

Appendix H CfSH Materials Assessment

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Applicant:

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Project:

Construction of a Low Impact Dwelling as a One
Planet Development

Site address:

Gilfach yr Haidd Farm, Ystalyfera, SA9 2BE

Assessor:

Bill Knight B Eng

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Code for Sustainable Homes 2010

Material Credits

Introduction

The project involves construction of a new-build dwelling which, as a One Planet Development, will not be assessed against the Code for Sustainable Homes . However, Terra Perma has been commissioned to provide an assessment of the environmental impact of the materials to be used based on the framework of the “Materials” section of the Code.

The code was withdrawn in 2015 but the basis for the assessment is valid and no alternative assessment has been laid out by W.A.G. for One Planet Development.

The Code assesses materials in three parts:

- “Mat 1” considers the specification of materials. Four of the five main building elements are to achieve “A” or “A+” ratings under the BRE GreenGuide.
- “Mat 2” considers the sourcing of materials in the structural elements of the building. 80% of the assessed materials are to be responsibly sourced.
- “Mat 3” considers the sourcing of materials in the finishing elements of the building. 80% of the assessed materials are to be responsibly sourced.

The Green Guide is primarily geared towards mainstream construction. Where no ratings exist for the proposed construction, a considered judgement will be made with regard to selecting a close equivalent. Likewise, where materials are sourced unconventionally the assessor will use discretion to compare the material and award points.

Mat 1 – Environmental impact of materials

OPD Requirement:

“Where at least four of the following five key elements of the building envelope achieve a rating of A+ or A6 in the 2008 version of The Green Guide:

- *Roof*
- *External walls*
- *Internal walls (including separating walls)*
- *Upper and ground floors (including separating floors)*
- *Windows”*

Material element: Roof Types 1 & 2

Specification:

The roof will be constructed in a mono-pitch, warm deck format. The construction will be:

- Steel profile sheet (reclaimed if possible)
- Treated timber battens (vertical/horizontal)
- Waterproof breathable vapour membrane (Tyvek or similar)
- 11mm OSB3
- 300 x 63 timber I-Joists @ 400 c/c
- With 300 mm full fill warmcell cellulose insulation (or equivalent)
- 11mm OSB3

There is no specification for this material type on the Green Guide list, therefore we have found that this product is similar to:

Type: *Timber trussed rafters and joists with insulation, roofing underlay, counterbattens, battens and reclaimed slates
(Green Guideref: 812410012, rating “A+”)*

Material element: External walls Types 1 & 2

Specification:

- Softwood timber cladding (We will use reclaimed locally grown untreated Larch as cladding if this is available,
- Treated timber battens (horizontal)
- 40mm woodfibre board
- 150mm timber studs
- With 150 mm full fill warmcell cellulose insulation (or equivalent)
- 11mm OSB3
- breathable vapour membrane
- Treated timber battens (horizontal)
- OSB plus paint

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There is no specification for this material type on the Green Guide list, nor anything very similar. We have found that this product is broadly similar to:

Type: Pre-treated softwood weather boarding, breather membrane, plywood (temperate EN 636-2) sheathing, timber frame with insulation, vapour control layer, plasterboard on battens, paint (GreenGuideref:806210060, rating "A+")

Material element: Internal walls

Specification:

- 12mm OSB3
- 97mm treated timber stud (reclaimed if possible)
- Insulation (rockwool)
- 12mm OSB3

I have found that this product is similar to.

Type: Timber stud, plasterboard, paint (Green Guide ref: 809760003, rating "A+")

Material element: Ground floor Types 1 & 2

Specification:

- 18mm OSB3 flooring
- 300 x 63 timber I-Joists @ 400 c/c
- With 300 mm full fill warmcell cellulose insulation (or equivalent)
- 11mm OSB3

The specification from the Green Guide is:

Type: Tongue and groove softwood boards on timber joists with insulation, over 50mm fine aggregate on polythene DPM laid on sand blinding (Green Guideref: 820470012, rating "A+")

Material element: Windows

Specification: Double-glazed hardwood windows, water-based stain. hardwood windows, water-based stain.) NB reclaimed miss-sized timber windows if possible or reclaimed miss-sized UPVC windows.

