/Stones/Slabs/Tiles/	Sandstone	2600	2.300	100	0.1	#REF!	#REF!
F20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Blocks/Stones/Slabs/Tiles/	Limestone, soft	1800	1.100	100	0.1	#REF!	#REF!
F20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Blocks/Stones/Slabs/Tiles/	Limestone, hard	2200	1.700	100	0.1	#REF!	#REF!
P10	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Boards/Insulation	Fibreboard	400	0.100	10	0.01	#REF!	#REF!
K10	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Boards/Linings	Plasterboard	900	0.250	12.5	0.0125	#REF!	#REF!
K10	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Boards/Linings	Plasterboard foil faced	900	0.250	12.5	0.0125	#REF!	#REF!
M40	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Tiles	Tiles ceramic	2300	1.300	5	0.005	#REF!	#REF!
G20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Timber sections	Timber (softwood)	500	0.130	150	0.15	#REF!	#REF!
G20	20 External Walls (EW)			Sector Generic material	Not applicable	Not applicable	Not applicable		Timber sections	Timber (softwood)	700	0.180	150	0.15	#REF!	#REF!
G20	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Timber sections	Hardwood timber	700	0.180	25	0.025	#REF!	#REF!
G20	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Timber sections	softwood timber	500	0.130	18	0.018	#REF!	#REF!
G20	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Timber sections	softwood timber	1000	0.240	18	0.018	#REF!	#REF!
K11	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Panels	Softwood plywood	500	0.130	18	0.018	#REF!	#REF!
K11	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Panels	Softwood plywood	1000	0.240	18	0.018	#REF!	#REF!
K11	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Panels	softwood chipboard	500	0.130	18	0.018	#REF!	#REF!
K11	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Panels	softwood chipboard	1000	0.240	18	0.018	#REF!	#REF!
G10	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable			Steel	7800	50.000	5	0.005	#REF!	#REF!
Z113	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid sheet	Stainless steel	7900	17.000	1	0.001	#REF!	#REF!
M20	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		External render	External rendering	1300	0.570	19	0.019	#REF!	#REF!
M20	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		internal plaster	Plaster (dense)	1300	0.570	19	0.019	#REF!	#REF!
M20	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable		internal plaster	Plaster (lightweight)	600	0.180	12	0.012	#REF!	#REF!
E10	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable	RC	Insitu	Reinforced concrete (1% steel)	2300	2.300	300	0.3	#REF!	#REF!
E10	Walls			Sector Generic material	Not applicable	Not applicable	Not applicable	RC	Insitu	Reinforced concrete (2% steel)	2400	2.500	300	0.3	#REF!	#REF!
E10	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable	ACS	Slab	Aerated concrete slab	500	0.160	150	0.15	#REF!	#REF!
J21	Roofs/Floor/Tanking			Sector Generic material	Not applicable	Not applicable	Not applicable	A	Coating	Asphalt	2100	0.700	20	0.02	#REF!	#REF!
J	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable		Flexible membrane	Felt/bitumen layers	1100	0.230	7	0.007	#REF!	#REF!
M10	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable		Levelling Screed/Wearing surface/Structural Topping	Screed	1200	0.410	25	0.025	#REF!	#REF!
Q23	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable		Loose gravel	Stone chippings	2000	2.000	10	0.01	#REF!	#REF!
H6	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid overlap tiles	Tiles (clay)	2000	1.000	6	0.006	#REF!	#REF!
0	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid overlap tiles	Tiles (concrete)	2100	1.500	10	0.01	#REF!	#REF!
	Roofs			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid slab	Wood wool slab	500	0.100	50	0.05	#REF!	#REF!
E10	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Cast insitu	Cast concrete	2000	1.350	300	0.3	#REF!	#REF!
E10	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Cast insitu	Reinforced concrete (1% steel)	2300	2.300	300	0.3	#REF!	#REF!
E10	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Cast insitu	Reinforced concrete (2% steel)	2400	2.500	300	0.3	#REF!	#REF!
0	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid sheet	Metal tray (steel)	7800	50.000	2	0.002	#REF!	#REF!
M10	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Levelling Screed/Wearing surface/Structural Topping	Screed	1200	0.410	45	0.045	#REF!	#REF!
G20	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid sections	Hardwood timber	700	0.180	25	0.025	#REF!	#REF!
G20	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid sections	softwood timber	500	0.130	18	0.018	#REF!	#REF!
G20	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid sections	softwood timber	1000	0.240	18	0.018	#REF!	#REF!
K11	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Sheet	softwood plywood	500	0.130	18	0.018	#REF!	#REF!
K11	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Sheet	softwood plywood	1000	0.240	18	0.018	#REF!	#REF!
K11	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Sheet	softwood chipboard	500	0.130	18	0.018	#REF!	#REF!
K11	Floors			Sector Generic material	Not applicable	Not applicable	Not applicable		Rigid Sheet	softwood chipboard	1000	0.240	18	0.018	#REF!	#REF!
P10	Thermal or acoustic Insulation		Insulating	Sector Generic material	Not applicable	Not applicable	Not applicable		Board	Expanded polystyrene (EPS) board	15	0.040	400	0.4	#REF!	#REF!
P10	Thermal or acoustic Insulation		Insulating	Sector Generic material	Not applicable	Not applicable	Not applicable		Quilt	Mineral wool quilt	12	0.042	420	0.42	#REF!	#REF!
P10	Thermal or acoustic Insulation		Insulating	Sector Generic material	Not applicable	Not applicable	Not applicable		Batt	Mineral wool batt	25	0.038	380	0.38	#REF!	#REF!
P10	Thermal or acoustic Insulation		Insulating	Sector Generic material	Not applicable	Not applicable	Not applicable		Boards, Foam	Phenolic foam board	30	0.025	250	0.25	#REF!	#REF!
P10			Insulating	Sector Generic material	Not applicable	Not applicable	Not applicable		Boards, Foam	Phenolic foam board	35	0.025	250	0.25	#REF!	#REF!
P10	Thermal or acoustic Insulation		Insulating	Sector Generic material	Not applicable	Not applicable	Not applicable		Boards, Foam	Polyurethane board PUR	30	0.025	250	0.25	#REF!	#REF!

