Statement of Verification

BREG EN EPD No.: 000669

Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Haughley Block Plant Ltd

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for: 1m2 of 100mm thick 3.6N/7.3N/10.4N HBP Medium Dense Blocks (147kg/m2, L:440mm x H:215mm x W:100mm).

Company Address

Haughley Block Plant Ltd Station Road Haughley, Stowmarket Suffolk IP14 3QP



May Cup Thu Signed for BRE Global Ltc

25 March 2025

Date of First Issue

Hayley Thomson

25 March 2025

Operator

Date of this Issue 24 March 2030

Expiry Date



This Statement of Verification is issued subject to terms and conditions (for details visit <u>www.greenbooklive.com/terms</u>. To check the validity of this statement of verification please, visit <u>www.greenbooklive.com/check</u> or contact us. BRE Global Ltd., Garston, Watford WD25 9XX. T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: <u>Enquiries@breglobal.com</u>



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EPD

Environmental Product Declaration

EPD Number: 000669

General Information

EPD Programme Operator	Applicable Product Category Rules					
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE 2023 Product Category Rules (PN 514 Rev 3.1) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019					
Commissioner of LCA study	LCA consultant/Tool					
Haughley Block Plant Ltd Station Road Haughley, Stowmarket Suffolk IP14 3QP	Francis Yu/ BRE LINA A2					
Declared Unit	Applicability/Coverage					
1m ² of 100mm thick 3.6N/7.3N/10.4N HBP Medium Dense Blocks (147kg/m ² , L:440mm x H:215mm x W:100mm).	Product Specific.					
EPD Type	Background database					
Cradle to Gate with options	Ecoinvent 3.8					
Demonstra	tion of Verification					
CEN standard EN 15	804 serves as the core PCR ^a					
Independent verification of the declara	tion and data according to EN ISO 14025:2010 ⊠ External					
(Where approp Bala	iate ^b)Third party verifier: Subramanian					
a: Product category rules b: Optional for business-to-business communication; mandatory	for business-to-consumer communication (see EN ISO 14025:2010, 9.4)					
Co	mparability					
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. 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+A2:2019 for further guidance						

Information modules covered

	Use stage									Benefits and loads beyond							
l I	Produc	τ	Consti	ruction	Rel	ated to	the bui	lding fa	bric	Relat the bu	ed to uilding	End-of-life			End-of-life the syste		the system boundary
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
\checkmark	\checkmark	\checkmark	V	V	V	V	V	V	V	V	V	V	V	V	V		\checkmark

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Haughley Block Plant Ltd. Station Road, Haughley, Suffolk, IP14 3QP

Construction Product:

Product Description

HBP Blocks are made of cement, aggregates and water. The blocks covered by this EPD are manufactured with semi-dry components, accurately weighed, thoroughly mixed before adding a measured amount of water. This semi dry mix is fed into a mould and mechanically pressed to form the block shape. Once demoulded, the blocks are cured in a warm and humid chamber, then moved externally for storage.

HBP blocks are used in a variety of applications including both interior and exterior load bearing and non-load bearing walls.

The LCA results listed in this product specific EPD are for $1m^2$ of 100mm 3.6N Medium Dense Block (147kg/m²), $1m^2$ of 100mm 7.3N Medium Dense Block (147kg/m²) and $1m^2$ of 100mm 10.4N Medium Dense Blocks (147kg/m²).

This EPD can also be used for $1m^2$ for other different thicknesses of the products as they have the same design and composition, i.e. $1m^2$ of 140mm 3.6N/7.3N/10.4N Medium Dense Blocks, $1m^2$ of 190mm 3.6N/7.3N/10.4N Medium Dense Blocks, $1m^2$ of 215mm 3.6N/7.3N/10.4N Medium Dense Blocks. The corresponding LCA results can be calculated using the conversion factors from the end-user table in the Interpretation section of the EPD.

Technical Information

Property	Value, Unit
Harmonised standard	EN 771-3:2011+A1:2015
Quality Management System compliance	ISO 9001, ISO 14001 and ISO 45001
Category I, Manufacturing Control compliance	BS EN 1996-1-1: 2005
Dimensions (mm)	W: 100mm/140mm/190mm/215mm, L: 440mm, H: 215mm
Dimensional tolerances	Category: D1 Flatness: NPD Parallelism: NPD
Configuration	Group 1 Solid
Dimensional stability	Moisture movement <=0.6mm/m
Shear bond	0.15N/mm ² (fixed value)
Flexural bond strength	NPD
Characteristic compressive strength	3.6 N/mm², 7.3N/mm², 10.4N/mm² (⊥ bed face)
Net dry density of concrete	1400-1600 kg/m3
Reaction to fire	Euroclass A1
Water absorption	NPD
Water Vapour Diffusion	5/15µ (fixed value)
Thermal conductivity	P = 50% 0.57 W/(m.K) [λ10,dry]
Durability against freeze-thaw	Not to be left exposed
Reaction to fire	Classification to EN 13501-1: A1

Note: The technical properties are extracted from the HBP technical data sheet and apply to all 3.6N/7.3N/10.4N HBP Medium Dense Blocks covered in the EPD and the end-user table. Please contact Haughley Block Plant Ltd for details.



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Main Product Contents - 100mm 3.6N HBP Medium Dense Blocks

Material/Chemical Input	%
Grit	42
Lightweight Filler Material	48
Cement	10

Main Product Contents - 100mm 7.3N HBP Medium Dense Blocks

Material/Chemical Input	%
Grit	42
Lightweight Filler Material	47
Cement	11

Main Product Contents - 100mm 10.4N HBP Medium Dense Blocks

Material/Chemical Input	%
Grit	41
Lightweight Filler Material	47
Cement	12

Manufacturing Process

Aggregates and cement are delivered to the factory where they are mixed and transported via conveyors to the block machine which manufactures modular/special block units. These units are then stacked in the curing chambers. Post curing chamber, they are taken to the cuber, strapped and banded. They are then stored in the yard and loaded onto lorries for customer distribution.

