

Third Project Newsletter – July 2011

Low Impact Buildings Project

www.lowimpactbuildings.org

Funded by:

Technology Strategy Board
Driving Innovation

EPSRC
Pioneering research
and skills

Project Team:

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Welcome

- This is the third newsletter of the Low Impact Buildings project.
- This [TSB](#) and [EPSRC](#) funded project is focused on developing an integrated waste, carbon and cost model to help deliver future low carbon buildings.
- The project is managed by sustainability experts [Best Foot Forwards](#), and supported by [Oxford Brookes University](#). Other consortium partners include leading architects [zedFactory](#) and developers of the energy modelling software [DesignBuilder](#).

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Progress

- Since the second newsletter in January, the project has moved forward to address the complex problems of data **integration** and **management** and **quantity measurement**
- Early stage **quantities** have been formally defined that follows the standard set out in the **new rules of measurement** or **nrm**
- A rule based system gathers quantities from the model as it develops and automatically updates estimates

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Data Management

- The tool now uses an agile data management methodology that allows data to be separated from the tool itself
- This method keeps the data centralised and easily maintainable
- The tool can recruit data from various sources using a flexible attribute system that maintains a link to the original source of the data

The screenshot shows the 'Data Manager' interface. On the left, there are 'Data Sources' listed: 'Name: default', 'Name: test_excel', 'Name: high_level_cost_data', and 'Name: bindings_default'. The main area displays a table with columns: ID, Element, Eleme..., Element Description, Assumed Eleme..., and Reference of density. The table contains four rows of foundation data. Below the table, there are 'Binding Details' for a selected row, including fields for Name, Class, Estimate Level, Tag, and Description. A 'Save Changes' button is present. To the right of the binding details is a table with columns: Name, Value, Input, and Output, containing data for 'Assumed Element Unit Rate'.

ID	Element	Eleme...	Element Description	Assumed Eleme...	Reference of density
1	Element	Foundations	Reinforced concrete strip or based foundation (upto 1200mm deep) in good ground (? 2 storeys)	86	Ground Floor area
2	Element	Foundations	Reinforced concrete strip or based foundation (upto 2400mm deep) in good ground (? 2 storeys)	127.5	Ground Floor area
3	Element	Foundations	Extra for reinforced concrete strip or based foundation (upto 1200mm deep) in good ground each additional storey	22.65	Ground Floor area
4	Element	Foundations	Raft foundations on poor ground (? 2 storeys)	137.5	Ground Floor area

Name	Value	Input	Output
Assumed Element Unit Rate	86	nrm GA	cost GBP

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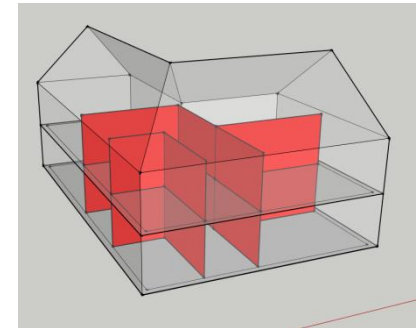
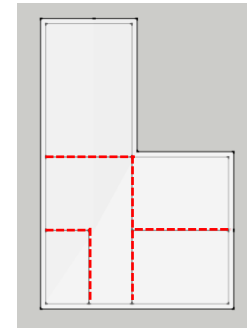
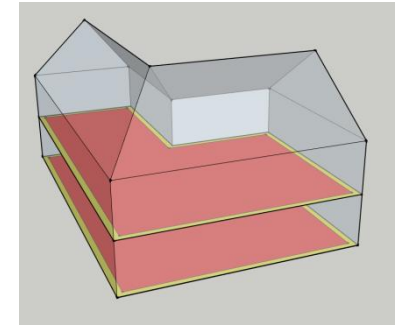
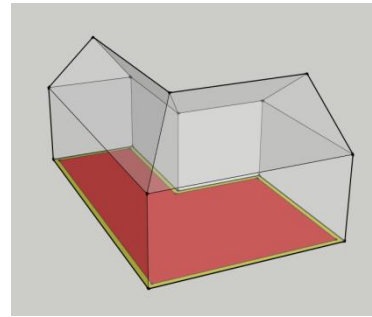
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Quantities

- The tool has a flexible measurements system for automatic early stage quantity take off
- In combination with a simple building profile, high level quantities can be gathered automatically from very simple model geometry
- Quantities are updated each time the model is changed which allows any unit rates to be applied to new measurements while the model is being developed



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Inference

- A series of rules are applied to allow the system to generate default estimates based the massing model and building profile
- These can be overridden or customised at any time by the user
- In future this system can be extended to add a richer rule based mechanism

