

## Statement of Verification

BREG EN EPD No.: 000742

Issue 01

This is to verify that the  
**Environmental Product Declaration**  
provided by:  
**IG Lintels**



is in accordance with the requirements of:

**EN 15804:2012+A2:2019**

and

**BRE Global Scheme Document SD207**

This declaration is for:

**1 Unit of steel lintels for internal and external masonry and timber frame walls**

### Company Address

IG Lintels,  
Marford House,  
The Pavilions,  
Llantarnam Business Park,  
Cwmbran,  
NP44 3FD



Steel  
Lintels



  
Signed for BRE Global Ltd

Hayley Thomson  
Operator

13 January 2026  
Date of this Issue

13 January 2026  
Date of First Issue

12 January 2031  
Expiry Date



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BRE Global Ltd., Garston, Watford WD25 9XX.  
T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: [Enquiries@breglobal.com](mailto:Enquiries@breglobal.com)





## Environmental Product Declaration

EPD Number: **000742**

### General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2023 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.1
Commissioner of LCA study	LCA consultant/Tool
Keystone Lintels Ltd t/a IG Lintels, Ballyreagh Industrial Estate, Sandholes Road Cookstown Co Tyrone BT80 9DG	Bala Subramanian/ BRE LINA A2
Declared Unit	Applicability/Coverage
1 Unit of steel lintels for internal and external masonry and timber frame walls	Other (please specify). Product specific
EPD Type	Background database
Cradle to Gate with options	Ecoinvent 3.8
Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR <sup>a</sup>	
Independent verification of the declaration and data according to EN ISO 14025:2010 <input checked="" type="checkbox"/> Internal <input type="checkbox"/> External	
(Where appropriate <sup>b</sup> )Third party verifier: Roger Connick	
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+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

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	Related to the building fabric				Related to the building			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
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>													

Note: Ticks indicate the Information Modules declared.

## Manufacturing site(s)

Keystone Lintels Ltd t/a IG Lintels  
Ballyreagh Industrial Estate,  
Sandholes Road  
Cookstown  
Co Tyrone  
BT80 9DG

Keystone Lintels Ltd t/a IG Lintels  
Ryder Close  
Cadley Hill Industrial Estate  
Derbyshire  
DE11 9EU

## Construction Product:

### Product Description

The IG Lintel range, Designed for use in internal and external masonry and timber frame walls, has safe working loads as detailed in each applicable loading table in the Lintel Product Guide. IG Lintels have been designed in accordance with BS 5977 Part 2 and PD 6697. Loading figures within each table have been ascertained by testing in accordance with the requirements of BS EN 845-2 and BS EN 846-9.

IG's standard range of lintels are manufactured from high quality grade pre-galvanised mild steel with a zinc coating of 600g/m<sup>2</sup> (including both sides). Pre-galvanised lintels are much more environmentally friendly than post galvanised lintels and have a lower carbon footprint. Stainless-steel lintels also available upon request in grades 304 and 316.

IG lintels have been subjected to numerous fire tests in accordance with BS 476: Part 20 and BS EN 1363-1 and have numerous BBA certifications for multiple lintel types.

The IG lintel range complies with the technical requirements of the BLP (Building Life Plans) regarding the durability data of mild steel, cold formed lintels. The service life of IG lintels will be the same as that anticipated for the building (minimum 60 years).

### Steel Lintels Manufacturing and LCA Analysis

IG Lintels are manufactured in various lengths, thicknesses, fold angles, and depending on lintel type are insulated. Despite these differences, the manufacturing process remains largely consistent, with variations primarily arising from the specific design of each lintel. For instance, the energy consumption during the bending process may vary depending on the material thickness, length, and fold angle.

To ensure accurate and tailored results for each type of lintel, individual production data has been utilised in the LCA analysis. The detailed results for each product variant are provided in the accompanying EPD.

The below are the list of products enclosed in the EPD and the manufactured site details:

Lintel	Weight per lintel, kg	Manufactured at
Hi Therm+ 100 1500mm	11.33	Swadlincote
Hi Therm+ 110 1500mm	12.20	Swadlincote
Hi Therm+ 150 1500mm	12.87	Swadlincote
L1/S 100 1500mm	9.98	Swadlincote
L1/S 110 1500mm	11.94	Swadlincote
L1/S 150 1500mm	12.93	Swadlincote
L1/E 100 1500mm	9.65	Cookstown
BOX 100 1500mm	7.49	Cookstown
L7/50 1500mm	6.62	Cookstown
L10 1500 mm	5.89	Cookstown

**Note: The lintels listed in the above table are manufactured at both facilities. For this LCA analysis, the lintels produced at each specific site during the data collection period from 01/01/2022 to 31/12/2022 have been calculated separately.**