The Haughley Block Plant factory recycles 100% of factory produced product waste.

Process flow diagram



Construction Installation

All block products are manually constructed to create block walling. The construction of walls should be in accordance with BS EN 1996: (1-1: 2005, 1-2: 2005) and 2: 2006) and normal good practice. For use above DPC, the blocks should be laid using mortar strength class M4. Below DPC level strength class M4, or M6, can be used depending on the risk of saturation and freezing.

Use Information

There is no energy use associated with the product once installed.

End of Life

At the end-of-life stage, the concrete block walls are crushed and screened on site as part of the building demolition. Industrial average end-of-life data has been used for this EPD, according BRE PCR for Type III EPD of Construction Products to EN 15804+A2, 95% of the concrete blocks are recycled as aggregates and 5% are sent to landfill.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m2 of 100mm thick 3.6N/7.3N/10.4N HBP Medium Dense Blocks (147kg/m2, L:440mm x H:215mm x W:100mm).

System boundary

This cradle-to-gate with options EPD has assessed in accordance with the modular approach as defined in EN15804:2012+A2:2019 and BRE 2023 Product Category Rules (PN 514 Rev 3.1) and includes the processes covered in the manufacturing site and product stage A1 to A3, A4-A5, B1-B7, C1-C4 and D.

Data sources, quality and allocation

Specific primary data derived from Haughley Block Plant Ltd's production process at Station Road, Haughley, Suffolk, IP14 3QP factory, have been modelled using the LINA LCA A2 software and the ecoinvent 3.8 database. In accordance with the requirements of EN 15804:2012+A2:2019, the most current available data has been used. The manufacturer-specific data from Haughley Block Plant Ltd covers a period of one year (01/10/2023 – 30/09/2024). Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production) from the ecoinvent 3.8 database. Renewable electricity (from mono solar PV) has been used in the EPD. HBP blocks production data includes data for all product variants. As the total weight of the input materials is less than the total weight of the output in the data collection, a 4.48%/3.39%/2.3% of material uplift has therefore been implemented for the input raw materials for 100mm 3.6N, 100mm 7.3N and 100mm 10.4N HBP Medium Dense Blocks respectively to make the input weight equal to the output weight. 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 15804:2012+A2:2019.

The LCAs are based on 100mm 3.6N, 7.3N and 10.4N HBP Medium Dense Blocks, which accounts for 3%, 27.8% and 0.4% of Haughley Block Plant total production. A list of conversion factors has been attached at the end of EPD for other variants (140/190/215mm, 3.6/7.3/10.4N HBP Medium Dense Blocks). All the products have similar composition and manufacturing processes, therefore they are listed in the same EPD. Haughley Block Plant Ltd manufactures other products in addition to HBP Medium Dense Block series, therefore, an allocation of fuel, water, material usage, and waste are required. All energy, water and waste have been allocated to the products by square metre according to the provisions of the BRE PCR PN514 Rev 3.1 and EN 15804:2012+A2:2019. Site wide values for energy, water and wastewater have been taken from bills. Figures for the raw materials, ancillary materials and packaging were from actual usages.

An economic allocation has been conducted for calculating the impacts of the lightweight filler material (FBA).

Haughley Block Plant is 100% solar with significant surplus generation sold back into the grid, Haughley Block Plant solar installation generates 200,147kWh of solar electricity and imports from the grid 84,636kWh per year.

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e. identical technology).	There is less than 5 years between the ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific UK datasets have been selected from the ecoinvent LCI for this LCA. The quality level of geographical and technical representativeness is therefore very good. The quality level of time

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representativeness is good as the background LCI datasets are based on ecoinvent v3.8 which was compiled in 2021. Therefore, there is less than 5 years between the ecoinvent LCI reference year and the time period for which the LCA was undertaken.

UK consumption mix was used for electricity with an emissions factor of 0.239kgCO2e/kWh. UK renewable electricity (roof, mono solar PV) was used with an emission factor of 0.125 kgCO2e/kWh.

Cut-off criteria

All raw materials, packaging materials, transportation, process energy, general energy, water use and nonproduction waste have been included where appropriate. Direct emissions to air, water and soil are not produced and have been excluded. No production waste is generated as all waste materials are crushed and re-used on site in the same production process. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA.

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LCA Results – 100mm 3.6N HBP Medium Dense Blocks (147kg/m2)

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

Parameters describing environmental impacts											
			GWP- total	GWP- fossil	GWP- biogenic	GWP- luluc	ODP	AP	EP- freshwater		
			kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CFC11 eq	mol H⁺ eq	kg (PO ₄) ³⁻ eq		
	Raw material supply	A1	2.43E+01	2.42E+01	1.01E-01	6.10E-03	5.27E-07	6.91E-02	7.81E-03		
Product stage	Transport	A2	5.51E-01	5.50E-01	5.32E-04	1.98E-04	1.31E-07	2.29E-03	3.43E-05		
F TOULUCE Stage	Manufacturing	A3	-1.14E+00	6.41E-01	-1.79E+00	2.20E-03	9.24E-08	4.53E-03	2.03E-04		
	Total (of product stage)	A1-3	2.37E+01	2.54E+01	-1.69E+00	8.49E-03	7.51E-07	7.59E-02	8.05E-03		
Construction	Transport	A4	8.68E-01	8.67E-01	8.43E-04	3.12E-04	2.07E-07	3.62E-03	5.40E-05		
process stage	Construction	A5	7.15E-01	7.65E-01	-5.06E-02	2.57E-04	2.27E-08	2.29E-03	2.42E-04		
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
95% to recycling an Scenario	d 5% to landfill										
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Transport	C2	4.89E-01	4.89E-01	4.17E-04	1.92E-04	1.13E-07	1.98E-03	3.15E-05		
End of life	Waste processing	C3	5.61E-01	5.61E-01	1.98E-04	5.60E-05	1.20E-07	5.83E-03	1.74E-05		
	Disposal	C4	3.88E-02	3.87E-02	3.84E-05	3.66E-05	1.57E-08	3.64E-04	3.54E-06		
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.12E-01	-6.04E-01	-7.82E-03	-8.52E-04	-4.87E-08	-3.89E-03	-3.29E-04		

