

Green Retrofit Calculator

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 BrianSpecMan Murphy GBC Number-Cruncher
 Caroe CPD 13th April 2023
 with added text slides after the event

This Presentation on GBE/GBC:

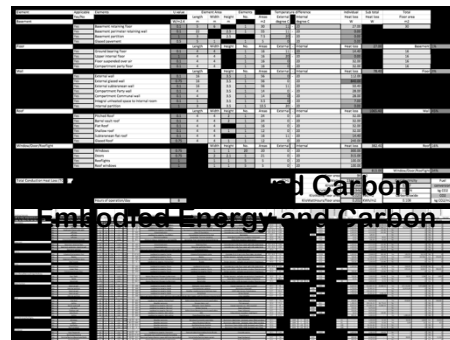
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 - <https://GreenBuildingEncyclopaedia.uk/?p=>
 - <https://GreenBuildingCalculator.uk/?p=2030>
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 - other file formats:
 - Handout, Show, PDF, PPTX
 - Links to related: GBE & GBC CPD & other content

BrianSpecMan Murphy

- ONC & HNC Construction
- BSc Degree Architecture (Honours)
- PG Diploma Architecture (Distinction)
- Technician and Architect by training
- Specification Writer by choice
- Environmentalism by action
- Educator by calling
- Carbon Counter by necessity
- Building Tour Guide for Fun
- 46 Years of experience in construction
- 40 years in specification
- 24 years in environmental
- 16 years in Education
- 12 years building carbon calculators

What did you do during COVID?

- Combined 2 whole-building calculators
 - In-use energy and carbon
 - Embodied energy and carbon
 - Originally created for 5th year Architecture module
 - Built in Bill of Quantities to carryout:
 - Green cost planning
 - Collecting sub-contract pricing
 - Tenders
 - Intelligent value engineering not just dumb cost cutting
- Added much more to make a design and decision tool
- Made Green Building Calculator
 - (GBC V2 April 2022 preview at Futurebuild '22 London)
- Finalising Green Retrofit Calculator
 - (GRC V1 April 2023 preview at Futurebuild '22 & '23)



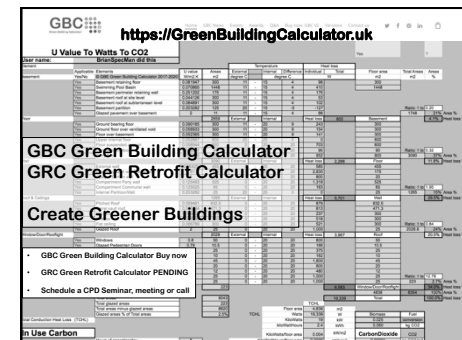
Embodied Energy and Carbon

In the context of fiduciary rules
 Profits > People > Planet
 V
 HERACEY™ =
 Healthy Environmental
 Resourceful Appropriate
 Competent Effective Yardstick
 =Sustainability

**Green Building Calculator Version 2
 GBC V2
 Green Retrofit Calculator Version 1
 GRC V1**

GBC
 Green Building Calculator

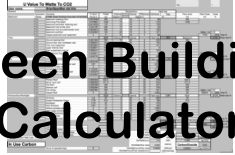
<https://GreenBuildingCalculator.uk>
 GBC Version 2 went live 20/04/22
 GRC Version 1 to go live April '23



**GBC Green Building Calculator
 GRC Green Retrofit Calculator**

Create Greener Buildings

- GBC Green Building Calculator Buy now
- GRC Green Retrofit Calculator PENDING
- Schedule a CPD Seminar, meeting or call



Green Building Calculator

I want.. I want.. I want..

I am coming at this problem:

- **Technician and Architect by training**
- **Specification Writer by choice (40 years)**
- **Side-line frustrated spectator**
- **Observer of projects going wrong:**
 - Briefing battens dropped at each interchange
 - Because of bad cost planning and layers of procurement complications
 - Lack of joined up management of it all
 - Loss of scrutiny of competency of anything

I don't want:

- **A building Performance Gap**
 - Started by philosophical, aesthetics and snappy-graphics education
 - **Educational Aspiration:** Awareness v Industry needs: Competency
 - Little or no technical, physics, science, numeracy, environmental education
 - Increasingly challenging Legislation Regulation Interpretation and Administration
 - Regulatory Tsunami just appearing over the horizon: Post-Grenfell/Competency Imperative
 - RIBA-discouraged and shrinking supervision role
 - Insurance encouraged "don't approve anything"
 - Evolves into vulnerable technical design
 - Invited by "Or Similar" annotation of drawings ("Or Equivalent" is safer in the Specification)
 - Undermined by substitution and surreptitious substitution
 - Brought on by inadequate tender leading to broad and better contracts
 - Manipulated by main contractor Dutch bargaining with sub-contractors
 - Lubricated by power over supply chain
 - Facilitated by out of control & bespoke procurement methods
 - Muddled by ill informed and misaligned perceptions "Contractors specify it now"
 - Encouraged by Constructing Excellence 10% year on year improvement
 - Compounded by 2013 Industrial strategy -33% cost, -50% emissions, -50% time
 - Cost cutting in disguise as "value engineering"
 - Driven by inadequately specific incompetent elemental cost planning
 - All leading to: incapacity of construction sector to deliver:
 - Client's bespoke design, green brief & investment ambitions

Why did I start making GBC?

- **I want I want I want..... us all to do better, first time**
 - Clients: to get what they asked for not what we gave them
 - Quality Surveyors: to do VE not Cost cutting, WLC not cheap; carbon & costs
 - Procurement: to focus on management of competency of end result
 - Manufacturers: to provide all important data, multi-functional products
 - Environmental Assessors: to guide designers with facts and figures
 - Building Designers: to do their own cost planning & technical analysis
 - Enable non-BIMers to do BIM app type analysis outside of BIM
 - Tenderers: to price a proper job and aim to claim no extras
 - Advisory Bodies: To be able to give more robust guidance
- **To have better information at hand when they make all specification decisions**
 - Evidence Based Design
 - Competent as was intended
 - No more engineering the value out of projects, but VE them in

I want clients

- **with aspirations and objectives for a Healthy, Environmental, Useful building:**
 - **To know they can engage a building designer team who have the tools and skills to meet their brief**
 - **To be able to invest well and get what they want;**
 - **not be driven down the business as usual cost cutting route initiated by QSs bad cost plans**
 - and procurement that adds a fee to reduce quality
 - **To know that their aspirations & objectives will survive all the way to completion on site**

I want building designers to be able to:

- **Do their own Cost Planning on small jobs not needing a QS**
 - based on the real cost of doing it greener and better for client
 - not just cheapest-wins every time
 - Don't set yourself up for a fall
- **Do it without a QS**
 - that steers the project towards financial and performance gaps
 - Avoiding approximate elemental pricing rates
 - Avoiding non-representative labour rates
 - Avoiding incompetent violet price books
- **Immediately understand the environmental impact**
 - Of construction or refurbishment methods
 - Help make better informed choices of materials or products
 - Become 'carbon literate'

I want building designers to be able to:

- **Compare alternative scenarios easily, quickly**
 - to begin to build an understanding of the consequences of their choices
 - in time be able to intuitively choose lower impact materials and methods
- **Intelligently interrogate the bill of materials**
 - do environmental analysis on the fly.
- **Access comprehensive generic materials and product datasets at their fingertips**
 - adopt, apply and interrogate designs

Counting Carbon

- **ACAN, LETI and RIBA campaigns**
- **Challenging Government to improve Building Regulations**
- **BRAD Z Counting carbon may arrive sooner than you think**
- **You may want to start interrogating building impacts, before you have to**
- **Get up to speed and land running**

I want building designers to be able to

- **Know where a product was invented to be used**
 - not risk its inappropriate application
 - 'Post-Grenfell golden thread' GBC V3, started in GBC V1
- **Close the performance gap:**
 - Energy now,
 - Airtightness, next
 - Fire, acoustics, indoor air quality, etc. later
 - Services design, lighting design, later
- **Have access to competent elemental assembly datasets**
 - 892 already for GBC V3
 - For use in the absence of know-how to assemble their own
 - Choose from and adopt or adapt competently

I want building designers to be able to

- Have a low cost tool affordable by small practices
- Have a multi-functional tool that interrogates the same building model/dataset
 - That only has to be built once, to get many results
 - Unlike WRAP and BRE tools
- Submit to architectural competitions and awards
 - that insist on embodied energy, embodied carbon and sequestered carbon and energy and carbon in use,
 - as part of the criteria for success
 - with an appropriate weighting I hope.