## Technical Information

Property	Value, Unit
Fire performance	IG lintels have been subjected to numerous fire tests conducted by Warrington fire in accordance with BS 476: Part 20 and BS EN1363-1. Contact IG Lintels technical department for further information
Galvanised steel	IG's standard range of lintels are manufactured from high quality grade pre-galvanised mild steel to BS EN 10346 DX51D plus Z600 or grade Z275 to BS EN10025-2 with minimised spangle finish and a minimum yield stress of 250N/mm <sup>2</sup> .
Stainless steel	All IG Stainless Steel Lintels are manufactured from Austenitic Stainless Steel, grade 304 2b to BS EN 10088- Part 2 Astm 240 (European Grade 1.4307). Upon request other grades of stainless-steel lintels are available, conforming to BS EN 845-2.
Structural Performance	BS EN 846-9 and BS EN 845-2
	The figures take into account the different loading arrangements which are common within traditional cavity wall construction.
	Total loading scenarios: Total UDL kN.
	Differential loading scenarios: Total UDL kN 3:1 or total UDL kN 19:1.
Polystyrene insulation	Expanded CFC free polystyrene conforming to BS EN 13163

For more information, please contact IG Lintels technical team or enquire at:

[www.iglintels.com/contact](http://www.iglintels.com/contact)

Tel (Cwmbran): 01633 486 486  
 Email (Cwmbran): [info@iglintels.com](mailto:info@iglintels.com)



**Figure 1 Hi- Therm+**



**Figure 2 L1/E 100**



**Figure 3 BOX 100**



**Figure 4 L1/S 100**



**Figure 5 L10**



**Figure 6 L7/50**

## Main Product Contents

Material/Chemical Input	%
Steel	>99%
Insulation	<1%

Note: The composition is same for all the products enclosed in this EPD.

## Manufacturing Process

Lintel manufacturing process Masonry Cavity Walls, Standard, Heavy and Extra Heavy-Duty Type Lintels.

- Steel sheets are cut to the correct blank size for the lintel type.
- Lintel blanks are then taken to the press brake to be folded to the correct dimensions.
- Folded sections are moved to the assembly area where mineral wool or EPS blocks are inserted into the lintel cavities and any excess is removed.
- Thermal break plates are clinched/spot welded onto the open side on the bottom of the lintels.
- Assembled lintels are then passed through the perforator to form a plaster key on the inner leaf.
- Finished lintels are labelled, strap banded and stored outdoors, ready for despatching.

Lintel manufacturing process Masonry Cavity Walls, Heavy and Extra Heavy Duty(Concrete floor) Type Lintels

- Steel sheets are cut to the correct blank size for the lintel type.
- Cut blanks are then passed through the perforator to form a plaster key on the inner leaf.
- Perforated lintel blanks are taken to the press brake to be folded to the correct dimensions.
- Folded sections are moved to the assembly area, brought together and fixed using rivets or welds.
- Mineral wool or EPS blocks are inserted into the lintel cavities and any excess is removed.
- Thermal break plates are fixed using rivets onto the open side on the bottom of the lintels.
- Finished lintels are labelled, strap banded and stored outdoors, ready for despatching.

Lintel manufacturing process Masonry Cavity Walls, Extreme Duty Type Lintels

- Steel sheets are cut to the correct blank size and steel beams are cut to the correct length for the lintel type.
- Cut blanks are then passed through the perforator to form a plaster key on the inner leaf.
- Lintel blanks are taken to the press brake to be folded to the correct dimensions.
- Folded sections and steel beams are moved to the assembly area, brought together and fixed using welds.
- Mineral wool or EPS blocks are inserted into the lintel cavities and any excess is removed.
- Continuous bottom plates are fixed using welds onto the open side on the bottom of the lintels.
- Finished lintels are labelled, strap banded and stored outdoors, ready for despatching.

Lintel manufacturing process Solid Wall and Single Leaf Type Lintels

- Steel sheets are cut to the correct blank size for the lintel type.
- Lintel blanks are then taken to the press brake to be folded to the correct dimensions.
- SW/K & L9 - Folded sections are moved to the assembly area, brought together and fixed using rivets.
- Finished lintels are labelled, strap banded and stored outdoors, ready for despatching.