Property Editor

Properties

Building

Building Profile

Ground Condition

Building Type

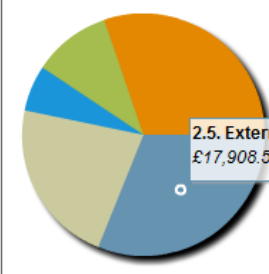
Structure

Stories

Roof Type

Sustainable Home Code

Cost Distribution



Cost Total	£57,600.79
Cost / m2 GIA	£321.76

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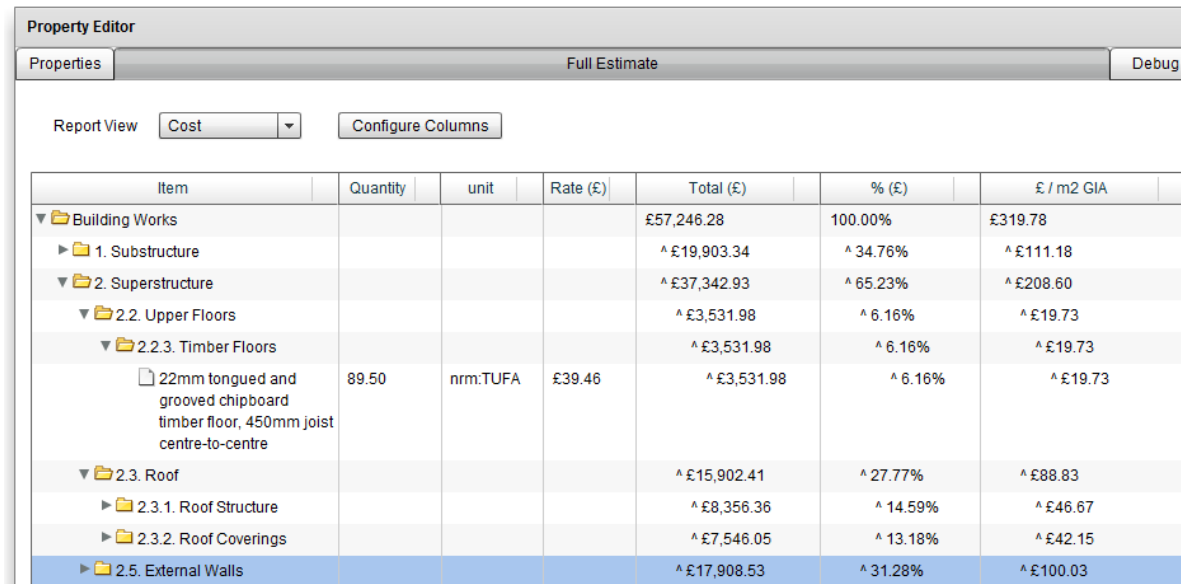
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Estimate Dimensions

- Cost can now be realised by the tool, and is presented in a hierarchical report breakdown based on the **nrm** standard



The screenshot shows a software interface titled 'Property Editor' with a 'Full Estimate' tab. Below the tab are 'Report View' (set to 'Cost') and 'Configure Columns' buttons. The main area contains a table with columns: Item, Quantity, unit, Rate (£), Total (£), % (£), and £ / m2 GIA. The table is organized into a hierarchy of folders and items, with the '22mm tongued and grooved chipboard timber floor, 450mm joist centre-to-centre' item highlighted in blue.

Item	Quantity	unit	Rate (£)	Total (£)	% (£)	£ / m2 GIA
▼ Building Works				£57,246.28	100.00%	£319.78
▶ 1. Substructure				^ £19,903.34	^ 34.76%	^ £111.18
▼ 2. Superstructure				^ £37,342.93	^ 65.23%	^ £208.60
▼ 2.2. Upper Floors				^ £3,531.98	^ 6.16%	^ £19.73
▼ 2.2.3. Timber Floors				^ £3,531.98	^ 6.16%	^ £19.73
□ 22mm tongued and grooved chipboard timber floor, 450mm joist centre-to-centre	89.50	nrm:TUFA	£39.46	^ £3,531.98	^ 6.16%	^ £19.73
▼ 2.3. Roof				^ £15,902.41	^ 27.77%	^ £88.83
▶ 2.3.1. Roof Structure				^ £8,356.36	^ 14.59%	^ £46.67
▶ 2.3.2. Roof Coverings				^ £7,546.05	^ 13.18%	^ £42.15
▶ 2.5. External Walls				^ £17,908.53	^ 31.28%	^ £100.03

- Carbon estimates will be addressed in the next newsletter

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Want to Know More?

- Visit our website: www.lowimpactbuildings.org
- Where you can:
 - Learn more about the project
 - Find contact details for the project team
 - Join our Discussion Group
 - Download project documents

Thank you

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