I want Non-BIM'ers

- Who have no need for BIM
 - Who cannot afford to implement BIM
 - Not doing Government work, not needing BIM
 - Have not experienced the benefits of BIM
- To be able to do BIM-app-type analysis outside of BIM
 - Interrogate the data and get useful results
- In the future:
 - Enable seamless BIM adoption later
 - Two way flow of information between BIM and GBC and visa versa

I want environmental and energy assessors to

- Be able to model whole buildings
 - With real products and their values
 - Not generic materials & grey values (GGTs)
 - find their weaknesses and communicate
 - in terms that building designers cannot ignore
- Interrogate at component level not just at:
 - elemental (GGTs) or whole building level (LCA)
- Interrogate bespoke assemblies
 - without having to refer back to control book
 - that take months to reply (BRE)

I want Quantity Surveyors to:

- Become a useful part of procurement process again
 - Cost planning has to do better than it has done over last few decades
 - Pricing books are woefully inadequate
 - do not reflect what is going on out there
 - Tradesmen rates are wrong as far as we can tell
 - Elemental rates are limited in scope
 - Accurate Cost planning appears to be impossible
 - Don't propose D&B etc. if the client wants bespoke, quality and good investment
 - Bid Quality Surveyors not Quantity Surveyors
 - Why give the client a Violet cost plan for a green brief for a green building?
 - Why give them false expectations? And then fail from there onwards?
 - Be more accurate than +/- 10% measuring and worse estimating
 - Create the 'Green Building Price Book'
 - Alastair MacCombe proposed 20 years ago
 - to become a reality, inside GBC
 - Do Green, competent Cost Planning
 - not win the 'race to the violet bottom'
 - Do real Value Engineering of green stuff into the project, not out of it
 - not cost-cutting disguised as Value Engineering;
 - but will they look at the bigger picture?
 - Do Whole Life Value without charging an extra fee
 - TOTEX = CAPEX + OPEX
 - More on Green and Violet Cost planning later

I want procurement to:

- Focus on the client expectations
 - No more novated designers without whistleblowing clauses
- Not focused on low cost and fast delivery
- At the expense of performance & quality
 - Craft supervisors not QA box tickers
 - Not sub-contracted snagging
- Not create long supply chain barriers between designers and craftsmen
- Manage interfaces between packages
 - Deliver consistency of end results for whole building
 - Easy to maintain by client's FM
- Go back to General Contracting if that's good enough

I want manufacturers to:

- Make multi-functional materials, products and systems:
 - But avoiding composites and mixing natural with technical materials
 - To replace many singular function alternatives
 - That succeed in Value Engineering processes
 - Because they are difficult to substitute
- Make low impact materials and products
 - Not hide behind BRE GGIS Generic Materials Assessments
 - at industry sector level: aggregated average grey not green or violet
 - Make their independently verified credible data available
 - as 'big open data' in 'consistent formats'
 - Readily interrogated by calculators with intelligent search functions
- Populate GBC Product Data Collection tables to create a single robust source and allow integration into GBC & bespoke Calculators
 - Share NBS Source datasets and add green data
 - Create Green Building Product Dataset & Green Building Price Book
- In BIM provide:
 - High Levels of Information (LOI)
 - Before High Levels of Detail (LOD)
 - Enable High Levels of Accuracy (LOA)

I want tenderers:

- To be able to use the built-in calculator
 - as the Bill of Quantities Tender Document
- To not have to price the job with every intention of making claims
 - Because retention money will never be paid without a fight
 - Dutch bargaining discounts will be expected
 - Main Contractor levy or discounts will be expected
 - Payments will be late: 3 months is normal today
 - Especially on Guaranteed Maximum Price GMP domestic tenders
- To be able to price the job properly:
 - not chasing some false illusion cost plan,
 - to allow trades people to have the time to care
 - and do a competent job using proper materials
 - Accurate and complete tender documents can invite accurate and complete pricing
- I want Specification Substitution to be done:
 - Transparently with all the facts and figures available
 - about the consequence of every change,
 - other than just cost savings for the contractor or shared with the client

I want BIM

- To live up to its expectations and hype
 - To do all the wonderful things it claims possible
 - Interrogate the model and BoM
 - I want to be able to do it myself asap
 - (still waiting for more data)

BIM is not popular yet

- Recent surveys show that BIM penetration into the design sector of the Construction industry is low
- If you do not do Government Work there is no need
- If you do not do big jobs there is no need
- If you have not experienced the benefits of BIM you have no incentive
- If you do not want to or cannot afford to run bigger computer systems to run BIM and open big files
- You may not get the benefit of BIM Apps
- You may need alternative tools to do the same jobs

I want advisory bodies

- To update their out of date generic information
 - E.g. BRE's House's elemental heat loss %
 - Based on historic data?
 - Based on BRAD L or SAP?
 - Replace it with Design Guide specifics?
 - Aspirational/Design Tool: PHPP
 - Evidence Based Guidance