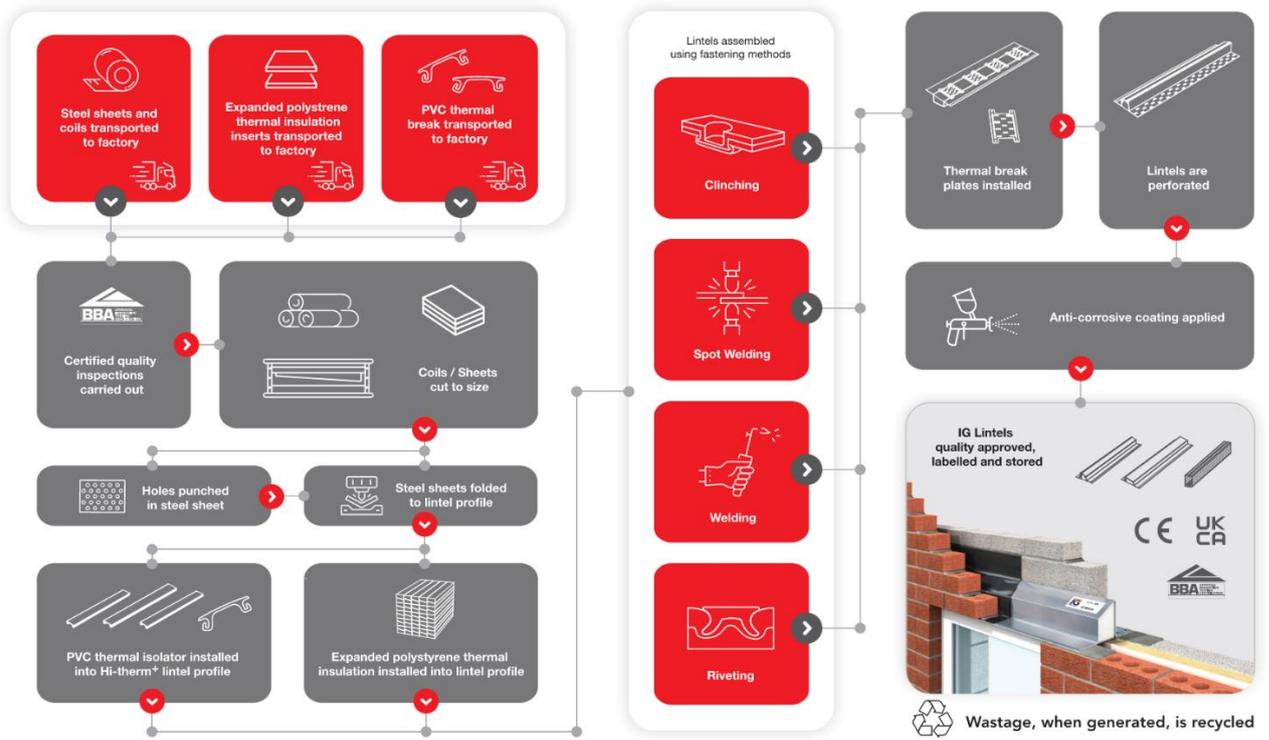
Lintel manufacturing process BOX Type Lintels

- Steel sheets are cut to the correct blank size for the lintel type.
- Cut blanks are then passed through the perforator to form a plaster key.
- Perforated lintel blanks are taken to the press brake to be folded to the correct dimensions.
- Folded sections are moved to the assembly area, brought together and fixed using rivets or welds.
- Finished lintels are labelled, strap banded and stored outdoors, ready for despatching.

Note: Anti-corrosive paint is applied to rivets, welds and cut edges.

Process flow diagram

Lintel Manufacturing Process



03.2025

iglintels.co.uk

Construction Installation:

1. Lintels should be installed with a minimum end bearing of 150mm, bedded on mortar and levelled along its length and across its width.
2. The masonry above the lintel should be built in accordance with BS EN 1996-2.
3. To prevent rotation of timber frame lintels a timber pinch batten (minimum 300mm long at mid span) is required. Timber frame lintels must be installed with restraining clips fixed to the timber frame structure.
4. Raise the inner and outer leaves simultaneously to avoid excessive eccentricity of loading, with a maximum height difference of 225mm (masonry should be laid on a mortar bed and all perpendicular joints should be filled).
5. Allow the mortar to cure before applying floor or roof loads (Temporary propping beneath a steel lintel is practised to facilitate speed of construction).
6. The NHBC recommend a damp proof course (DPC) or cavity tray should be installed over all openings in external cavity walls.
7. When installing concrete floor units or other heavy components above a lintel, care should be taken to avoid shock loading and floor units should not be dragged into position. Masonry immediately above the lintel should be allowed to cure.
8. Point loads should not be applied directly onto lintel flanges. Lintels should have a minimum of 150mm masonry between the flange and the application level of any form of loading. Consult IG's technical

department if applying a point load above a lintel.

9. The external lintel flange must project beyond the window/door frame, and it is recommended that a flexible sealing compound is used between the underside of the lintel flange and the frame.

10. When the underside of a lintel is exposed, its appearance can be enhanced by the addition of lintel soffit cladding.

11. Do not cut lintels to length or modify them in any way without consulting a IG engineer.

Note: For the installation of lintels, ancillary materials are generally not required beyond standard mortar or fixings. The packaging used to pack the product will result as recyclable waste at the installation site.