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Conductivities updated

More data needed

Format	Common Building Materials	Density	Weight/Area	Thermal Conductivity k value	Thickness	Thickness	Resistivity	U value
.	.	p	.	λ	.	.	R	U
Quilt/Batt/Foam/Board/Block/etc.	Wood fibre/Sheep's wool/Fired clay/straw board/etc.	kg/m³	kg/m2	W/m.K	mm	m	m2.K/W	W/m2.K
.	1	2	3	4	5	6	7	8
Floor spacers	.	.	#VALUE!	.	.	#VALUE!	#VALUE!	#VALUE!
Floor spacers	.	.	#VALUE!	.	.	#VALUE!	#VALUE!	#VALUE!
Floor spacers	.	.	#VALUE!	.	.	#VALUE!	#VALUE!	#VALUE!
.	Accessory: Floor spacers, 200mm	.	#VALUE!	.	200	0.2	#VALUE!	#VALUE!
.	Accessory: Floor spacers, 60mm	.	#VALUE!	.	60	0.06	#VALUE!	#VALUE!
.	Accessory: Floor spacers, 80mm	.	#VALUE!	.	80	0.08	#VALUE!	#VALUE!
Liquid applied coating	Adhesive: Bitumen	1050	#VALUE!	0.230	.	#VALUE!	#VALUE!	#VALUE!
Liquid applied coating	Adhesive: Bitumen	1700	#VALUE!	0.200	.	#VALUE!	#VALUE!	#VALUE!
Liquid applied coating	Adhesive: Bitumen Coating	1050	#VALUE!	0.250	.	#VALUE!	#VALUE!	#VALUE!
Liquid applied coating	Adhesive: Bitumen, 10mm	1700	17	0.200	10	0.01	0.050	20.000
Adhesive	Adhesive: Synthetic resin-based	1200	#VALUE!	0.900	.	#VALUE!	#VALUE!	#VALUE!
Undisturbed Subsoil	Aggregate & Sand: Dry Gravel	.	#VALUE!	1.500	1000	1	0.667	1.500
Undisturbed Subsoil	Aggregate & Sand: Dry Sand	.	#VALUE!	1.500	1000	1	0.667	1.500
Loose Aggregate	Aggregate & sand: Gravel	1800	#VALUE!	0.700	.	#VALUE!	#VALUE!	#VALUE!
Consolidated layer	Aggregate & Sand: gravel or crushed rock	2240	#VALUE!	1.300	.	#VALUE!	#VALUE!	#VALUE!
Consolidated layer	Aggregate & Sand: gravel or crushed rock, 100mm	2240	224	1.300	100	0.1	0.077	13.000
Loose Aggregate	Aggregate & sand: Gravel, 50mm	1800	90	0.700	50	0.05	0.071	14.000
Loose gravel	Aggregate & Sand: Stone: chippings	1600	#VALUE!	0.700	.	#VALUE!	#VALUE!	#VALUE!
Loose gravel	Aggregate & Sand: Stone: chippings	1600	#VALUE!	0.700	.	#VALUE!	#VALUE!	#VALUE!
Loose gravel	Aggregate & Sand: Stone: chippings, 10mm	2000	20	2.000	10	0.01	0.005	200.000
Undisturbed Subsoil	Aggregate & Sand: Wet Gravel	.	#VALUE!	2.000	1000	1	0.500	2.000
Undisturbed Subsoil	Aggregate & Sand: Wet Gravel	.	#VALUE!	2.000	1000	1	0.500	2.000
Air space	Air space: heat flow downwards, 100mm				100	0.1	0.22	.
Air space	Air space: heat flow downwards, 10mm				10	0.01	0.15	.
Air space	Air space: heat flow downwards, 15mm				15	0.015	0.17	.
Air space	Air space: heat flow downwards, 25mm				25	0.025	0.19	.
Air space	Air space: heat flow downwards, 300mm				300	0.3	0.23	.
Air space	Air space: heat flow downwards, 50mm				50	0.05	0.21	.
Air space	Air space: heat flow downwards, 5mm				5	0.005	0.11	.
Air space	Air space: heat flow downwards, 7mm				7	0.007	0.13	.
Air space	Air space: heat flow horizontal, 100mm				100	0.1	0.18	.
Air space	Air space: heat flow horizontal, 10mm				10	0.01	0.15	.