GWP-total = Global warming potential, total; GWP-fossil = Global warming potential, fossil;

GWP-biogenic = Global warming potential, biogenic;

GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, accumulated exceedance; and EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results (continued)

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

Parameters describing environmental impacts												
			EP- marine	EP- terrestrial	POCP	ADP- mineral &metals	ADP- fossil	WDP	PM			
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m ³ world eq deprived	disease incidence			
	Raw material supply	A1	1.79E-02	1.92E-01	4.81E-02	3.83E-05	1.90E+02	2.75E+00	3.66E-07			
Product stage	Transport	A2	6.99E-04	7.64E-03	2.46E-03	1.28E-06	8.56E+00	4.13E-02	6.41E-08			
i loudet stage	Manufacturing	A3	1.44E-03	1.56E-02	5.09E-03	1.23E-05	1.17E+01	3.92E-01	9.93E-08			
	Total (of product stage)	A1-3	2.01E-02	2.15E-01	5.56E-02	5.18E-05	2.10E+02	3.19E+00	5.29E-07			
Construction	Transport	A4	1.10E-03	1.21E-02	3.88E-03	1.99E-06	1.35E+01	6.53E-02	1.02E-07			
process stage	Construction	A5	6.06E-04	6.48E-03	1.68E-03	1.57E-06	6.34E+00	9.63E-02	1.61E-08			
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
95% to recycling ar Scenario	nd 5% to landfill											
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00			
End of life	Transport	C2	5.97E-04	6.53E-03	2.00E-03	1.70E-06	7.39E+00	3.32E-02	4.22E-08			
	Waste processing	C3	2.58E-03	2.83E-02	7.78E-03	2.89E-07	7.70E+00	1.78E-02	1.19E-06			
	Disposal	C4	1.27E-04	1.39E-03	4.03E-04	8.83E-08	1.08E+00	4.96E-02	7.33E-09			
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.96E-04	-1.08E-02	-2.78E-03	-5.71E-06	-8.89E+00	-1.16E+00	-4.91E-08			

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;

EP-terrestrial = Eutrophication potential, accumulated exceedance;

POCP = Formation potential of tropospheric ozone;

ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;

ADP-fossil = Depletion potential of the stratospheric ozone layer; WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts

		IRP	ETP-fw	HTP-c	HTP-nc	SQP	
		kBq U ²³⁵ eq	CTUe	CTUh	CTUh	dimensionless	
	Raw material supply	A1	4.91E-01	3.69E+02	4.65E-09	2.10E-07	5.55E+01
Product stage	Transport	A2	4.33E-02	6.69E+00	1.86E-10	7.31E-09	9.66E+00
T Toduct stage	Manufacturing	A3	1.34E-01	1.53E+01	2.59E-09	1.52E-08	1.61E+02
	Total (of product stage)	A1-3	6.69E-01	3.91E+02	7.42E-09	2.33E-07	2.26E+02
Construction	Transport	A4	6.84E-02	1.06E+01	2.92E-10	1.16E-08	1.55E+01
process stage	Construction	A5	2.02E-02	1.18E+01	2.26E-10	7.02E-09	6.80E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	1 5% to landfill Sc	enario					
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	3.80E-02	5.77E+00	1.87E-10	6.05E-09	5.08E+00
	Waste processing	C3	3.47E-02	4.50E+00	1.74E-10	3.27E-09	9.80E-01
	Disposal	C4	4.80E-03	6.83E-01	1.73E-11	4.49E-10	2.27E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.38E-01	-1.03E+01	-5.98E-10	-1.08E-08	-8.17E+00

IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems; HTP-c = Potential comparative toxic unit for humans; HTP-nc = Potential comparative toxic unit for humans; and SQP = Potential soil quality index.

LCA Results (continued)

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

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
	Raw material supply	A1	5.16E+00	0.00E+00	5.16E+00	1.88E+02	0.00E+00	1.88E+02
Droduct store	Transport	A2	1.09E-01	0.00E+00	1.09E-01	8.40E+00	0.00E+00	8.40E+00
FIDUUCI Slage	Manufacturing	A3	1.61E+01	1.73E+01	3.34E+01	1.12E+01	1.05E+00	1.23E+01
	Total (of product stage)	A1-3	2.14E+01	1.73E+01	3.87E+01	2.08E+02	1.05E+00	2.09E+02
Construction	Transport	A4	1.72E-01	0.00E+00	1.72E-01	1.33E+01	0.00E+00	1.33E+01
process stage	Construction	A5	6.41E-01	5.19E-01	1.16E+00	5.89E+00	3.78E-01	6.27E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario						
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.04E-01	0.00E+00	1.04E-01	7.25E+00	0.00E+00	7.25E+00
End of life	Waste processing	C3	4.31E-02	0.00E+00	4.31E-02	7.55E+00	0.00E+00	7.55E+00
	Disposal	C4	9.22E-03	0.00E+00	9.22E-03	1.06E+00	0.00E+00	1.06E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.36E-01	0.00E+00	-8.36E-01	-8.90E+00	0.00E+00	-8.90E+00