**Use stage:** Once the lintels are installed in the building and in a suitable environment, lintels can last for decades without needing maintenance and replacement. Therefore, no impacts in use stage.

### End of Life

Steel lintels, used in both internal and external masonry and timber frame walls, are typically made from galvanized or stainless steel. These lintels provide support for masonry above openings such as windows and doors.

At the end of life, steel lintels are carefully removed using power tools and separated from other building waste. They are then sent to scrap metal facilities, where they undergo cleaning, shredding, and melting in furnaces. The recycled steel is repurposed into new construction materials, automotive parts, or industrial applications.

Recycling steel lintels helps reduce the demand for virgin materials and significantly lowers CO<sub>2</sub> emissions, contributing to a more sustainable construction cycle.

## Life Cycle Assessment Calculation Rules

### Declared unit description

1 Unit of steel lintels for internal and external masonry and timber frame walls

### System boundary

This is a Cradle-to-Gate with Options EPD, reporting the upstream processing stages A1 to A3, Construction/Installation (A4-A5), Use stage (B1-B5), end-of-life stages (C1-C4) and Module D in accordance with EN 15804:2012+A2:2019 and BRE 2023 Product Category Rules (PN 514 Rev 3.1).

### Data sources and allocation

The datasets are derived from Ecoinvent v3.8, and the LCA tool used was BRE LINA A2. The LCA analysis is conducted for the 1 Unit of steel lintels manufactured in both Cookstown and Swadlincote factory over the period of one year (from 01/01/2022 to 31/12/2022).

IGLintels are manufactured in various lengths, thicknesses, fold angles, and depending on lintel type are insulated. Despite these differences, the manufacturing process remains largely consistent, with variations primarily arising from the specific design of each lintel. For instance, the energy consumption during the bending process may vary depending on the material thickness, length, and fold angle. To ensure accurate and tailored results for each type of lintel, individual production data has been utilised in the LCA analysis. The detailed results for each product variant are provided in the accompanying EPD.

The steel lintels are manufactured at two distinct factories, located in Cookstown and Swadlincote. Both sites produce lintels as well as other products, therefore an allocation of energy, water, waste, wastewater discharge, and non-production waste is required. This allocation was carried out in line with the guidelines specified in BRE PCR PN514 and EN 15804, using the mass allocation.

For the LCA analysis, actual usage data was employed for raw materials, ancillary materials, and packaging. The manufacturer has confirmed that the Cookstown production facility is shared with three other manufacturers, and the production waste from all operations is treated collectively as a single factory waste stream. Since the product is manufactured in both Swadlincote production facility and Cookstown production facility, and the production processes are almost identical across the facilities, the wastage factor was calculated for Swadlincote production facility by comparing the total Lintels product output against the total waste allocated to Lintels. This resulted in a 3.41% waste rate per product. Accordingly, the waste rate was applied to the Cookstown facility with the waste figures has been calculated based on the percentage of lintels production at the facility using mass allocation. Manufacturer has confirmed that the Hi-Therm lintels and other lintels are manufactured in the Swadlincote production facility and the allocation to energy, water, waste, and packaging are based on the actual usage. Upon checking the data collection form for each lintel, the mass balance is within the 5% tolerance range and no-proxy datasets have been used.

Secondary data was obtained for all upstream and downstream processes outside the manufacturer's control, such as raw material production, where supplier-specific certified data was unavailable. This data was sourced from the ecoinvent 3.8 database. All ecoinvent datasets utilised are carefully selected to be as relevant and precise as possible, incorporating specific elements such as the UK grid for electricity where available. Manufacturer uses the national grid electricity for production, so therefore the national grid electricity dataset has been used for the LCA modelling (Ecoinvent 3.8). The GWP carbon footprint for using 1 kWh of electricity, GB kWh is 0.239 in kgCO<sub>2</sub>eq/kWh.

### Data quality:

Specific European and the UK datasets have been selected from the ecoinvent LCI for this LCA. The quality level of time representativeness is also Very 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.

## Cut-off criteria

The inventory process within this LCA encompasses comprehensive data pertaining to raw materials, packaging materials, consumables, and their transportation to the manufacturing site. It also accounts for process energy consumption, water usage, and general waste generation. Furthermore, it considers transportation throughout the product's lifecycle, as well as impact from construction, use, and at end-of-life disposal. Upstream extraction and processing of inputs are factored into the inventory through the use of background datasets within LINA and ecoinvent data, aligning with industry-established standards and practices except for direct emissions to air, water, and soil, which are not measured in both the factories.