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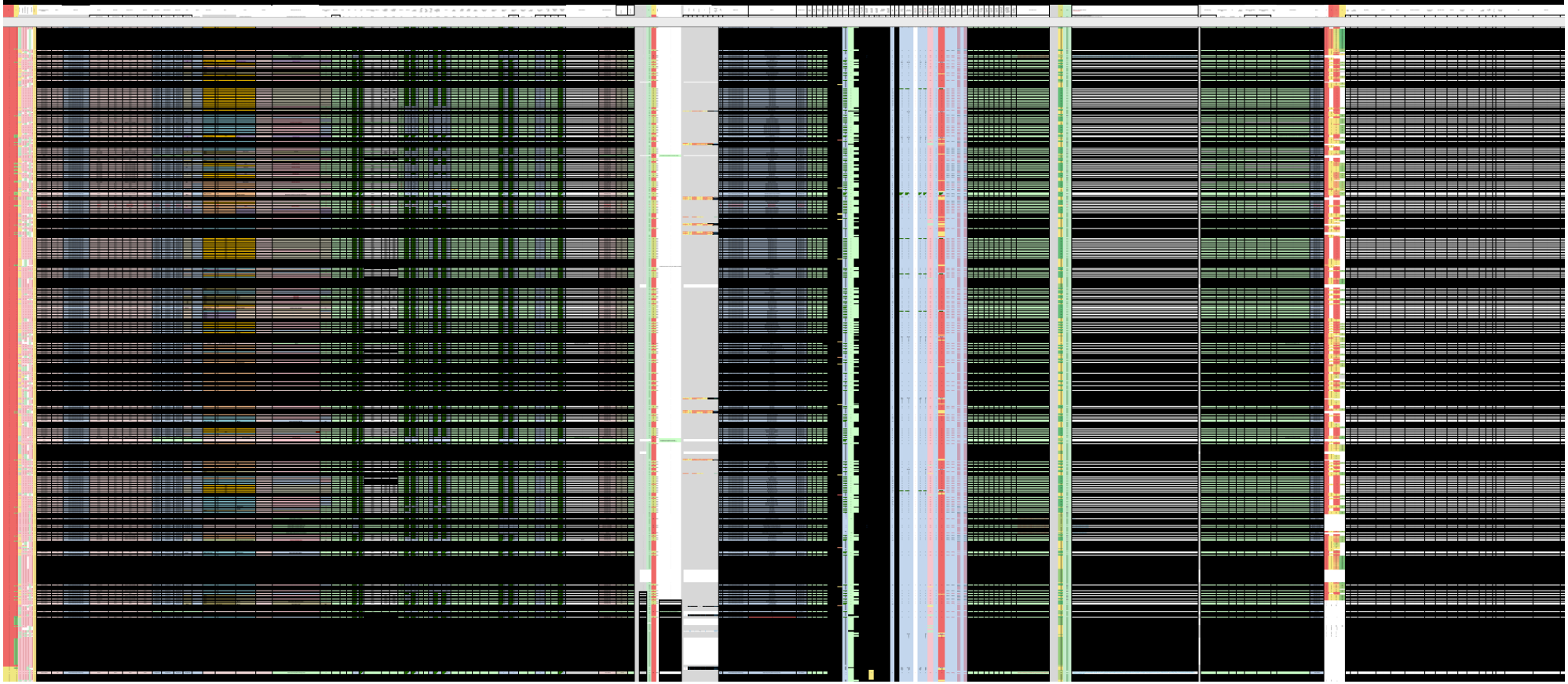
GBC V2 & GBC V3
Intelligent DDL & LUT

alue Total DDL (23/03/2022)	Elemental U value Blocks	EUVDDL Name	EUVDDL shorter	M
Alphabetic order	Alphabetic order	Alphabetic order	Alphabetic order	
Choose	Choose	Choose	Choose	
ACCESSORY:	**ACCESSORY:**	AccessoryEUVDDL	AccessoryEUVDDL	Ger
ccessory: Floor spacers, 200mm	Accessory: Floor spacers, 200mm		AdhesiveEUVDDL	Pro
ccessory: Floor spacers, 60mm	Accessory: Floor spacers, 60mm		Aggregates&SandEUVDDL	Acc
ccessory: Floor spacers, 80mm	Accessory: Floor spacers, 80mm		AirSpaceEUVDDL	Sub
***	**ADHESIVE:**	AdhesiveEUVDDL	CladdingEUVDDL	Sys
ADHESIVE:	Choose		ConcreteInsituEUVDDL	Ele
Adhesive: Bitumen	Adhesive: Bitumen		ConcretePrecastReinforcedEUVDDL	
Adhesive: Bitumen Coating	Adhesive: Bitumen Coating		ExternalWallFinishshEUVDDL	Oth
Adhesive: Bitumen, 10mm	Adhesive: Bitumen, 10mm		GlazingEUVDDL	
dhesive: Synthetic resin-based	Adhesive: Synthetic resin-based		ImpactSoundInsulationEUVDDL	