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 nonrenewable 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)

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

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
	Raw material supply	A1	1.56E-02	0.00E+00	0.00E+00	6.64E-02
Dreduct etc.co	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.02E-03
Product stage	Manufacturing	A3	6.56E-02	1.79E-06	0.00E+00	9.78E-03
	Total (of product stage)	A1-3	8.12E-02	1.79E-06	0.00E+00	7.72E-02
Construction	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.61E-03
process stage	Construction	A5	2.43E-03	5.38E-08	0.00E+00	2.33E-03
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario		·		
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	8.23E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.39E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.16E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.74E-02

SM = Use of secondary material; RSF = Use of renewable secondary fuels; $\label{eq:NRSF} \begin{array}{l} \mbox{NRSF} = \mbox{Use of non-renewable secondary fuels}; \\ \mbox{FW} = \mbox{Net use of fresh water} \end{array}$

LCA Results (continued)

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

Other environmental information describing waste categories

			HWD	NHWD	RWD
			kg	kg	kg
	Raw material supply	A1	1.93E+00	3.76E+01	3.00E-04
Draduat atogo	Transport	A2	9.03E-03	1.57E-01	5.55E+01
Floduct stage	Manufacturing	A3	4.27E-02	8.55E-01	5.75E-05
	Total (of product stage)	A1-3	1.98E+00	3.86E+01	5.55E+01
Construction	Transport	A4	1.42E-02	2.47E-01	9.06E+01
process stage	Construction	A5	5.95E-02	1.16E+00	1.66E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
-	Repair	B3	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	5% to landfill Sc	enario			
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.14E-03	1.45E-01	5.00E-05
End of life	Waste processing	C3	1.01E-02	7.09E-02	5.32E-05
	Disposal	C4	1.12E-03	1.59E-02	7.09E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.12E-02	-1.56E+00	-4.54E-05

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

LCA Results (continued)

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

Other environmental information describing output flows - at end of life

			CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Droduct stage	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Troduct stage	Manufacturing	A3	0.00E+00	3.11E-05	1.33E-08	1.44E-03	0.00E+00	-5.44E-01
	Total (of product stage)	A1-3	0.00E+00	3.11E-05	1.33E-08	1.44E-03	0.00E+00	-5.44E-01
Construction	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
process stage	Construction	A5	0.00E+00	7.38E-03	3.98E-10	4.30E-05	0.00E+00	-1.63E-02
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling a Scenario	and 5% to landfill				<u>.</u>			
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Waste processing	C3	0.00E+00	1.01E-05	1.61E-07	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse; MFR = Materials for recycling MER = Materials for energy recovery; EE = Exported Energy

hre

LCA Results – 100mm 7.3N HBP Medium Dense Blocks (147kg/m2)

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

Parameters de	escribing envi	ronm	entai im	pacts					
			GWP- total	GWP- fossil	GWP- biogenic	GWP- luluc	ODP	AP	EP- freshwater
			kg CO₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CO₂ eq	kg CFC11 eq	mol H⁺ eq	kg (PO ₄) ³⁻ eq
	Raw material supply	A1	2.53E+01	2.52E+01	1.14E-01	6.46E-03	5.62E-07	7.18E-02	7.86E-03
Product stage	Transport	A2	5.63E-01	5.62E-01	5.44E-04	2.03E-04	1.34E-07	2.35E-03	3.51E-05
T Toddet Stage	Manufacturing	A3	-1.14E+00	6.44E-01	-1.79E+00	2.20E-03	9.28E-08	4.55E-03	2.04E-04
	Total (of product stage)	A1-3	2.47E+01	2.64E+01	-1.67E+00	8.86E-03	7.89E-07	7.87E-02	8.10E-03
Construction	Transport	A4	8.68E-01	8.67E-01	8.43E-04	3.12E-04	2.07E-07	3.62E-03	5.40E-05
process stage	Construction	A5	7.44E-01	7.94E-01	-5.02E-02	2.68E-04	2.39E-08	2.37E-03	2.43E-04
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling an Scenario	d 5% to landfill								
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	4.89E-01	4.89E-01	4.17E-04	1.92E-04	1.13E-07	1.98E-03	3.15E-05
	Waste processing	C3	5.61E-01	5.61E-01	1.98E-04	5.60E-05	1.20E-07	5.83E-03	1.74E-05
	Disposal	C4	3.88E-02	3.87E-02	3.84E-05	3.66E-05	1.57E-08	3.64E-04	3.54E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.19E-01	-6.11E-01	-7.91E-03	-8.62E-04	-4.92E-08	-3.93E-03	-3.33E-04

GWP-total = Global warming potential, total; GWP-fossil = Global warming potential, fossil;

GWP-biogenic = Global warming potential, biogenic;

GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, accumulated exceedance; and EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results (continued)