## LCA Results – Hi Therm+ 100 1500 mm with the weight of 11.33 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	2.84E+01	2.82E+01	1.11E-01	2.63E-02	1.68E-06	3.63E-01	1.34E-02
	Transport	A2	1.43E-01	1.43E-01	1.22E-04	5.62E-05	3.31E-08	5.85E-04	9.20E-06
	Manufacturing	A3	1.14E-01	1.46E-01	-3.44E-02	1.95E-04	1.37E-08	7.59E-04	3.45E-05
	Total (Consumption grid)	A1-3	2.86E+01	2.85E+01	7.71E-02	2.66E-02	1.73E-06	3.64E-01	1.35E-02
Construction process stage	Transport	A4	9.43E-02	9.41E-02	8.03E-05	3.70E-05	2.18E-08	3.82E-04	6.06E-06
	Construction	A5	1.02E-01	2.44E-03	9.91E-02	1.51E-06	3.81E-10	3.42E-05	9.23E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
End of life	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	9.43E-02	9.41E-02	8.03E-05	3.70E-05	2.18E-08	3.82E-04	6.06E-06
	Waste processing	C3	6.12E-01	6.11E-01	2.16E-04	6.10E-05	1.31E-07	6.35E-03	1.89E-05
	Disposal	C4	2.64E-02	2.63E-02	1.90E-05	4.48E-06	1.67E-09	4.16E-05	5.11E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	1.11E+01	1.12E+01	3.50E-02	-3.16E-03	-4.46E-07	-4.05E-02	-4.41E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.76E-02	1.33E+00	1.25E-01	1.04E-03	3.23E+02	1.42E+01	4.46E-06
	Transport	A2	1.76E-04	1.92E-03	5.88E-04	4.97E-07	2.16E+00	9.72E-03	1.23E-08
	Manufacturing	A3	3.30E-04	2.46E-03	7.19E-04	1.81E-06	2.65E+00	4.58E-02	1.37E-08
	Total (Consumption grid)	A1-3	3.81E-02	1.34E+00	1.27E-01	1.04E-03	3.28E+02	1.43E+01	4.49E-06
Construction process stage	Transport	A4	1.15E-04	1.26E-03	3.85E-04	3.27E-07	1.42E+00	6.41E-03	8.13E-09
	Construction	A5	1.54E-05	1.66E-04	4.58E-05	4.59E-09	3.48E-02	1.80E-03	4.38E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	
End of life	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	1.15E-04	1.26E-03	3.85E-04	3.27E-07	1.42E+00	6.41E-03	8.13E-09
	Waste processing	C3	2.81E-03	3.08E-02	8.48E-03	3.14E-07	8.39E+00	1.94E-02	1.70E-07
	Disposal	C4	1.15E-04	1.56E-04	5.05E-05	1.21E-08	1.20E-01	5.46E-03	8.32E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.61E-03	-1.02E-01	-5.61E-02	-8.42E-06	-1.13E+02	-8.01E-01	-7.47E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.63E+00	1.10E+03	1.98E-07	1.07E-06	9.97E+01
	Transport	A2	1.11E-02	1.69E+00	5.46E-11	1.77E-09	1.48E+00
	Manufacturing	A3	5.68E-02	3.61E+00	1.22E-09	2.39E-09	8.05E+00
	Total (Consumption grid)	A1-3	1.70E+00	1.11E+03	2.00E-07	1.08E-06	1.09E+02
Construction process stage	Transport	A4	7.32E-03	1.11E+00	3.60E-11	1.16E-09	9.78E-01
	Construction	A5	3.86E-04	3.07E-02	2.07E-11	7.11E-11	6.32E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	7.32E-03	1.11E+00	3.60E-11	1.16E-09	9.78E-01
	Waste processing	C3	3.78E-02	4.91E+00	1.90E-10	3.56E-09	1.07E+00
	Disposal	C4	5.46E-04	1.02E-01	2.60E-12	6.14E-11	2.62E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.00E-01	-3.34E+02	-5.97E-08	-2.30E-07	-2.21E+01

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
Product stage	Raw material supply	A1	2.73E+01	0.00E+00	2.73E+01	3.12E+02	8.06E+00	3.20E+02
	Transport	A2	3.04E-02	0.00E+00	3.04E-02	2.12E+00	0.00E+00	2.12E+00
	Manufacturing	A3	6.47E-01	1.17E+00	1.82E+00	2.84E+00	2.35E-01	3.07E+00
	Total (Consumption grid)	A1-3	2.80E+01	1.17E+00	2.92E+01	3.17E+02	8.29E+00	3.25E+02
Construction process stage	Transport	A4	2.01E-02	0.00E+00	2.01E-02	1.40E+00	0.00E+00	1.40E+00
	Construction	A5	-1.19E+00	1.19E+00	7.60E-04	2.96E-02	0.00E+00	2.96E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.01E-02	0.00E+00	2.01E-02	1.40E+00	0.00E+00	1.40E+00
	Waste processing	C3	4.70E-02	0.00E+00	4.70E-02	8.22E+00	0.00E+00	8.22E+00
	Disposal	C4	1.41E-03	0.00E+00	1.41E-03	-5.68E+00	5.80E+00	1.18E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.32E+00	0.00E+00	-2.32E+00	-1.12E+02	0.00E+00	-1.12E+02