GBC V2 Material Product Data EECSC EPD Data Collected becomes Look Up Table



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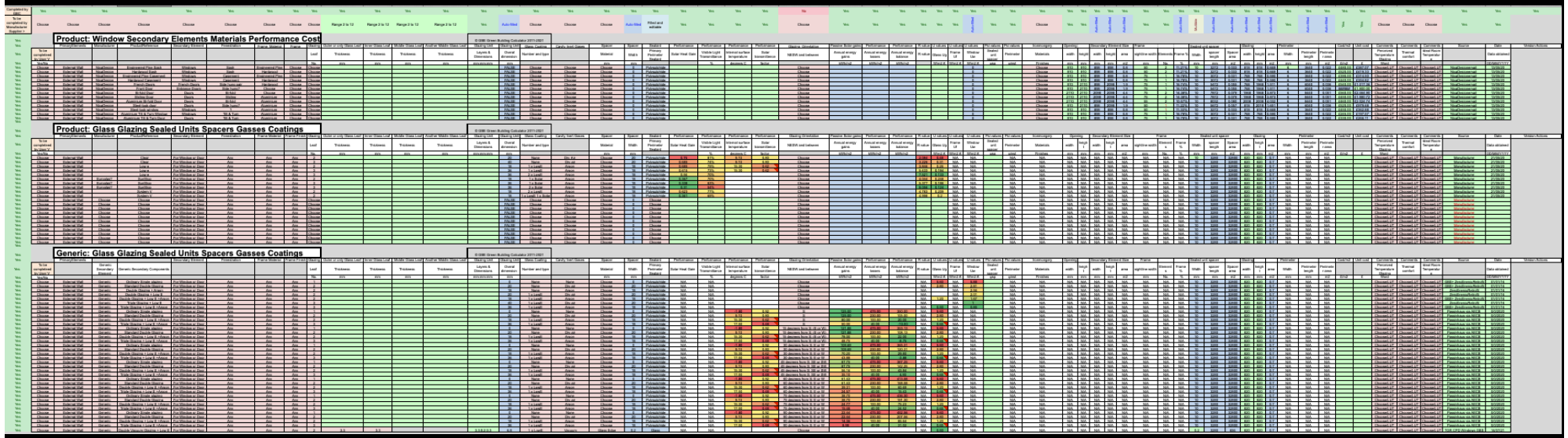
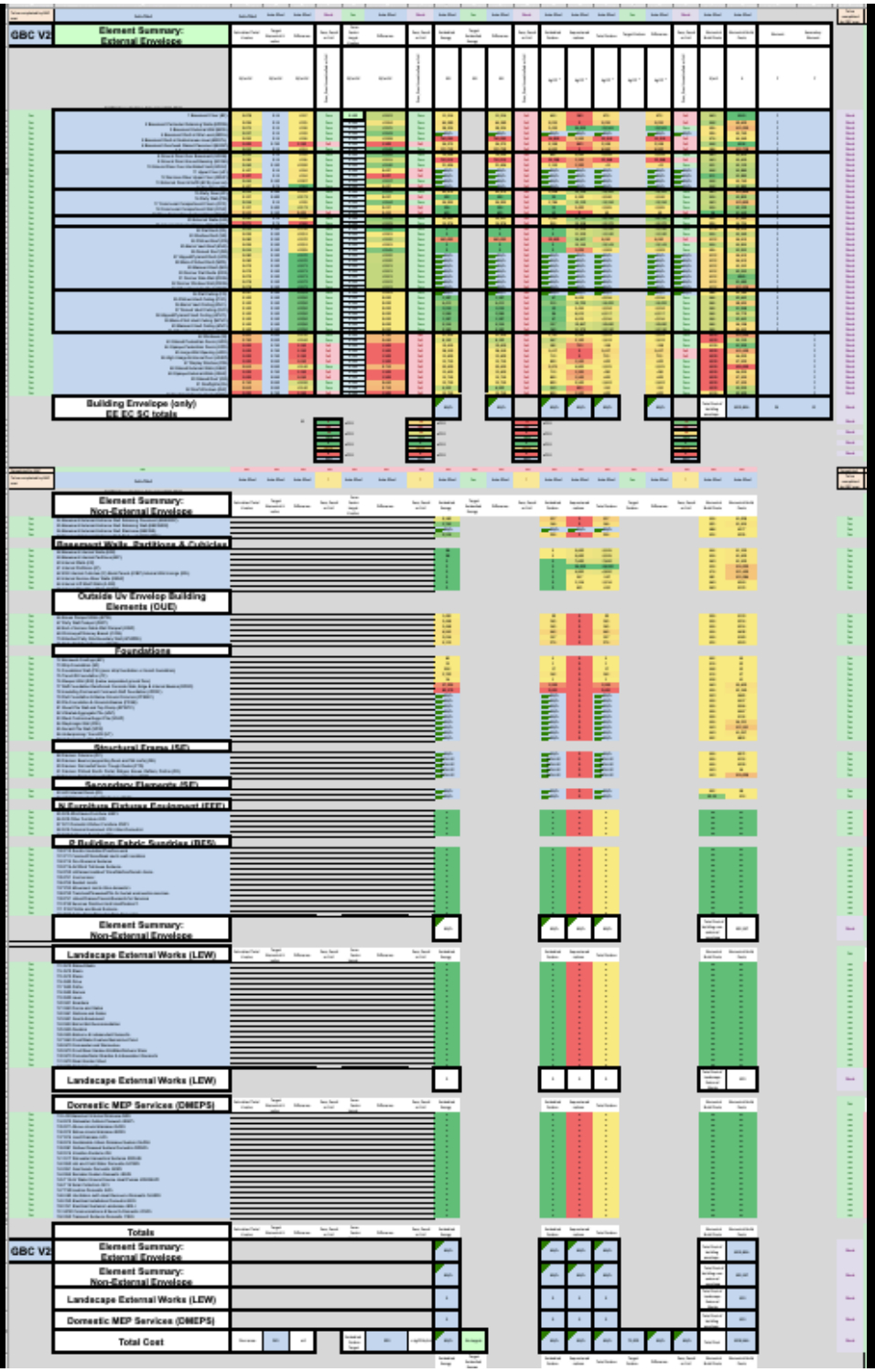
GBC V2 Secondary Elements Windows & Glazing options




GBC V2
Element Summary: External Envelope
Building Envelope (only) EE EC SC totals
Element Summary: Non-External Envelope
Basement Walls, Partitions & Cylinders
Outside Uv Envelop Building Elements (OUE)
Foundations
Structural Frame (SF)
Secondary Elements (SE)
M Furniture Fixtures Equipment (FFFE)
P Building Fabric Sundries (BFS)
Element Summary: Non-External Envelope
Landscape External Works (LEW)
Landscape External Works (LEW)
Domestic MEP Services (DMEPS)
Totals
GBC V2
Element Summary: External Envelope
Element Summary: Non-External Envelope
Landscape External Works (LEW)
Domestic MEP Services (DMEPS)
Total Cost