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

Parameters describing environmental impacts										
			EP- marine	EP- terrestrial	POCP	ADP- mineral &metals	ADP- fossil	WDP	PM	
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m ³ world eq deprived	disease incidence	
	Raw material supply	A1	1.87E-02	2.01E-01	5.03E-02	4.11E-05	1.93E+02	2.81E+00	3.87E-07	
Product stage	Transport	A2	7.15E-04	7.82E-03	2.51E-03	1.31E-06	8.76E+00	4.22E-02	6.56E-08	
i loudot stage	Manufacturing	A3	1.45E-03	1.57E-02	5.11E-03	1.23E-05	1.17E+01	3.93E-01	9.97E-08	
	Total (of product stage)	A1-3	2.09E-02	2.24E-01	5.79E-02	5.47E-05	2.14E+02	3.24E+00	5.52E-07	
Construction	Transport	A4	1.10E-03	1.21E-02	3.88E-03	1.99E-06	1.35E+01	6.53E-02	1.02E-07	
process stage	Construction	A5	6.30E-04	6.76E-03	1.75E-03	1.66E-06	6.45E+00	9.80E-02	1.67E-08	
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
95% to recycling ar Scenario	nd 5% to landfill									
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
End of life	Transport	C2	5.97E-04	6.53E-03	2.00E-03	1.70E-06	7.39E+00	3.32E-02	4.22E-08	
	Waste processing	C3	2.58E-03	2.83E-02	7.78E-03	2.89E-07	7.70E+00	1.78E-02	1.19E-06	
	Disposal	C4	1.27E-04	1.39E-03	4.03E-04	8.83E-08	1.08E+00	4.96E-02	7.33E-09	
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.06E-04	-1.09E-02	-2.81E-03	-5.77E-06	-8.99E+00	-1.17E+00	-4.97E-08	

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;

EP-terrestrial = Eutrophication potential, accumulated exceedance;

POCP = Formation potential of tropospheric ozone;

ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;

ADP-fossil = Depletion potential of the stratospheric ozone layer; WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts

			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U ²³⁵ eq	CTUe	CTUh	CTUh	dimensionless
	Raw material supply	A1	5.15E-01	3.80E+02	4.84E-09	2.17E-07	5.83E+01
Product stage	Transport	A2	4.43E-02	6.84E+00	1.90E-10	7.48E-09	9.89E+00
T Toduct stage	Manufacturing	A3	1.35E-01	1.54E+01	2.59E-09	1.53E-08	1.61E+02
	Total (of product stage)	A1-3	6.94E-01	4.02E+02	7.62E-09	2.40E-07	2.29E+02
Construction	Transport	A4	6.84E-02	1.06E+01	2.92E-10	1.16E-08	1.55E+01
process stage	Construction	A5	2.10E-02	1.21E+01	2.32E-10	7.24E-09	6.89E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	1 5% to landfill Sc	enario					
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	3.80E-02	5.77E+00	1.87E-10	6.05E-09	5.08E+00
	Waste processing	C3	3.47E-02	4.50E+00	1.74E-10	3.27E-09	9.80E-01
	Disposal	C4	4.80E-03	6.83E-01	1.73E-11	4.49E-10	2.27E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.39E-01	-1.04E+01	-6.05E-10	-1.09E-08	-8.27E+00

IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems; HTP-c = Potential comparative toxic unit for humans; HTP-nc = Potential comparative toxic unit for humans; and SQP = Potential soil quality index.

LCA Results (continued)

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

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
	Raw material supply	A1	5.44E+00	0.00E+00	5.44E+00	1.92E+02	0.00E+00	1.92E+02
Droduct store	Transport	A2	1.12E-01	0.00E+00	1.12E-01	8.60E+00	0.00E+00	8.60E+00
FIDUUCI Slage	Manufacturing	A3	1.61E+01	1.73E+01	3.34E+01	1.13E+01	1.06E+00	1.23E+01
	Total (of product stage)	A1-3	2.17E+01	1.73E+01	3.90E+01	2.11E+02	1.06E+00	2.13E+02
Construction	Transport	A4	1.72E-01	0.00E+00	1.72E-01	1.33E+01	0.00E+00	1.33E+01
process stage	Construction	A5	6.51E-01	5.19E-01	1.17E+00	6.00E+00	3.83E-01	6.38E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario						
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.04E-01	0.00E+00	1.04E-01	7.25E+00	0.00E+00	7.25E+00
End of life	Waste processing	C3	4.31E-02	0.00E+00	4.31E-02	7.55E+00	0.00E+00	7.55E+00
	Disposal	C4	9.22E-03	0.00E+00	9.22E-03	1.06E+00	0.00E+00	1.06E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.46E-01	0.00E+00	-8.46E-01	-9.01E+00	0.00E+00	-9.01E+00

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 nonrenewable 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)

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

Parameters describing resource use, secondary materials and fuels, use of water

			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m³
	Raw material supply	A1	1.62E-02	0.00E+00	0.00E+00	6.78E-02
Draduatatara	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.04E-03
Product stage	Manufacturing	A3	6.56E-02	1.81E-06	0.00E+00	9.80E-03
	Total (of product stage)	A1-3	8.18E-02	1.81E-06	0.00E+00	7.87E-02
Construction	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.61E-03
process stage	Construction	A5	2.45E-03	5.43E-08	0.00E+00	2.38E-03
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario				
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	8.23E-04
End of life	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.39E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.16E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.77E-02

SM = Use of secondary material; RSF = Use of renewable secondary fuels; $\label{eq:NRSF} \begin{array}{l} \mbox{NRSF} = \mbox{Use of non-renewable secondary fuels}; \\ \mbox{FW} = \mbox{Net use of fresh water} \end{array}$

LCA Results (continued)

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

Other environmental information describing waste categories

			HWD	NHWD	RWD
			kg	kg	kg
	Raw material supply	A1	1.93E+00	3.79E+01	3.18E-04
Broduct store	Transport	A2	9.24E-03	1.61E-01	5.68E+01
Floduct stage	Manufacturing	A3	4.28E-02	8.57E-01	5.78E-05
	Total (of product stage)	A1-3	1.98E+00	3.89E+01	5.68E+01
Construction	Transport	A4	1.42E-02	2.47E-01	9.06E+01
process stage	Construction	A5	5.95E-02	1.17E+00	1.70E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	5% to landfill Sc	enario			
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	8.14E-03	1.45E-01	5.00E-05
End of life	Waste processing	C3	1.01E-02	7.09E-02	5.32E-05
	Disposal	C4	1.12E-03	1.59E-02	7.09E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.17E-02	-1.58E+00	-4.59E-05