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	4.19E+00	0.00E+00	0.00E+00	3.50E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.41E-04
	Manufacturing	A3	8.42E-03	1.29E-06	0.00E+00	1.43E-03
	Total (Consumption grid)	A1-3	4.20E+00	1.29E-06	0.00E+00	3.52E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.59E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	4.30E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.59E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.78E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.28E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.94E-02

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)

(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
Product stage	Raw material supply	A1	9.76E+00	4.93E+01	7.08E-04
	Transport	A2	2.38E-03	4.23E-02	1.46E-05
	Manufacturing	A3	4.99E-02	1.96E-01	1.73E-05
	Total (Consumption grid)	A1-3	9.81E+00	4.95E+01	7.40E-04
Construction process stage	Transport	A4	1.57E-03	2.79E-02	9.63E-06
	Construction	A5	4.27E-04	6.43E-02	1.59E-07
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.57E-03	2.79E-02	9.63E-06
	Waste processing	C3	1.10E-02	7.73E-02	5.79E-05
	Disposal	C4	1.62E-04	1.53E-01	7.63E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.03E+00	-2.12E+01	-1.20E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	2.23E-05	9.53E-09	1.03E-03	0.00E+00	-2.32E-02
	Total (Consumption grid)	A1-3	0.00E+00	2.23E-05	9.53E-09	1.03E-03	0.00E+00	-2.32E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.49E-02	7.66E-10	0.00E+00	1.03E-02	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – Hi Therm+ 110 1500 mm with the weight of 12.20 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	3.06E+01	3.04E+01	1.21E-01	2.82E-02	1.81E-06	3.90E-01	1.44E-02
	Transport	A2	1.54E-01	1.54E-01	1.31E-04	6.06E-05	3.57E-08	6.32E-04	9.93E-06
	Manufacturing	A3	1.19E-01	1.53E-01	-3.69E-02	2.06E-04	1.45E-08	8.06E-04	3.65E-05
	Total (Consumption grid)	A1-3	3.09E+01	3.08E+01	8.39E-02	2.85E-02	1.86E-06	3.92E-01	1.45E-02
Construction process stage	Transport	A4	1.02E-01	1.01E-01	8.64E-05	3.98E-05	2.35E-08	4.12E-04	6.53E-06
	Construction	A5	1.08E-01	1.87E-03	1.06E-01	1.54E-06	2.46E-10	3.19E-05	9.77E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.02E-01	1.01E-01	8.64E-05	3.98E-05	2.35E-08	4.12E-04	6.53E-06
	Waste processing	C3	6.56E-01	6.56E-01	2.32E-04	6.55E-05	1.40E-07	6.82E-03	2.03E-05
	Disposal	C4	3.44E-02	3.43E-02	2.45E-05	5.25E-06	1.92E-09	4.82E-05	6.11E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	1.19E+01	1.20E+01	3.75E-02	-3.39E-03	-4.78E-07	-4.35E-02	-4.73E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.04E-02	1.43E+00	1.35E-01	1.12E-03	3.50E+02	1.54E+01	4.80E-06
	Transport	A2	1.90E-04	2.08E-03	6.35E-04	5.36E-07	2.33E+00	1.05E-02	1.33E-08
	Manufacturing	A3	3.52E-04	2.61E-03	7.65E-04	1.92E-06	2.75E+00	4.89E-02	1.46E-08
	Total (Consumption grid)	A1-3	4.10E-02	1.43E+00	1.36E-01	1.12E-03	3.56E+02	1.54E+01	4.82E-06
Construction process stage	Transport	A4	1.24E-04	1.35E-03	4.15E-04	3.53E-07	1.53E+00	6.90E-03	8.75E-09
	Construction	A5	1.46E-05	1.57E-04	4.18E-05	4.27E-09	2.71E-02	1.92E-03	3.64E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.24E-04	1.35E-03	4.15E-04	3.53E-07	1.53E+00	6.90E-03	8.75E-09
	Waste processing	C3	3.02E-03	3.31E-02	9.10E-03	3.37E-07	9.00E+00	2.08E-02	1.83E-07
	Disposal	C4	1.50E-04	1.81E-04	5.92E-05	1.43E-08	1.39E-01	6.29E-03	9.63E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.03E-02	-1.09E-01	-6.02E-02	-9.03E-06	-1.21E+02	-8.59E-01	-8.01E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.75E+00	1.18E+03	2.13E-07	1.15E-06	1.07E+02
	Transport	A2	1.20E-02	1.82E+00	5.90E-11	1.91E-09	1.60E+00
	Manufacturing	A3	5.80E-02	3.82E+00	1.30E-09	2.53E-09	8.61E+00
	Total (Consumption grid)	A1-3	1.82E+00	1.19E+03	2.14E-07	1.16E-06	1.17E+02
Construction process stage	Transport	A4	7.88E-03	1.20E+00	3.87E-11	1.25E-09	1.05E+00
	Construction	A5	3.69E-04	2.72E-02	2.21E-11	7.24E-11	5.01E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	7.88E-03	1.20E+00	3.87E-11	1.25E-09	1.05E+00
	Waste processing	C3	4.06E-02	5.27E+00	2.04E-10	3.82E-09	1.15E+00
	Disposal	C4	6.32E-04	1.22E-01	3.13E-12	7.29E-11	3.04E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.14E-01	-3.59E+02	-6.40E-08	-2.46E-07	-2.37E+01