GBC V2 U value > Watts > CO2 In Use

U Values To Watts To CO_2

User name: BrianSpecMan did this

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Basement	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No		W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	1 Basement Floor (BF)	0.082	60	11	-	15	4	20		60					Auto-filled
	Yes	2 Basement Perimeter Retaining Walls (BPRW)	0.251	200	11	-	15	4	201		200					Auto-filled
	Yes	3 Basement External Wall (BEW)	0.064	125	11	-	15	4	32		125					Auto-filled
	Yes	4 Basement Roof at Site Level (BRSL)	0.044	60	11	-	15	4	11		60					Auto-filled
	Yes	5 Basement Roof at SubTerranean level (BRSTL)	0.085	60	11	-	15	4	20		60					Auto-filled
	Yes	6 Basement Overhead Glazed Pavement (BOGP)	1.747	11	11	-	15	4	77		11					Auto-filled
	Yes	7 Swimming Pool Basin (SPB)	0.071	2296	11	-	16	5	814		2296					Auto-filled
				2812						1,174	Basement	2812	52%	8.3%	0.16	Review

Floor	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No		W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	8 Ground Floor Over Basement (GFOB)	0.052	60	15	-	20	5	16		60					Auto-filled
	Yes	9 Ground Floor Ground Bearing (GFGB)	0.090	60	11	-	20	9	49		60					Auto-filled
	Yes	10 Ground Floor Over Ventilated Void (GFOV)	0.057	60	0	-	20	20	68		60					Auto-filled
	Yes	11 Upper Floor (UF)	0.102	60	20	-	20	0	0		60					Auto-filled
	Yes	12 Services Riser Upper Floor (SRUF)	0.104	1.80	20	-	20	0	0		1.8					Auto-filled
	Yes	13 External Floor & Soffit (EFS) (over air)	0.059	120	0	-	20	20	141		120					Auto-filled
	Yes	14 Top Floor (TF)	0.105	60	20	-	20	0	0		60					Auto-filled
				421.8						273	Floor	421.8	8%	1.9%	0.25	Review

Compartmentation	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No		W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	15 Party Floor (PF)	0.053	180	0	-	20	20	190		180					Auto-filled
	Yes	16 Party Wall (PW)	0.125	50	0	-	20	20	125		50					Auto-filled
	Yes	17 Communal Compartment Floors (CCF)	0.053	180	0	-	20	20	190		180					Auto-filled
	Yes	18 Communal Compartment Wall (CCW)	0.126	37.5	0	-	20	20	94		37.5					Auto-filled
	Yes	19 Riser Compartment Upper Floor (RCUF)	0.593	5.4	0	-	20	20	64		5.4					Auto-filled
				452.9						664	Compartmentation	452.9	8%	4.7%	0.56	Review

Wall	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No	0	W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	20 External Walls (EW)	0.064	80	0	-	20	20	103		80					Auto-filled
	Yes	21 Integral Unheated Space Wall (IUSW)	0.062	49	5	-	5	0	0		49					Auto-filled
	Yes	59 Basement Internal Partitions (BIP)	0.203	25	15	-	15	0	0		25					Auto-filled
	Yes	60 Internal Walls (IW)	0.093	25	20	-	20	0	0		25					Auto-filled
				179						103	Wall	179	3%	0.7%	0.22	Review

Roof	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No		W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	22 Flat Roof (FR)	0.039	60	0	-	20	20	47		60					Auto-filled
	Yes	23 Shallow Roof (SR)	0.086	60	0	-	20	20	104		60					Auto-filled
	Yes	24 Pitched Roof (PR)	0.069	59	0	-	20	20	82		59					Auto-filled
	Yes	25 Barrel Vault Roof (BVR)	0.086	68	0	-	20	20	118		68					Auto-filled
	Yes	26 Domed Roof (DR)	0.049	31	0	-	20	20	30		31					Auto-filled
	Yes	27 Hipped/Pyramid Roof (HPR)	0.069	59	0	-	20	20	82		59					Auto-filled
	Yes	28 Mono-Pitched Roof (MPR)	0.069	59	0	-	20	20	82		59					Auto-filled
	Yes	29 Mansard Roof (MR)	0.069	48	0	-	20	20	66		48					Auto-filled
	Yes	30 Dormer Flat Roofs (DFR)	0.069	21	0	-	20	20	29		21					Auto-filled
	Yes	31 Dormer Side Wall (DSW)	0.070	9	0	-	20	20	12		9					Auto-filled
	Yes	32 Dormer Window Wall (DWW)	0.069	15	0	-	20	20	21		15					Auto-filled
	Yes	33 Other Geometry Roof (OGR)	0.069	121	0	-	20	20	167		121					Auto-filled
				610						841	Roof	610	11%	6.0%	0.53	Review

Ceilings	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No		W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	34 Flat Ceiling (FC)	0.087	60	0	-	20	20	104		60					Auto-filled
	Yes	35 Pitched Vault Ceiling (PVC)	0.089	41	0		20	20	73		41					Auto-filled
	Yes	36 Barrel Vault Ceiling (BVC)	0.089	131	0		20	20	234		131					Auto-filled
	Yes	37 Domed Vault Ceiling (DVC)	0.089	31	0		20	20	55		31					Auto-filled
	Yes	38 Hipped/Pyramid Vault Ceiling (HPVC)	0.089	59	0		20	20	105		59					Auto-filled
	Yes	39 Mono-Pitch Vault Ceiling (MPVC)	0.089	41	0		20	20	73		41					Auto-filled
	Yes	40 Mansard Vault Ceiling (MVC)	0.089	97	0		20	20	172		97					Auto-filled
	Yes	41 Other Geometry Ceiling (OGC)	0.089	101	0		20	20	179		101					Auto-filled
				561						996	Ceilings	561	10%	7.1%	0.68	Review