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

LCA Results (continued)

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

Other environmental information describing output flows - at end of life

			CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Broduct stopp	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
T Toduct Stage	Manufacturing	A3	0.00E+00	3.14E-05	1.34E-08	1.44E-03	0.00E+00	-5.44E-01
	Total (of product stage)	A1-3	0.00E+00	3.14E-05	1.34E-08	1.44E-03	0.00E+00	-5.44E-01
Construction	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
process stage	Construction	A5	0.00E+00	7.48E-03	4.01E-10	4.33E-05	0.00E+00	-1.63E-02
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling a Scenario	and 5% to landfill							
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Waste processing	C3	0.00E+00	1.01E-05	1.61E-07	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse; MFR = Materials for recycling MER = Materials for energy recovery; EE = Exported Energy

hre

LCA Results – 100mm 10.4N HBP Medium Dense Blocks (147kg/m2)

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

Parameters de	escribing envi	ronm	ental imp	pacts					
			GWP- total	GWP- fossil	GWP- biogenic	GWP- luluc	ODP	AP	EP- freshwater
			kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CFC11 eq	mol H⁺ eq	kg (PO ₄) ³⁻ eq
	Raw material supply	A1	2.62E+01	2.61E+01	1.26E-01	6.81E-03	5.97E-07	7.45E-02	7.92E-03
Product stage	Transport	A2	5.75E-01	5.75E-01	5.56E-04	2.07E-04	1.37E-07	2.40E-03	3.58E-05
T Toddet Stage	Manufacturing	A3	-1.17E+00	6.11E-01	-1.79E+00	2.16E-03	8.81E-08	4.31E-03	1.96E-04
Total (of product stage)		A1-3	2.56E+01	2.73E+01	-1.66E+00	9.18E-03	8.22E-07	8.12E-02	8.15E-03
Construction	Transport	A4	8.68E-01	8.67E-01	8.43E-04	3.12E-04	2.07E-07	3.62E-03	5.40E-05
process stage	Construction	A5	7.71E-01	8.21E-01	-4.99E-02	2.77E-04	2.48E-08	2.44E-03	2.45E-04
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling an Scenario	d 5% to landfill								
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	4.89E-01	4.89E-01	4.17E-04	1.92E-04	1.13E-07	1.98E-03	3.15E-05
End of life	Waste processing	C3	5.61E-01	5.61E-01	1.98E-04	5.60E-05	1.20E-07	5.83E-03	1.74E-05
	Disposal	C4	3.88E-02	3.87E-02	3.84E-05	3.66E-05	1.57E-08	3.64E-04	3.54E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.25E-01	-6.16E-01	-7.98E-03	-8.70E-04	-4.97E-08	-3.97E-03	-3.36E-04

GWP-total = Global warming potential, total; GWP-fossil = Global warming potential, fossil;

GWP-biogenic = Global warming potential, biogenic;

GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, accumulated exceedance; and EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results (continued)

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

Parameters describing environmental impacts											
			EP- marine	EP- terrestrial	POCP	ADP- mineral &metals	ADP- fossil	WDP	PM		
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m ³ world eq deprived	disease incidence		
	Raw material supply	A1	1.95E-02	2.10E-01	5.25E-02	4.38E-05	1.97E+02	2.86E+00	4.07E-07		
Product stage	Transport	A2	7.31E-04	7.99E-03	2.57E-03	1.34E-06	8.95E+00	4.31E-02	6.70E-08		
i loudet stage	Manufacturing	A3	1.37E-03	1.48E-02	4.85E-03	1.15E-05	1.11E+01	3.83E-01	9.51E-08		
	Total (of product stage)	A1-3	2.16E-02	2.33E-01	5.99E-02	5.66E-05	2.17E+02	3.29E+00	5.69E-07		
Construction	Transport	A4	1.10E-03	1.21E-02	3.88E-03	1.99E-06	1.35E+01	6.53E-02	1.02E-07		
process stage	Construction	A5	6.51E-04	7.00E-03	1.81E-03	1.71E-06	6.53E+00	9.93E-02	1.72E-08		
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
95% to recycling ar Scenario	nd 5% to landfill										
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
	Transport	C2	5.97E-04	6.53E-03	2.00E-03	1.70E-06	7.39E+00	3.32E-02	4.22E-08		
	Waste processing	C3	2.58E-03	2.83E-02	7.78E-03	2.89E-07	7.70E+00	1.78E-02	1.19E-06		
	Disposal	C4	1.27E-04	1.39E-03	4.03E-04	8.83E-08	1.08E+00	4.96E-02	7.33E-09		
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.15E-04	-1.10E-02	-2.84E-03	-5.83E-06	-9.08E+00	-1.18E+00	-5.01E-08		

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;

EP-terrestrial = Eutrophication potential, accumulated exceedance;

POCP = Formation potential of tropospheric ozone;

ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;

ADP-fossil = Depletion potential of the stratospheric ozone layer; WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts

			10.0				000
		IRP	ETP-tw	HTP-c	HIP-nc	SQP	
		kBq U ²³⁵ eq	CTUe	CTUh	CTUh	dimensionless	
	Raw material supply	A1	5.37E-01	3.91E+02	5.02E-09	2.24E-07	6.09E+01
Product stage	Transport	A2	4.53E-02	6.99E+00	1.94E-10	7.64E-09	1.01E+01
T Toduct stage	Manufacturing	A3	1.27E-01	1.47E+01	2.57E-09	1.46E-08	1.61E+02
	Total (of product stage)	A1-3	7.09E-01	4.13E+02	7.79E-09	2.46E-07	2.32E+02
Construction	Transport	A4	6.84E-02	1.06E+01	2.92E-10	1.16E-08	1.55E+01
process stage	Construction	A5	2.14E-02	1.24E+01	2.37E-10	7.42E-09	6.97E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	1 5% to landfill Sc	enario					
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	3.80E-02	5.77E+00	1.87E-10	6.05E-09	5.08E+00
	Waste processing	C3	3.47E-02	4.50E+00	1.74E-10	3.27E-09	9.80E-01
	Disposal	C4	4.80E-03	6.83E-01	1.73E-11	4.49E-10	2.27E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.41E-01	-1.05E+01	-6.10E-10	-1.10E-08	-8.35E+00

IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems; HTP-c = Potential comparative toxic unit for humans; HTP-nc = Potential comparative toxic unit for humans; and SQP = Potential soil quality index.

LCA Results (continued)

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

Parameters describing resource use, primary energy

-		PERE	PERM	PERT	PENRE	PENRM	PENRT	
		MJ	MJ	MJ	MJ	MJ	MJ	
	Raw material supply	A1	5.71E+00	0.00E+00	5.71E+00	1.95E+02	0.00E+00	1.95E+02
Broduct store	Transport	A2	1.14E-01	0.00E+00	1.14E-01	8.79E+00	0.00E+00	8.79E+00
Floduci stage	Manufacturing	A3	1.58E+01	1.73E+01	3.31E+01	1.07E+01	9.94E-01	1.17E+01
	Total (of product stage)	A1-3	2.16E+01	1.73E+01	3.89E+01	2.14E+02	9.94E-01	2.15E+02
Construction	Transport	A4	1.72E-01	0.00E+00	1.72E-01	1.33E+01	0.00E+00	1.33E+01
process stage	Construction	A5	6.49E-01	5.19E-01	1.17E+00	6.13E+00	3.32E-01	6.46E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario						
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.04E-01	0.00E+00	1.04E-01	7.25E+00	0.00E+00	7.25E+00
End of life	Waste processing	C3	4.31E-02	0.00E+00	4.31E-02	7.55E+00	0.00E+00	7.55E+00
	Disposal	C4	9.22E-03	0.00E+00	9.22E-03	1.06E+00	0.00E+00	1.06E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.54E-01	0.00E+00	-8.54E-01	-9.09E+00	0.00E+00	-9.09E+00

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 nonrenewable 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)

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

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	
	Raw material supply	A1	1.69E-02	0.00E+00	0.00E+00	6.92E-02
Draduatatara	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.06E-03
Product stage	Manufacturing	A3	6.55E-02	1.64E-06	0.00E+00	9.51E-03
	Total (of product stage)	A1-3	8.24E-02	1.64E-06	0.00E+00	7.98E-02
Construction	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.61E-03
process stage	Construction	A5	2.47E-03	4.93E-08	0.00E+00	2.41E-03
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario		·		
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Transport	C2	0.00E+00	0.00E+00	0.00E+00	8.23E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.39E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.16E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.80E-02

SM = Use of secondary material; RSF = Use of renewable secondary fuels; $\label{eq:NRSF} \begin{array}{l} \mbox{NRSF} = \mbox{Use of non-renewable secondary fuels}; \\ \mbox{FW} = \mbox{Net use of fresh water} \end{array}$

LCA Results (continued)

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

Other environmental information describing waste categories

-		HWD	NHWD	RWD	
		kg	kg	kg	
	Raw material supply	A1	1.93E+00	3.81E+01	3.35E-04
Broduct store	Transport	A2	9.44E-03	1.64E-01	5.81E+01
Product stage	Manufacturing	A3	4.12E-02	8.25E-01	5.44E-05
	Total (of product stage)	A1-3	1.98E+00	3.91E+01	5.81E+01
Construction	Transport	A4	1.42E-02	2.47E-01	9.06E+01
process stage	Construction	A5	5.95E-02	1.17E+00	1.74E+00
	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
95% to recycling and	I 5% to landfill Sc	enario			
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.14E-03	1.45E-01	5.00E-05
End of life	Waste processing	C3	1.01E-02	7.09E-02	5.32E-05
	Disposal	C4	1.12E-03	1.59E-02	7.09E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.22E-02	-1.59E+00	-4.64E-05

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

LCA Results (continued)