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
Product stage	Raw material supply	A1	2.93E+01	0.00E+00	2.93E+01	3.36E+02	1.02E+01	3.47E+02
	Transport	A2	3.28E-02	0.00E+00	3.28E-02	2.29E+00	0.00E+00	2.29E+00
	Manufacturing	A3	6.72E-01	1.26E+00	1.93E+00	2.93E+00	2.53E-01	3.18E+00
	Total (Consumption grid)	A1-3	3.00E+01	1.26E+00	3.13E+01	3.42E+02	1.04E+01	3.52E+02
Construction process stage	Transport	A4	2.16E-02	0.00E+00	2.16E-02	1.50E+00	0.00E+00	1.50E+00
	Construction	A5	-9.62E-01	9.62E-01	3.01E-04	1.80E-02	0.00E+00	1.80E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.16E-02	0.00E+00	2.16E-02	1.50E+00	0.00E+00	1.50E+00
	Waste processing	C3	5.04E-02	0.00E+00	5.04E-02	8.83E+00	0.00E+00	8.83E+00
	Disposal	C4	1.69E-03	0.00E+00	1.69E-03	-7.60E+00	7.73E+00	1.36E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.49E+00	0.00E+00	-2.49E+00	-1.20E+02	0.00E+00	-1.20E+02

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	4.49E+00	0.00E+00	0.00E+00	3.78E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.60E-04
	Manufacturing	A3	9.01E-03	1.30E-06	0.00E+00	1.51E-03
	Total (Consumption grid)	A1-3	4.50E+00	1.30E-06	0.00E+00	3.80E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.71E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	4.58E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.71E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.13E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.47E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.08E-02

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)