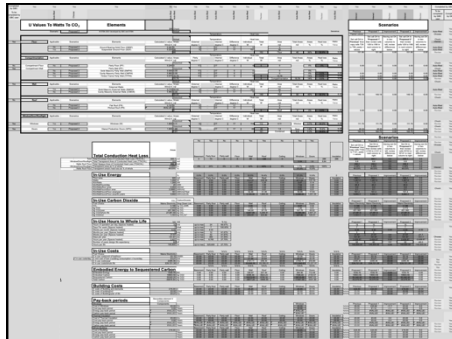
In use Carbon

I/we want embodied & in-use energy
 Up front carbon, embodied, sequestered, biogenic, total and in-use carbon
 Build & running costs, payback & carbon-back periods, all in one place at one time

**I want I want I want
 I am reminded to**

**Be the change
 you want to see in
 the world**

Mahatma Gandhi



If you want to dig deeper

- We are at Stand M60 Firstplanit
- Come over to explore Firstplanit+GBC+GRC
- Go at your own pace
- Zoom in on the details you want to explore
- Ask your questions get your answers
- Take a souvenir postcard
- Scan your badge get more information
- Reserve an in house Zoom FPI, GBC & GRC CPD
- Get your product data into Firstplanit+GBC+GRC

GRC

Green Retrofit Calculator
<https://GreenBuildingCalculator.uk>

Green Retrofit Calculator GRC V1

Developed by BrianSpecMan of GBC and Peter Draper of STBA
 Presented by BrianSpecMan

GRC V1 Retrofit

GBC B2: STBA & HES
 Responsible Retrofit Options
 Appraisal & Carbon Calculator

GBC B6: Interreg NP&AP
 Energy Pathfinder Project
 Scottish Islands Case Study

Manufacturer/Manufacturers	Product Agents/Distributors	Supplier/Supplier Members	Product Applications	Product Information Providers
Product Data Sheet/Technical Documents/Inventory Lists	Product Data Sheet/Technical Documents/Inventory Lists	Product Data Sheet/Technical Documents/Inventory Lists	Product Data Sheet/Technical Documents/Inventory Lists	Product Data Collection
Excel Down-loads	Link Up Tables	Schedule of Accommodations/Questionnaire/Forms	Excel Input/Target Labels	Excel mechanisms
Historical Values	Material Values/Calculations	Asset Values/Asset Values	Excel Geometry/Technical Documents/Room to Room Heat	Data Sources
Targets/Values/Requirements/Design Documents/Target Documents/Excel Lists/EE ESC BC	Surface & Carity/Resilience	Energy Systems & Heat Temperature/Heat of Mass	Generic Materials Datasets	Data Inputs
Generic Assembly/Component/Excel or Room/Can Not or LCA/EPD	Building Elements/Methods	Sub-structure/Queries	Choosing targets & Data sources	Option Switches for more detail
Non-Residential/EA/Furniture/Windows/Traffic/MEP/Landmarks/Residential/EA/Residential/EA	GBC Users/Designer/Engineer/CAAD Operators/CFD/SEA/EE/CFP & EPD/Compliance	Energy/EE/BC/EPD/A-AD/Carbon	Price Information	Chosen Elements
Summary Sheet/Elements & Building/Use Energy & %/Fuel Carbon Intensity/Carbon Intensity	Summary Sheet/Elements & Building/Embodied Energy/Embodied Carbon/Intensities & Biogenic Carbon/LCA/Carbon Assessment	Summary Sheet/Elements & Building/Embodied Energy/Embodied Carbon/Intensities & Biogenic Carbon/LCA/Carbon Assessment	Choosing Components	Choosing Materials or Products
			Automatic Number Crunching	Checking Targets Met or warnings
			GBC Users	Dashboard
				Summary Sheets
				Purpose of Green Building Calculator

Green Building Calculator V 2
<https://GreenBuildingCalculator.uk>

GBE GRC GBC

Green Retrofit Calculator

Regulations: Building Regulations Approved Document L2 (Part 1 & 2) UK & W, Future Homes Standard 2021, Scottish Technical Standard Part 6 2020, Northern Ireland (2017), PAS 2035 2023 (Training)

Region: Region 1

Building Type: Domestic

Table with columns for U-values, thermal mass, and other performance metrics.

GBE GRC GBC

Green Retrofit Calculator

Table with columns for Material, U-value, Thermal Mass, etc.

GRC V1 GBC B2 Insulation:
Materials Formats Densities: 17 of >150
Chosen U value targets = Thicknesses

Table with columns for Insulation, Material, U-value, Thickness, etc.