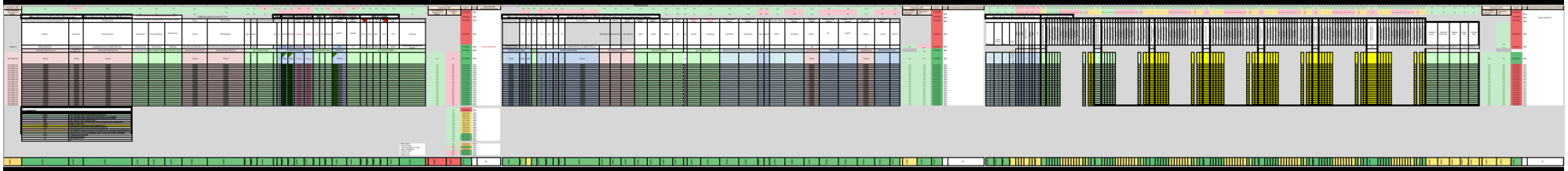
Window/Door/Rooflight	Applicable	Elements	U value	Areas	Temperature External		Internal	Difference	Heat loss Individual	Total	Floor area	Total Areas	Areas	Heat loss	Ratio:	
	Yes/No		W/m2.K	m2	degree C		degree C	degree C	W	W	m2	m2	%	%	1 in x	
	Yes	6 Basement Overhead Glazed Pavement (BOGP)	1.75	11	0	-	20	20	384		11					Auto-filled
	Yes	42 Windows (W)	0.8	50	0	-	20	20	800		50					Auto-filled
	Yes	43 Glazed Pedestrian Doors (GPD)	0.79	10.5	0	-	20	20	166		10.5					Auto-filled
	Yes	44 Opaque Pedestrian Doors (OPD)	2	12	0	-	20	20	480		12					Auto-filled
	Yes	45 Large Wall Opening (LWO)	2	45	0	-	20	20	1,800		45					Auto-filled
	Yes	46 High Usage Entrance Door (HUED)	2	20	0	-	20	20	800		20					Auto-filled
	Yes	47 Display Window (DW)	2	25	0	-	20	20	1,000		25					Auto-filled
	Yes	48 Glazed External Walls (GEW)	0.81	80	0	-	20	20	1,296		80					Auto-filled
	Yes	49 Opaque External Walls (OEW)	2	20	0	-	20	20	800		20					Auto-filled
	Yes	50 Glazed Roof (GR)	2	25	0		20	20	1,000		25					Auto-filled
	Yes	51 Rooflights (RL)	0.75	25	0	-	20	20	375		25					Auto-filled
	Yes	52 Roof Windows (RW)	0.81	10	0	-	20	20	162		10					Auto-filled
	Yes	53 Roof Air & Smoke Vents (RASV)	2	25	0	-	20	20	1,000		25					Auto-filled
				359						10,063	Window/Door/Rooflight	359	7%	71.3%	10.73	Review
										14,114		5396	100%	100.0%	1.00	Review
										4,051		5036	93%	28.7%	0.31	Review

GBC V2
In-use Energy Carbon Costs

				Yes	Yes	Yes	Yes	Yes	Yes	Yes		Auto-filled
GBC V2	**Total Conduction Heat Loss**	Areas		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
Total	Total Envelope Area Conducted Heat Loss (TEACHL)	3204	m^2	621	453	421.8	179	610	561		2845	Auto-filled
Window/Door/Rooflight	Total Transparent Area Conducted Heat Loss (TTACHL)	359	m^2	Areas						359	358.5	Auto-filled
Walls Roof Floor	Total Opaque Area Conducted Heat Loss (TOACHL)	**2845**	m^2									Auto-filled
	Envelope element areas as % of whole envelope		%	19%	14%	13%	6%	19%	18%	11%	100%	
Window/Door/Rooflight	Transparent area as % of whole	12.60%	%									Auto-filled
	In-Use Energy	Total heat loss via elements:	%	2.0%	5.1%	2.1%	0.7%	7.1%	8.3%	74.7%		
	Floor area	3,204	m^2	Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		Auto-filled
	Watts	13,476	W	271	681	285	100	957	1,116	10,066	13475.8812	Auto-filled
	KiloWatts	13.476	kW	0.27	0.68	0.28	0.10	0.96	1.12	10.07	13.4759	Auto-filled
	kiloWattHours	107.8	kWh	2.17	5.44	2.28	0.80	7.66	8.93	80.53	107.8070	Auto-filled
	KiloWatts/floor area	0.004	kW/m^2	0.0001	0.0002	0.0001	0.0000	0.0003	0.0003	0.0031	0.0042	Auto-filled
	KiloWattHours/floor area	0.0336	kWh/m^2	0.0007	0.0017	0.0007	0.0002	0.0024	0.0028	0.0251	0.0336	Auto-filled
	KiloWattHours/Floor area/annum	40.8262	kWh/m^2/Year	0.82	2.06	0.86	0.30	2.90	3.38	30.50	40.8262	Auto-filled
	In-Use Carbon Dioxide	CO_2	Carbon Dioxide									
	Fuel Choice	Grid Electricity Mix: UK 2020	Drop Down List	Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		Choose
	CO_2 equivalent		kg CO_2eq/kWh									
	CO_2	0.186	kg CO_2/kWh									Auto-filled
	conversion											
	kg CO_2	20.052	kg CO2									Auto-filled
	kg CO_2/m^2	8,458	kg CO2/m2	170	427	179	63	601	700	6,318		Auto-filled
	In-Use Hours	h/d	Unit			% h/y						
odation N14 or edit here	Hours of operation/day (spaces heated or cooled)	8	h/d	up to max	24							Review
	Days per week (spaces heated or cooled)	7	d/wk	up to max	7							Yes
	Weeks per month (spaces heated or cooled)	4.33	w/m	up to max	4.33							Auto-filled
	Months per year (spaces heated or cooled)	5	m/y	up to max	12							Yes
	Weeks per year (spaces heated or cooled)	21.67	w/y	up to max	52							Auto-filled
	Days per year (spaces heated or cooled)	151.67	d/y	up to max	365							Auto-filled
	Hours per year (spaces heated or cooled)	1213.33	h/y	up to max	8760	13.85%						Auto-filled
	In-Use Costs	Total		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
	Fuel Choice	Oil to DHW	Drop Down List									Choose
	£ costs/unit of fuel:	0.468	£/kWh	0.009	0.024	0.010	0.003	0.033	0.039	0.349	£/kWh	Auto-filled
	Embodied Energy	Total		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
		#N/A	MJ	1,071,033	81,256	#N/A	39,427	465,092	#N/A	223,560	MJ	Auto-filled
	Embodied Carbon	Total		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
		#N/A	kg CO_2	39,301	3,819	#N/A	2,517	20,690	#N/A	12,730	kg CO2	Auto-filled
	Sequestered Carbon	Total		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
		#N/A	kg CO_2	39,880	35,840	#N/A	35,088	147,134	#N/A	19,420	kg CO2	Auto-filled
	Total Carbon	Total		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
		#N/A	kg CO_2	-579	-32,021	#N/A	-32,571	-126,445	#N/A	-6,690	kg CO2	Auto-filled
	Total Build Cost	Total		Basement	Compartmentation	Floor	Wall	Roof	Ceiling	Windows, Glazing & Doors		
		£305,115.77	£	£45,996.00	£27,940.00	£0.00	£12,384.00	£59,872.57	£37,353.21	£96,850.00	£	Auto-filled