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

Other environmental information describing output flows - at end of life

-		CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)	
		kg	kg	kg	MJ per energy carrier	kg C	kg C	
	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Broduct stopp	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Flouuct stage	Manufacturing	A3	0.00E+00	2.85E-05	1.22E-08	1.31E-03	0.00E+00	-5.44E-01
	Total (of product stage)	A1-3	0.00E+00	2.85E-05	1.22E-08	1.31E-03	0.00E+00	-5.44E-01
Construction	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
process stage	Construction	A5	0.00E+00	6.44E-03	3.65E-10	3.94E-05	0.00E+00	-1.63E-02
	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95% to recycling a Scenario	and 5% to landfill				<u>.</u>			
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Waste processing	C3	0.00E+00	1.01E-05	1.61E-07	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse; MFR = Materials for recycling MER = Materials for energy recovery; EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information								
Scenario	Parameter Units Result							
A4 – Transport to the	14% of the production goes to London (161km) 86% of the production is sold locally (50km average) So the total average for the factory is 65km.							
	Fuel type / Vehicle type	Litre of fuel type per distance or vehicle type	Lorry,>32 metric ton					
Ŭ	Distance:	km	65					
	Bulk density of transported products	kg/m ³	1400-1600					
	All block products are manually constructed to create block installed, energy / fuel is negligible.	walling. The produ	ct is manually					
A5 – Installation in the building	Installation wastage rate	%	3					
	Material loss	kg	4.41					
B2 – Maintenance	Maintenance not required - once walling is installed, it is static and inert.							
B3 – Repair	Repair not required - once walling is installed, it is static and inert.							
B4 – Replacement	Replacement not required - once walling is installed, it will satisfy the intended function for the life of the building.							
B5 – Refurbishment	Refurbishment not required - once walling is installed, it will satisfy the intended function for the life of the building.							
B6 – Use of energy; B7 – Use of water	There is no operational energy and water use required - once walling is installed, it is static and inert.							
C1 to C4 End of life,	Description of scenario							
C1 – Deconstruction	Walling is dismantled manually or mechanically as part of the whole building demolition process, then crushed and screened for recycled hardcore. No data is available for deconstruction from the manufacturer. 100% recovery rate of the product has been assumed at its end of life.MJ0							
C2 – Transport from site to pre-processing	A common practice is that the deconstructed walling is crus for re-use as hardcore. But a typical 20km assumption has case an external crushing facility is used.	hed on site and trar also been given in tl	nsported locally his module in					
facility or landfill	Road, 16-32 metric ton, euro5	km	20					
C3 - Pre-processing of uninstalled product	There is currently no process in place to dispose of the product waste by the manufacturer Therefore, industrial average end-of-life data for 'Block, concrete (dense)' has been used according to BRE PCR PN 514 Rev 3.1, i.e. 95% of waste to recycling. So 95% x 147 = 13 kg will be recycled.							
	Concrete waste to recycling	kg	139.65					
C4 – Disposal	There is currently no process in place to dispose of the proc Therefore, industrial average end-of-life data for 'Block, con according to BRE PCR PN 514 Rev 3.1, i.e. 5% of waste to be landfilled.	duct waste by the m crete (dense)' has b landfill. So 5% x 14	anufacturer. been used 17 = 7.35kg will					
	Concrete waste to landfill	kg	7.35					

Scenarios and additional technical information								
Scenario	Parameter Units Res							
	95% i.e. 139.65 kg of concrete waste will be sent to recycling plant. Out of which, grit and cement contain 0% of existing post-consumer waste. FBA is a by-product from coal electricity generation, so it will be treated as 100% post-consumer waste, which makes up 47.9% of 100mm 3.6N blocks/ 47.3% of 100mm 7.3N blocks/ 46.8% of 100mm 10.4N blocks.							
Module D	Benefits due to recycling (100mm 3.6N blocks)	kg	72.76					
	Benefits due to recycling (100mm 7.3N blocks)	kg	73.60					
	Benefits due to recycling (100mm 10.4N blocks)	kg	74.29					

Interpretation

1 m² of 100mm 3.6N/7.3N/10.4N HBP Medium Dense Blocks have the same composition and similar percentage of composition, and the differences are less than 10%. Therefore, the 100mm 7.3N blocks, which have the largest production quantity, are used as a representative in the Interpretation section.

Out of the total mass of input materials, lightweight aggregate accounts for 47%, grit accounts for 42%, and cement accounts for 11%. The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing phase, covered by information modules A1-A3 of EN15804:2012+A2:2019.

As a result, Lightweight Filler and Cement (CEM II/AL) have very similar contribution on GWP and contribute the most on overall environmental impacts.



End-user table

The LCA results in the EPD are for 1m² of 100mm 3.6N Medium Dense Blocks (147kg/m²), 100mm 7.3N Medium Dense Blocks (147kg/m²) and 100mm 10.4N Medium Dense Blocks (147kg/m²). The environmental impacts of other product sizes in this series can be obtained from multiplying the 100mm 3.6N, 100mm 7.3N and 100mm 10.4N LCA results by the conversion factors below.

The proportion/breakdown of impacts remain the same throughout the range.

(For example, to calculate the environment impacts of 140mm 3.6N blocks, the EPD users need to multiply the conversion factor 1.33 by the LCA results of 100mm 3.6N blocks. To calculate the environment impacts of 140mm 7.3N blocks, the EPD users need to multiply the conversion factor 1.33 by the LCA results of 100mm 7.3N blocks. To calculate the environment impacts of 140mm 10.4N blocks, the EPD users need to multiply the conversion factor 1.33 by the LCA results of 100mm 7.3N blocks. To calculate the environment impacts of 140mm 10.4N blocks, the EPD users need to multiply the conversion factor 1.33 by the LCA results of 100mm 10.4N blocks.

Block sizes (mm)	Weight (kg/m²)	Conversion Factors
100mm 3.6N (L:440x H:215 x W:100)	147	1
100mm 7.3N (L:440x H:215 x W:100)	147	1
100mm 10.4N (L:440x H:215 x W:100)	147	1
140mm 3.6N (L:440x H:215 x W:140)	196	1.33
140mm 7.3N (L:440x H:215 x W:140)	196	1.33
140mm 10.4N (L:440x H:215 x W:140)	196	1.33
190mm 3.6N (L:440x H:215 x W:190)	273	1.86
190mm 7.3N (L:440x H:215 x W:190)	273	1.86
190mm 10.4N (L:440x H:215 x W:190)	273	1.86
215mm 3.6N (L:440x H:215 x W:215)	299	2.03
215mm 7.3N (L:440x H:215 x W:215)	299	2.03
215mm 10.4N (L:440x H:215 x W:215)	299	2.03

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