GRC V1 GBC B2 Elemental Assembly > 1 v GF Existing & Previous Interventions

Table with columns for Material, U-value, Thermal Mass, etc.

GBC V1 GRC V1 GBC B2 Material Conductivities >150 materials GBC V3 >2200 materials

Table with columns for Material, U-value, Thermal Mass, etc.

GRC V1 GBC B6 Elemental Assembly > 2 v GF Existing & Proposed Interventions Element: Roof, 2ndry Element: Window

Table with columns for Material, U-value, Thermal Mass, etc.

GRC V1 GBC B2 Elemental Assembly > 4 Bill of Materials Quantities Costs

Table with columns for Material, U-value, Thermal Mass, etc.

GRC V1 GBE B6 Bill of Quantities Elemental Summary

Table with columns for Material, U-value, Thermal Mass, etc.

GRC V1 GBC B2 Elemental Assembly > 5 Embodied Energy > Sequestered Carbon

Table with columns for Material, U-value, Thermal Mass, etc.

GRC V1 GBC B2 ICE Database Embodied Carbon datasets V1>V3

GRC V1 GBC B2 Elements EEECS Summary

Element	Embodied Energy (kWh/m²)	Embodied Carbon (t/m²)	Required Carbon (t/m²)	Total Carbon (t/m²)
Ground Floor Slab (GFS)	2.10	18.18	197.28	181.10
Subsidence Slab (SS)	0.00	0.00	0.00	0.00
1st Floor Slab (1FS)	2.10	18.18	197.28	181.10
2nd Floor Slab (2FS)	2.10	18.18	197.28	181.10
3rd Floor Slab (3FS)	2.10	18.18	197.28	181.10
4th Floor Slab (4FS)	2.10	18.18	197.28	181.10
5th Floor Slab (5FS)	2.10	18.18	197.28	181.10
6th Floor Slab (6FS)	2.10	18.18	197.28	181.10
7th Floor Slab (7FS)	2.10	18.18	197.28	181.10
8th Floor Slab (8FS)	2.10	18.18	197.28	181.10
9th Floor Slab (9FS)	2.10	18.18	197.28	181.10
10th Floor Slab (10FS)	2.10	18.18	197.28	181.10
11th Floor Slab (11FS)	2.10	18.18	197.28	181.10
12th Floor Slab (12FS)	2.10	18.18	197.28	181.10
13th Floor Slab (13FS)	2.10	18.18	197.28	181.10
14th Floor Slab (14FS)	2.10	18.18	197.28	181.10
15th Floor Slab (15FS)	2.10	18.18	197.28	181.10
16th Floor Slab (16FS)	2.10	18.18	197.28	181.10
17th Floor Slab (17FS)	2.10	18.18	197.28	181.10
18th Floor Slab (18FS)	2.10	18.18	197.28	181.10
19th Floor Slab (19FS)	2.10	18.18	197.28	181.10
20th Floor Slab (20FS)	2.10	18.18	197.28	181.10
21st Floor Slab (21FS)	2.10	18.18	197.28	181.10
22nd Floor Slab (22FS)	2.10	18.18	197.28	181.10
23rd Floor Slab (23FS)	2.10	18.18	197.28	181.10
24th Floor Slab (24FS)	2.10	18.18	197.28	181.10
25th Floor Slab (25FS)	2.10	18.18	197.28	181.10
26th Floor Slab (26FS)	2.10	18.18	197.28	181.10
27th Floor Slab (27FS)	2.10	18.18	197.28	181.10
28th Floor Slab (28FS)	2.10	18.18	197.28	181.10
29th Floor Slab (29FS)	2.10	18.18	197.28	181.10
30th Floor Slab (30FS)	2.10	18.18	197.28	181.10
31st Floor Slab (31FS)	2.10	18.18	197.28	181.10
32nd Floor Slab (32FS)	2.10	18.18	197.28	181.10
33rd Floor Slab (33FS)	2.10	18.18	197.28	181.10
34th Floor Slab (34FS)	2.10	18.18	197.28	181.10
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38th Floor Slab (38FS)	2.10	18.18	197.28	181.10
39th Floor Slab (39FS)	2.10	18.18	197.28	181.10
40th Floor Slab (40FS)	2.10	18.18	197.28	181.10
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53rd Floor Slab (53FS)	2.10	18.18	197.28	181.10
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60th Floor Slab (60FS)	2.10	18.18	197.28	181.10
61st Floor Slab (61FS)	2.10	18.18	197.28	181.10
62nd Floor Slab (62FS)	2.10	18.18	197.28	181.10
63rd Floor Slab (63FS)	2.10	18.18	197.28	181.10
64th Floor Slab (64FS)	2.10	18.18	197.28	181.10
65th Floor Slab (65FS)	2.10	18.18	197.28	181.10
66th Floor Slab (66FS)	2.10	18.18	197.28	181.10
67th Floor Slab (67FS)	2.10	18.18	197.28	181.10
68th Floor Slab (68FS)	2.10	18.18	197.28	181.10
69th Floor Slab (69FS)	2.10	18.18	197.28	181.10
70th Floor Slab (70FS)	2.10	18.18	197.28	181.10
71st Floor Slab (71FS)	2.10	18.18	197.28	181.10
72nd Floor Slab (72FS)	2.10	18.18	197.28	181.10
73rd Floor Slab (73FS)	2.10	18.18	197.28	181.10
74th Floor Slab (74FS)	2.10	18.18	197.28	181.10
75th Floor Slab (75FS)	2.10	18.18	197.28	181.10
76th Floor Slab (76FS)	2.10	18.18	197.28	181.10
77th Floor Slab (77FS)	2.10	18.18	197.28	181.10
78th Floor Slab (78FS)	2.10	18.18	197.28	181.10
79th Floor Slab (79FS)	2.10	18.18	197.28	181.10
80th Floor Slab (80FS)	2.10	18.18	197.28	181.10
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86th Floor Slab (86FS)	2.10	18.18	197.28	181.10
87th Floor Slab (87FS)	2.10	18.18	197.28	181.10
88th Floor Slab (88FS)	2.10	18.18	197.28	181.10
89th Floor Slab (89FS)	2.10	18.18	197.28	181.10
90th Floor Slab (90FS)	2.10	18.18	197.28	181.10
91st Floor Slab (91FS)	2.10	18.18	197.28	181.10
92nd Floor Slab (92FS)	2.10	18.18	197.28	181.10
93rd Floor Slab (93FS)	2.10	18.18	197.28	181.10
94th Floor Slab (94FS)	2.10	18.18	197.28	181.10
95th Floor Slab (95FS)	2.10	18.18	197.28	181.10
96th Floor Slab (96FS)	2.10	18.18	197.28	181.10
97th Floor Slab (97FS)	2.10	18.18	197.28	181.10
98th Floor Slab (98FS)	2.10	18.18	197.28	181.10
99th Floor Slab (99FS)	2.10	18.18	197.28	181.10
100th Floor Slab (100FS)	2.10	18.18	197.28	181.10
Whole Building	1000.00	10000.00	10000.00	10000.00