GBC V2 Then add: Carbon targets Pass or Fail
GBC V2 Then add: Cost Pay Back Carbon Pay Back Value Engineering

GBC V2 Manufacturer Supplier Intelligent Product Data Collection



	Manufacturer Supplier Request:		Manufacturer Product Reference	NB This Schedule can be downloaded directly from the Green Building Calculator website Https://GreenBuildingCalculator.uk			© GBE Green Building Calculator 2017-2021						Size		Insulation		Overheating		Size			Condensation Check		Bill of Costs					
	Add as many rows as you have products/sizes/applications	Component	Primary Function	NB as more functionality is added this table will develop to capture more information			Format	MSR Materials	Density	k value	SpecificHeatCapatity			Thickness		R value	U value	Decrement Value	Decrement Delay	Length	Width	lv	Thermal Resistance R layer	Vapour Resistance Rv layer	Labour rate	Product rate	Item rate	Material rate	Accessories rate	
	Element	Component	Primary Function	Manufacturer	Product Reference	Product Code	Format	MSR Materials	kg/m³	W/m.K				mm	m	m2.K/W	W/m2.K	Pending	Pending	mm	mm	MN s/g.m	m2K/W	MN s/g	£/m2	£/m2	£/No.	£/m2	£/m2	Comments
Example >	Wall/Floor/Roof/Etc.	Position/Application	Insulation/Structure/ VCL/BM/ATL/WTL/etc.	Company name	Product Name	Model No.	Quilt Batt Foam Board Block etc.	Wood fibre Sheep's wool Fired clay Straw board, etc.	20	0.160				150	0.15	0.938	1.067	Pending	Pending	1000	450	25	0.938	3.75	£25.00	£30.00	£25.00	£56.00	£20.00	anything else to be taken into account
	Choose from Drop Down List	Choose from Drop Down List	Choose from Drop Down List	Type information below	Type information below	Type information below	Choose from Drop Down List	Choose from Drop Down List	Type information below					Worked out automatically						Type information below			Worked out	Type information Below					
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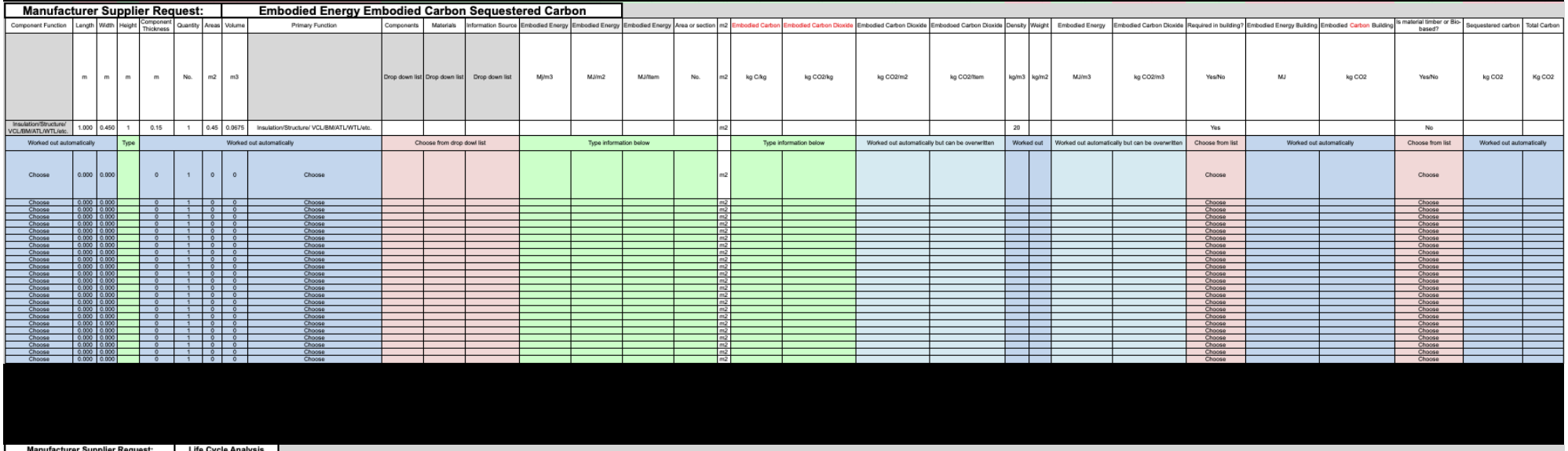
Manufacturer Supplier
GBC V2 EE EC SC
& GBC V3 LCA datasets



