Statement of Verification

BREG EN EPD No.: 000160 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Mumford & Wood Limited

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

Conservation Casement Window

Company Address

Tower Business Park
Kelvedon Road
Tiptree
Essex
CO5 0LX

Signed for BRE Global Ltd	Emma Baker Operator	07 March 2017 Date of this Issue
07 March 2017 Date of First Issue		06 March 2022 Expiry Date

BRE Global Verified EPD

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General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	**LCA consultant/Tool**
British Woodworking Federation (BWF) The Building Centre 26 Store Street London WC1E 7BT	BRE LINA
Declared/Functional Unit	**Applicability/Coverage**
1m^2 of top hung casement window	Product Average.
EPD Type	**Background database**
Cradle to Gate	ecoinvent

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Dr Owen Abbe
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		☐

Note: Ticks indicate the Information Modules declared.

Manufacturing site

Mumford & Wood Ltd
Tower Business Park
Kelvedon Road
Tiptree, Essex
CO5 0LX

Construction Product:

Product Description

This EPD is for a Conservation Casement Window. This is a high performance timber casement window with flush-line appearance of casement to frame.

Technical Information

Property	Value, Unit
Acoustics reduction rating	40db
Security performance	Certified to PAS 24 Secured by Design
Weather performance to BS 6375-1	Air permeability Class 4, water tightness Class 9A & Wind resistance Class C5
Weather performance to BS 6375-2	Passed
Thermal U-Value	1.4 W/m^{2}k

Main Product Contents

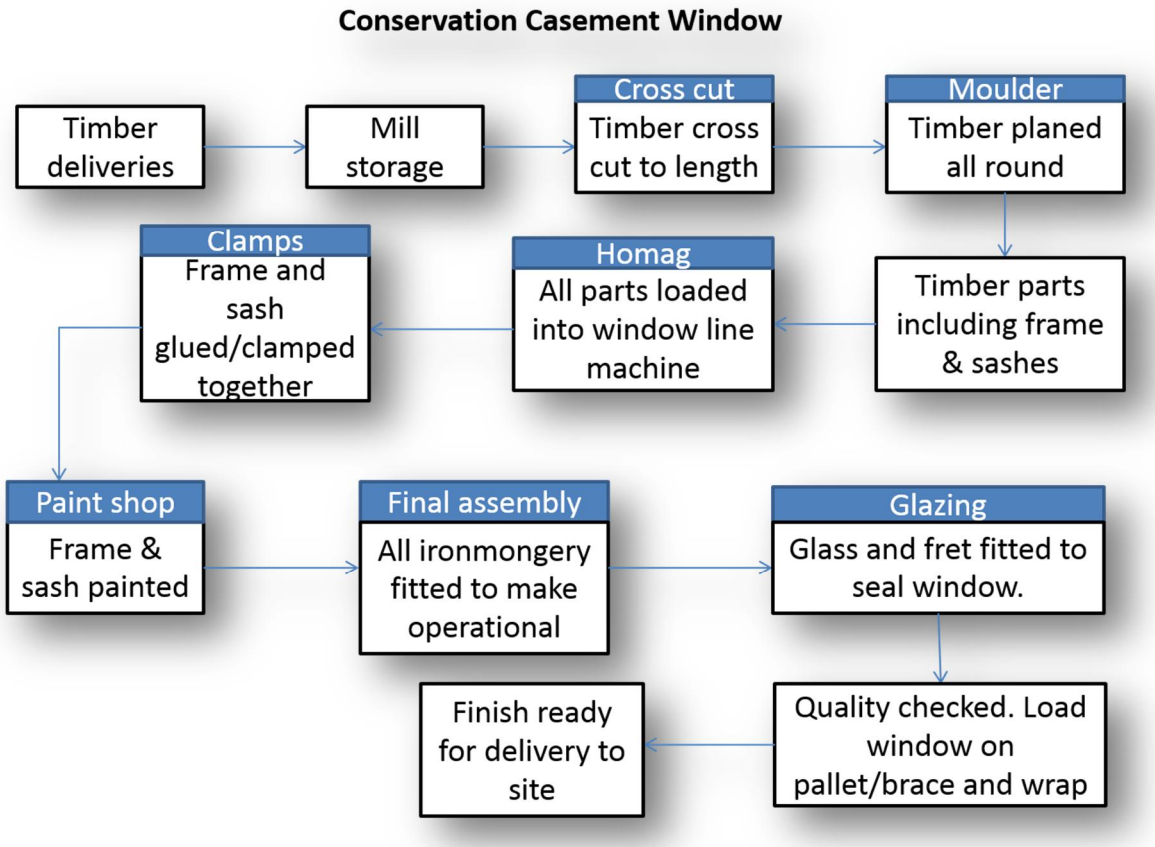
Material/Chemical Input	%
Wood	63
Glass	29
Steel hardware	5
Paint	2
Rubber/EPDM	<1

Manufacturing Process

Raw material is sorted and cut to length by an optimising cross cut saw. The sorted timber lengths are then sized through a moulder to make straight and true. These parts are loaded on to a conveyer that feeds into a window line machine. The window line will machine all profiles and joint systems as well as all drill positions and slots as required. The finished parts will be glued to make whole sashes and frames. The whole sashes and frames will be spray painted ready for assembly. Glass will be fitted and ironmongery located to operate the windows. Once finished, this product will be quality checked and wrapped ready for delivery.