GRC V1 GBC B2 Window Door Rooflights Existing & Previous Interventions

GRC V1 GBC B2 U Values

GRC V1 GBC B2 U Values

GRC V1 GBC B2 Whole Building U values > Watts > % & Scenarios

- Scenarios
- Column 1: Existing and Previous interventions
- Columns 2-3 & 4-5: 2 alternative insulation options

GRC V1 IUE > Total ECO2

GRC V1 GBC B2 Fuel CO2-Factors

GRC V1 GBC B2 Fuel Costs

Fuel costs became volatile during GRC development.

It now needs other cells for Client's Fuel Costs on fixed term pricing and/or year on year planned increases

Project Summary: 8 Buildings Existing & 2 Proposal Scenarios & Results

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GBC V1 Awards/Shortlist

- 3 months after GBC V1 launch
 - Green Apple 2020-21 Award Winner
 - Environmental Award for Carbon reduction
 - Central England Prestige 2020-21 Winner
 - Winner
 - Construction Computing 2020 Awards
 - Finalist but no award
 - Innovation of the year 2020
 - One to watch Company 2020
 - Too new, no results, collect results & reapply
 - LSI RISE Awards 2021:
 - Highly Commended
 - Category: Education & Training
 - World society of Sustainable Energy technologies
 - Winner Innovation Award 2020/21

GBC V1 Awards/Shortlist

GBC V2 Costs to users

GBC V2	Yes	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 site)		£8.88	£8.88	
University Professor, Tutor, Lecturer (to show/demand)		£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, TAFE, CPD Wales	£4.88	£4.88	£4.88	
Other Self Builders, SVI, DVI, Self Managers	£48.88	£48.88	£48.88	
GBC V1.1 (Lite element)		£1.88		
GBC V2 (view only non-functioning; explore before you buy)			£1.88	

Add Charity rate £4.88 to all

Worksheet revisions record

Green Retrofit Calculator Add-Ons (ambitions)