Manufacturer Supplier Request: | **Embodied Energy Embodied Carbon Sequestered Carbon**

Component Function	Length	Width	Height	Component Thickness	Quantity	Areas	Volume	Primary Function	Components	Materials	Information Source	Embodied Energy	Embodied Energy	Embodied Energy	Area or section	m2	Embodied Carbon	Embodied Carbon Dioxide	Embodied Carbon Dioxide	Embodoed Carbon Dioxide	Density	Weight	Embodied Energy	Embodied Carbon Dioxide	Required in building?	Embodied Energy Building	Embodied Carbon Building	Is material timber or Bio-based?	Sequestered carbon	Total Carbon
	m	m	m	m	No.	m2	m3		Drop down list	Drop down list	Drop down list	Mj/m3	MJ/m2	MJ/Item	No.	m2	kg C/kg	kg CO2/kg	kg CO2/m2	kg CO2/Item	kg/m3	kg/m2	MJ/m3	kg CO2/m3	Yes/No	MJ	kg CO2	Yes/No	kg CO2	Kg CO2
Insulation/Structure/ VCL/IBM/ATL/WTL/etc.	1.000	0.450	1	0.15	1	0.45	0.0675	Insulation/Structure/ VCL/IBM/ATL/WTL/etc.								m2					20				Yes			No		
Worked out automatically			Type	Worked out automatically					Choose from drop dowl list			Type information below					Type information below		Worked out automatically but can be overwritten		Worked out		Worked out automatically but can be overwritten		Choose from list	Worked out automatically		Choose from list	Worked out automatically	
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
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Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
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Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
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Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		
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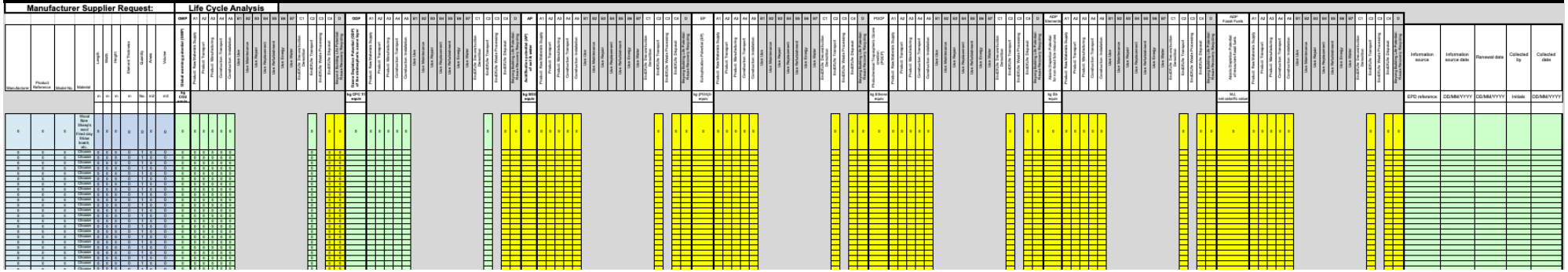
Choose	0.000	0.000		0	1	0	0	Choose								m2									Choose			Choose		



Manufacturer Supplier Request: | **Life Cycle Analysis**

GBE

https://GreenBuildingEncyclopaedia.uk

GBC

Green Building Calculator

https://GreenBuildingCalculator.uk

GBC V2 Costs to users

Completed by GBC	GBC V2	Yes	Yes	Yes
	V2 Prices	V1 One off payment (no longer available when V2 is launched)	V2 One off (with corrections but no future developments)	V2 Annual renewal subscription (with future developments)
	Larger practice	£98.88	£98.88	£98.88
	Six to ten person practice		£78.88	£78.88
	One to five person practice	£48.88	£48.88	£48.88
	Graduate, employee (Own use)		£8.88	£8.88
	University Professor, Tutor, Lecturer (to show/demo)		£8.88	£8.88
	University Professor, Tutor, Lecturer (to hangout to one student cohort)		£98.88	£98.88
	Student (own use only)	£4.88	£4.88	£4.88
	Self Builders, TAN6 OPD Wales	£4.88	£4.88	£4.88
	Other Self Builders, BIY, DIY, Self-Managers	£48.88	£48.88	£48.88
	GBC V1.1 (Lite demo)		£1.88	
	GBC V2 (view only non-functioning) explore before you buy		£1.88	

GBE

https://GreenBuildingEncyclopaedia.uk

File Updates 3

GBC

Green Building Calculator

https://GreenBuildingCalculator.uk

Rev No.	Comments	Author	Date
A21	ASBP Digital Tools with Firstplanit Reset RIBA South Wales and export to website	BRM	17/09/2022
A22	Update retrofit for Interreg Energy Pathfinder case study feedback for End of Project Conference	BRM	19/09/2022
A23	Hemp-Lime construction for IHBA Symposium France	BRM	13/10/2022
A24	Saunders Boston Architects week	BRM	24/10/2022
A25	BADSBA event		25/10/2022
A25	Regen '22 Liverpool	BRM	02/11/2022

GBE

https://GreenBuildingEncyclopaedia.uk

GBC

Green Building Calculator

https://GreenBuildingCalculator.uk

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