The specification from the Green Guide is:

Type: Durable hardwood window, double glazed, water based stain (non TWAS) (Green Guide ref: 813100016, rating "A+")

Five of five elements achieve the A+ rating for this dwelling.

Mat 1 Credits achieved:	15 / 15
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Mat 2 – Responsible sourcing of materials – basic building elements

OPD Requirement:

“Where 80% of the assessed materials in the following Building Elements are responsibly sourced:

- a) *Frame*
- b) *Groundfloor*
- c) *Upper floors (including separating floors)*
- d) *Roof*
- e) *External walls*
- f) *Internal walls (including separating walls)*
- g) *Foundation/substructure (excluding sub-base materials)*
- h) *Staircase*

Additionally, 100% of any timber in these elements must be legally sourced”

a) Frame

Element	Tier Level	Certification
Wood Wool board	1	FSC
Sustainably sourced OSB sheathing	1	FSC
Sustainably sourced/reclaimed timber frame	None	Locally sourced
<i>100% assessed</i>	<i>3 points</i>	

b) Ground floor

Element	Tier Level	Certification
Sustainably sourced boards and I beam joists	None	Locally sourced
<i>100% assessed</i>	<i>3 points</i>	

c) Upper floors – Not applicable

d) Roof

Element	Tier Level	Certification
Wood Wool board	1	FSC
Sustainably sourced rafters	1	Locally sourced
Sustainably sourced OSB sheathing	1	FSC
Green roof/Metal cladding	None	Locally sourced/Reclaimed
<i>100% assessed</i>	<i>3 points</i>	

e) External walls

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Element	Tier Level	Certification
Wood wool insulation	None	TBC
Sustainably sourced OSB sheathing	1	FSC
Locally sourced Timber cladding	None	Locally sourced
<i>100% assessed</i>	<i>3 points</i>	

f) Internal walls

Element	Tier Level	Certification
Timber studwork	1	FSC
OSB sheathing	1	FSC
<i>100% assessed</i>	<i>3 points</i>	

g) Foundation & substructure – Not applicable

Element	Tier Level	Certification
<i>0% assessed</i>	<i>0 points</i>	

h) Staircase-Notapplicable

Mat 2 Total Points:	15 / 15
Mat 2 Credits achieved:	6 / 6

Mat 3 – Responsible sourcing of materials – finishing

elements Requirement:

“Where 80% of the assessed materials in the following Finishing Elements are responsibly sourced:

- *a) Staircase*
- *b) Windows*
- *c) External & internal doors*
- *d) Skirting*
- *e) Panelling*
- *f) Furniture*
- *g) Fascias*
- *h) Any other significant use*

Additionally, 100% of any timber in these elements must be legally sourced”

a) Staircase - Not applicable

b) Windows

Element	Tier Level	Certification
Timber	1	FSC
Glass	1	BES 6001:2008
<i>100% assessed</i>	<i>3 points</i>	

c) External & internal doors

Element	Tier Level	Certification
External door - timber	1	FSC
Internal doors - timber	1	FSC
<i>100% assessed</i>	<i>3 points</i>	

d) Skirting – Not applicable

e) Panelling-Not applicable

f) Furniture

Element	Tier Level	Certification
Kitchen units (Reclaimed)	1	FSC
Bathroom white goods (Reclaimed)	1	BES 6001:2008
<i>100% assessed</i>	<i>3 points</i>	

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g) Fascias (soffit boards, bargeboards, gutter boards, others)

Element	Tier Level	Certification
Timber	1	FSC
<i>100% assessed</i>	<i>3 points</i>	

h) Any other significant use-Notapplicable

Mat 3 Total Points:	15 / 15
Mat 3 Credits achieved:	3 / 3

Appendix A – Mat 1, Mat 2 & Mat 3 scoring methodology

Mat 1 credits are awarded on the basis of the rating in the Green Guide as follows:

Green Guide Rating	Credits
A+ Rating	3
A Rating	2
B Rating	1
C Rating	0.5
D Rating	0.25
E Rating	0

Mat 2 credits are awarded on the following basis:

Table: Cat 3.3 Credit Structure				
Number of Elements	Credits Available			
	6	4	3	2
	Range of Points			
8	≥ 18	≥ 12	≥ 9	≥ 6
7	≥ 15.75	≥ 10.25	≥ 7.87	≥ 5.25
6	≥ 13.5	≥ 9	≥ 6.75	≥ 4.5
5	≥ 11.25	≥ 7.5	≥ 5.625	≥ 3.75

Mat 3 credits are awarded on the following basis:

Table: Cat 3.4 Credit Structure			
Number of Elements	Credits Available		
	3	2	1
	Range of Points		
8	$= 18$	≥ 12	≥ 6
7	≥ 15.75	≥ 10.25	≥ 5.25
6	≥ 13.5	≥ 9	≥ 4.5
5	≥ 11.25	≥ 7.5	≥ 3.75

Appendix B – Materials from site and locally sourced or reclaimed

The Mat 2 and Mat 3 categories involve an assessment of the sustainability of the principal material components of certain elements.

The Code for Sustainable Homes system for appraising sustainability revolves around various certification schemes based on BES 6001:2008 (FSC, CITES, EMAS etc). These are heavily geared towards larger industrial suppliers.

It would not be reasonable to expect an individual to obtain and maintain the necessary certification (such as ISO 9001) for small scale, sustainable harvesting of material from site. Small-scale local suppliers also tend to be penalised by this system, despite often operating in a far more sustainable and ethical manner than the large scale corporate giants that dominate the market.

Where materials are sourced from, site or reclaimed it is not necessarily possible to assess them under Mat 2 and Mat 3, so some credits will be unavailable in this case.

However, sourcing materials from site in a sensitive and sustainable way can significantly lower the impact of the project; minimising embodied energy from off-site processing, packaging and transportation. As the sustainability of the proposal is of critical importance to the applicants, where materials are to be taken from site the following guiding principles have been observed to ensure the harvesting of materials on site was carried out sustainably. These are detailed below. Several small-scale local suppliers have been selected on the basis of their good practice and sustainable approach to sourcing. As they are local, it is possible to visit the site of production to ensure the sustainability of their methods. Despite this, no credits are available in this case, despite the obvious environmental benefits.

Timber (†)

- Larch

Wood is a carbon-sequestering material, absorbing carbon dioxide as it grows and storing it for the lifetime of the building. Timber is renewable and will be harvested in accordance with FSC principles, in line with certified suppliers (see Appendix C).

There is a considerable amount of larch on the site and if it proves possible to extract it economically it will be utilized.

Appendix C – The 10 principles of the Forest Stewardship Council

“The ten FSC Principles require the forest owner or manager to do the following:

Principle 1: Compliance with laws and FSC Principles—to comply with all laws, regulations, treaties, conventions and agreements, together with all FSC Principles and Criteria.

Principle 2: Tenure and user rights and responsibilities—to define, document and legally establish long-term tenure and user rights.

Principle 3: Indigenous peoples’ rights—to identify and uphold indigenous peoples’ rights of ownership and use of land and resources.

Principle 4: Community relations and worker’s rights—to maintain or enhance forest workers’ and local communities’ social and economic well-being.

Principle 5: Benefits from the forest—to maintain or enhance long term economic, social and environmental benefits from the forest.

Principle 6: Environmental impact—to maintain or restore the ecosystem, its biodiversity, resources and landscapes.

Principle 7: Management plan—to have a management plan, implemented, monitored and documented.

Principle 8: Monitoring and assessment—to demonstrate progress towards management objectives.

Principle 9: Maintenance of high conservation value forests—to maintain or enhance the attributes which define such forests.

Principle 10: Plantations—to plan and manage plantations in accordance with FSC Principles and Criteria.”