GBC Elemental Assembly Component choices

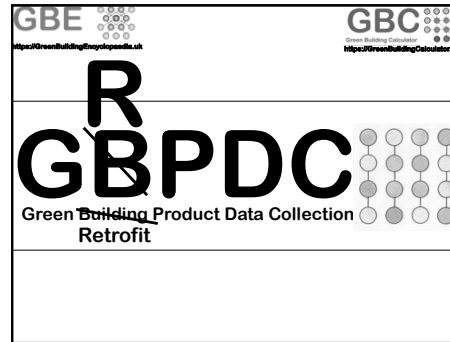
[GBC Look Up Table](#)
[GBC Drop Down Lists](#)

Post-Grenfell Golden Thread: Selective filtering for competency

[GBPFMS](#)
[GBMP](#)
[GBMS](#)
[GBS](#)

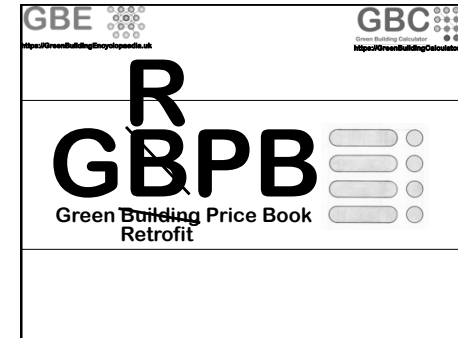
[GBPB](#)
[GBPC](#)
[GBREAIzi](#)

Outputs:
 Embodied & In use Energy & Carbon Data, Build & Running costs
 GBRobustSpec GBFMSpec GBMethodsStatement GBMaterialsPassport



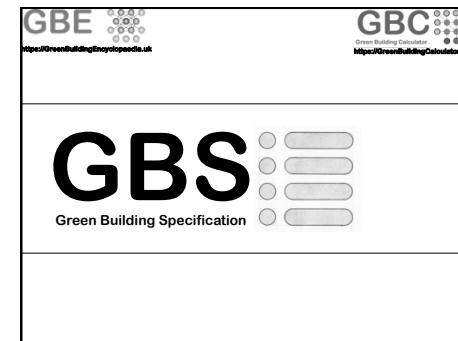
- ### GRC Green Retrofit Product Data Collection
- Import Excel or CSV tables
 - Product information and properties
 - Post Grenfell: 'Golden thread'
 - GRC needs to be selective
 - Only offer a product in place it was invented for and uses to solve
 - Intelligent Excel worksheet
 - Drop down lists to choose from, less errors
 - Being tested with some manufacturer
 - before general release

- ### Green Retrofit Product Data Collection (GRPDC)
- Manufacturer and Supplier populated
 - Anti-Greenwash campaign
 - CCPI Competent Construction Product Information aligned
 - Intelligent Data collection tables,
 - Drop down lists, choose to avoid typos
 - Some cells to type or paste into
 - Allocate products to correct locations in elemental look up tables
 - Avoid inappropriate applications
 - Follows manufacturers recommendations
 - Values for calculator
 - Verification data (certificates, dates, evidence confirmed)
 - To integrate with:
 - Green Retrofit Price Book
 - Green Retrofit Calculator
 - Green Retrofit Specification
 - Green Retrofit FM specification
 - Firstplant
 - Enable other design & decision tools



- ### Green Retrofit Price Book (GRPBP)
- After GBC V2 & GRC V1
 - Initially: Excel worksheet to be sent to manufacturers, suppliers and installers
 - Long term: stand alone on-line platform available to GBC, GRC other App developers or data users
 - To obtain robust prices to build robust cost plans
 - Like MRRP: Manufacturers recommended retail/trade price
 - Price for Green Retrofit Products by Green Retrofit Installers (not defined for sustainability by violet contractor)
 - Materials, Products, Accessories, Whole systems, Elements, Sub-elements, Buildings
 - Not their best price but their normal price that all can have
 - Or we end up back in the substitution vortex
 - We will also ask for prices for:
 - 1m³, 10m³, 100m³, etc. (opportunity for discounts for quantity)
 - Unopened, un-split delivery pack/pallets (potential wastage rates for later version)
 - Installation rates: m³/day and labour day rates
 - feeds into potential Programme, not by GBC or GRC
 - plant hire, power, delivery, fuel rates
 - Overheads prelims profits (unless to be accounted separately)