The raw material is based starting with a 1000 mm x 1000 mm unit size 1 m^2 window and then increasing the raw material to a more average size product through production of 1230 x 1480 at a unit size of 1.82 m^2. The frame is 68 mm x 93 mm. The sash rails are 64 mm x 57 mm and a bead of 15 mm x 18 mm. The double glazed unit is 24 mm made up of 4 mm / 16 mm / 4 mm toughened glass. All ironmongery weights are calculated per item and also the weather seals.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

The declared unit is 1m^2 (1000 mm x 1000 mm) of top hung casement window

System boundary

This is a cradle-to-gate EPD, therefore reporting only the mandatory product stage A1 to A3 (in accordance with EN 15804:2012).

Data sources, quality and allocation

Specific primary data derived from the Mumford & Wood Limited production process in Essex have been modelled. In accordance with the requirements of EN 15804, the most current available data has been used. The manufacturer-specific data from Mumford & Wood Limited covers a production period of 1 year (31/12/15 to 01/01/17).

Secondary data has been used for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production). Within LINA, all background LCI datasets have been taken from the ecoinvent database v3.2. Where the creation of BRE background datasets was required, these have been created using ecoinvent datasets. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs according to the requirements specified in EN 15804. In addition, a Wood for Good dataset which is based on GaBi has been used.

Mumford & Wood Limited manufactures other finished products at the Essex site in addition to those covered by this EPD. Calculations were performed to enable allocation of total site energy use, water use, waste and emission to the conservation casement window. Allocation procedures are according to EN 15804 and are based on the ISO 14044 guidance.

Cut-off criteria

All raw materials, packaging materials and consumable item inputs, and associated transport to the plant, process energy and water use, direct production waste, emissions to air, water and soil have been included where relevant.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO_2 equiv.	kg CFC 11 equiv.	kg SO_2 equiv.	kg $(PO_4)^{3-}$ equiv.	kg C_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	-2.63E+00	3.51E-06	3.65E-01	8.64E-02	2.96E-02	1.58E-03	6.13E+02
	Transport	A2	2.85E+01	5.26E-06	1.07E-01	2.74E-02	1.71E-02	7.41E-05	4.31E+02
	Manufacturing	A3	7.91E+01	4.05E-06	3.78E-01	8.92E-02	2.22E-02	7.30E-05	1.08E+03
	Total (of product stage)	A1-3	1.05E+02	1.28E-05	8.50E-01	2.03E-01	6.89E-02	1.73E-03	2.12E+03
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND	MND

GWP = Global Warming Potential;
ODP = Ozone Depletion Potential;
AP = Acidification Potential for Soil and Water;
EP = Eutrophication Potential;
POCP = Formation potential of tropospheric Ozone;
ADPE = Abiotic Depletion Potential – Elements;
ADPF = Abiotic Depletion Potential – Fossil Fuels;

LCA Results (continued)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	2.77E+02	3.86E+02	6.63E+02	6.77E+02	0.00E+00	6.77E+02
	Transport	A2	5.97E+00	2.18E-05	5.97E+00	4.29E+02	0.00E+00	4.29E+02
	Manufacturing	A3	1.16E+02	3.25E-05	1.16E+02	1.44E+03	0.00E+00	1.44E+03
	Total (of product stage)	A1-3	3.99E+02	3.86E+02	7.85E+02	2.55E+03	0.00E+00	2.55E+03
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results (continued)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	6.66E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	9.46E-02
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	3.26E-01
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	1.09E+00
Construction process stage	Transport	A4	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	2.29E+00	4.78E+00	1.83E-02
	Transport	A2	1.82E-01	1.97E+01	2.98E-03
	Manufacturing	A3	1.98E-01	9.32E+00	7.92E-03
	Total (of product stage)	A1-3	2.67E+00	3.38E+01	2.92E-02
Construction process stage	Transport	A4	MND	MND	MND
	Construction	A5	MND	MND	MND
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction , demolition	C1	MND	MND	MND
	Transport	C2	MND	MND	MND
	Waste processing	C3	MND	MND	MND
	Disposal	C4	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results (continued)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

CRU = Components for re-use;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

This is a cradle-to-gate EPD and therefore no optional scenarios are included.

Summary, comments and additional information

Sustainability statement (optional)

ISO14001 Environmental Management system certified. FSC chain of custody certified

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

BSI. Performance of windows and doors – Part 1: Classification for weather tightness and guidance on selection and specification. BS EN ISO 6375-1:2009. London, BSI, 2009.

BSI. Performance of windows and doors – Part 2: Classification for operation and strength characteristics and guidance on selection and specification. BS EN ISO 6375-2:2009. London, BSI, 2009.

BSI. Enhanced security performance requirements for doorsets and windows in the UK. Doorsets and windows intended to offer a level of security suitable for dwellings and other buildings exposed to comparable risk. PAS 24:2016.

Conservation Range, Mumford & Wood Ltd, http://www.mumfordwood.com/conservation-range.html