- ### Green Retrofit Price Book (GRPBP)
- Because Violet Price books and Violet Cost Planning
 - Have bankrupted the industry
 - So designers can do their own cost planning without QS
 - Manufacturer, Supplier and Retrofit Installer populated
 - The whole supply chain
 - £/m²,
 - £/1m², £/10m², £/100m², £/1000m², etc.
 - £/ unbroken packs
 - To Integrate with:
 - Green Building/Retrofit Calculator
 - Green Building/Retrofit Products Data Collection
 - Feeds Firstplant
 - Enable other design & decision tools



GRC GRPDC > GRS Specification

- Import Excel or CSV tables
 - Product information and properties
- Feeds into GRC Elemental Assemblies:
 - Component Choices
- Generates an outline specification
 - That is a Robust Specification
 - To fend off substitution

- **Manufacturer and Supplier populated GRPDC**
- **Intelligent Data collection tables,**
 - Drop down lists, choose to avoid typos
 - Some cells to type or paste into
 - Allocate products to correct locations in elemental look up tables
 - Avoid inappropriate applications
 - Follows manufacturers recommendations
 - Values for calculator
 - Verification data (certificates, dates, evidence confirmed)
- **To integrate with:**
 - Green Building/Retrofit Price Book
 - Green Building/Retrofit Calculator
 - Green Building/Retrofit FM specification
 - Firstplanit
- **Enable other design & decision tools**

GBRS

Green Building Robust Specification

GBS Robust Specification

- Product Clauses <1p
 - (Options to select from)
 - (Blanks for populating by project specifier)
- Material Clauses
- Bespoke Component Clauses
- Accessory Clauses
- Fixings Fastener Clauses
- Proofing Clauses
- Elemental Clauses
- System Clauses
- MEP Services Clauses
- Samples Mock-ups Clauses
- Reference Clauses
- Performance Clauses
- Testing Clauses
- Workmanship Clauses
- Maintenance Clauses
- Work sections >20-50p
 - Template for Project editing

GBMP

Green Building Material Passport

GBMP Green Building Materials Passport 16 pages!!

For one product

GBMP Green Building Materials Passport

GBFMS

Green Building FM Specification

GBMS

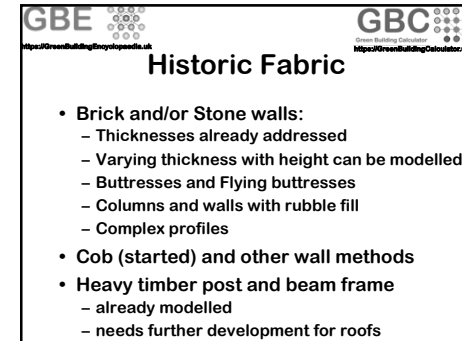
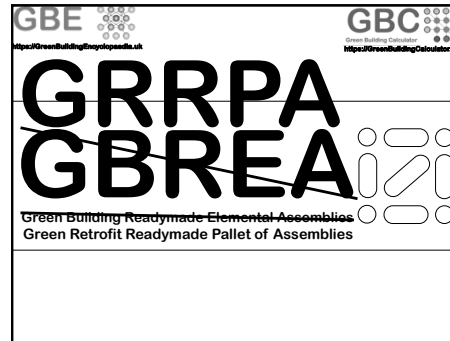
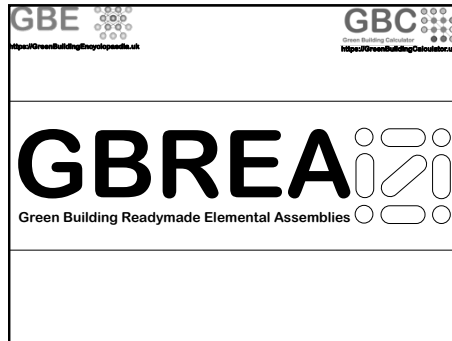
Green Building Method Statement

GBE Method Statement

- 75 datapoints
- To help manufacturers to ensure their products are specified
- and used properly on site

GBE Method Statements

GBE Green Building Encyclopaedia



File Updates 4

Rev No.	Comments	Author	Date
A31	Added GRC logos and posters	BRM	28/02/2023
A32	Updated GRC V1 for Futurebuild 23 Edge talk	BRM	09/03/2023
A33	Update for Wilkinson Eyre CPD	BRM	15/03/2023
A34	Added images for Exhibition Sticky labels	BRM	19/03/2023
A35	Update from Interreg Energy Pathfinder and Interreg CobBauge for CAROE. Added more text slides after the event	BRM	14/04/2023
A36		BRM	00/03/2023
A37		BRM	00/03/2023
A38		BRM	00/03/2023
A39		BRM	00/03/2023
A40		BRM	00/03/2023