(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
Product stage	Raw material supply	A1	1.05E+01	5.29E+01	7.60E-04
	Transport	A2	2.57E-03	4.56E-02	1.58E-05
	Manufacturing	A3	5.32E-02	2.07E-01	1.78E-05
	Total (Consumption grid)	A1-3	1.05E+01	5.32E+01	7.94E-04
Construction process stage	Transport	A4	1.69E-03	3.00E-02	1.04E-05
	Construction	A5	3.98E-04	6.78E-02	8.06E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.69E-03	3.00E-02	1.04E-05
	Waste processing	C3	1.19E-02	8.30E-02	6.21E-05
	Disposal	C4	1.93E-04	2.03E-01	8.76E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.11E+00	-2.28E+01	-1.28E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	2.26E-05	9.66E-09	1.04E-03	0.00E+00	-2.49E-02
	Total (Consumption grid)	A1-3	0.00E+00	2.26E-05	9.66E-09	1.04E-03	0.00E+00	-2.49E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.88E-03	8.33E-11	0.00E+00	1.12E-03	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – Hi Therm+ 150 1500 mm with the weight of 12.87 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	3.23E+01	3.21E+01	1.28E-01	2.97E-02	1.90E-06	4.11E-01	1.52E-02
	Transport	A2	1.63E-01	1.63E-01	1.39E-04	6.41E-05	3.77E-08	6.68E-04	1.05E-05
	Manufacturing	A3	1.51E-01	1.86E-01	-3.86E-02	2.43E-04	1.72E-08	9.05E-04	4.19E-05
	Total (Consumption grid)	A1-3	3.26E+01	3.25E+01	8.97E-02	3.00E-02	1.96E-06	4.12E-01	1.52E-02
Construction process stage	Transport	A4	1.07E-01	1.07E-01	9.12E-05	4.20E-05	2.48E-08	4.34E-04	6.89E-06
	Construction	A5	1.14E-01	1.97E-03	1.12E-01	1.62E-06	2.59E-10	3.36E-05	1.03E-06
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.07E-01	1.07E-01	9.12E-05	4.20E-05	2.48E-08	4.34E-04	6.89E-06
	Waste processing	C3	6.90E-01	6.90E-01	2.44E-04	6.89E-05	1.48E-07	7.17E-03	2.14E-05
	Disposal	C4	4.23E-02	4.23E-02	3.00E-05	5.97E-06	2.15E-09	5.43E-05	7.06E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.26E+01	-1.26E+01	3.95E-02	-3.57E-03	-5.03E-07	-4.57E-02	-4.98E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.26E-02	1.50E+00	1.42E-01	1.17E-03	3.72E+02	1.63E+01	5.05E-06
	Transport	A2	2.01E-04	2.19E-03	6.71E-04	5.67E-07	2.47E+00	1.11E-02	1.41E-08
	Manufacturing	A3	3.87E-04	2.93E-03	8.51E-04	2.18E-06	3.56E+00	5.31E-02	1.58E-08
	Total (Consumption grid)	A1-3	4.32E-02	1.51E+00	1.44E-01	1.18E-03	3.78E+02	1.63E+01	5.08E-06
Construction process stage	Transport	A4	1.31E-04	1.43E-03	4.38E-04	3.72E-07	1.62E+00	7.28E-03	9.23E-09
	Construction	A5	1.53E-05	1.65E-04	4.39E-05	4.49E-09	2.85E-02	2.02E-03	3.84E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.31E-04	1.43E-03	4.38E-04	3.72E-07	1.62E+00	7.28E-03	9.23E-09
	Waste processing	C3	3.18E-03	3.48E-02	9.57E-03	3.55E-07	9.47E+00	2.19E-02	1.92E-07
	Disposal	C4	1.86E-04	2.04E-04	6.75E-05	1.65E-08	1.56E-01	7.05E-03	1.08E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.08E-02	-1.15E-01	-6.33E-02	-9.50E-06	-1.27E+02	-9.04E-01	-8.43E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.84E+00	1.24E+03	2.24E-07	1.21E-06	1.13E+02
	Transport	A2	1.27E-02	1.92E+00	6.24E-11	2.02E-09	1.69E+00
	Manufacturing	A3	8.31E-02	4.32E+00	1.38E-09	2.87E-09	9.30E+00
	Total (Consumption grid)	A1-3	1.94E+00	1.25E+03	2.25E-07	1.22E-06	1.24E+02
Construction process stage	Transport	A4	8.31E-03	1.26E+00	4.09E-11	1.32E-09	1.11E+00
	Construction	A5	3.87E-04	2.86E-02	2.33E-11	7.61E-11	5.27E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.31E-03	1.26E+00	4.09E-11	1.32E-09	1.11E+00
	Waste processing	C3	4.27E-02	5.54E+00	2.14E-10	4.02E-09	1.21E+00
	Disposal	C4	7.11E-04	1.42E-01	3.62E-12	8.38E-11	3.43E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.26E-01	-3.77E+02	-6.74E-08	-2.59E-07	-2.49E+01

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
Product stage	Raw material supply	A1	3.08E+01	0.00E+00	3.08E+01	3.55E+02	1.22E+01	3.68E+02
	Transport	A2	3.47E-02	0.00E+00	3.47E-02	2.42E+00	0.00E+00	2.42E+00
	Manufacturing	A3	8.68E-01	1.33E+00	2.19E+00	3.96E+00	2.65E-01	4.23E+00
	Total (Consumption grid)	A1-3	3.17E+01	1.33E+00	3.31E+01	3.62E+02	1.25E+01	3.74E+02
Construction process stage	Transport	A4	2.28E-02	0.00E+00	2.28E-02	1.59E+00	0.00E+00	1.59E+00
	Construction	A5	-1.01E+00	1.01E+00	3.16E-04	1.89E-02	0.00E+00	1.89E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.28E-02	0.00E+00	2.28E-02	1.59E+00	0.00E+00	1.59E+00
	Waste processing	C3	5.31E-02	0.00E+00	5.31E-02	9.28E+00	0.00E+00	9.28E+00
	Disposal	C4	1.96E-03	0.00E+00	1.96E-03	-9.51E+00	9.67E+00	1.53E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.62E+00	0.00E+00	-2.62E+00	-1.26E+02	0.00E+00	-1.26E+02

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	4.72E+00	0.00E+00	0.00E+00	4.00E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.75E-04
	Manufacturing	A3	9.57E-03	1.95E-06	0.00E+00	1.74E-03
	Total (Consumption grid)	A1-3	4.73E+00	1.95E-06	0.00E+00	4.02E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.80E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	4.81E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.80E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.40E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.65E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.19E-02

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)

(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
Product stage	Raw material supply	A1	1.10E+01	5.56E+01	7.99E-04
	Transport	A2	2.72E-03	4.83E-02	1.67E-05
	Manufacturing	A3	5.71E-02	2.34E-01	2.45E-05
	Total (Consumption grid)	A1-3	1.11E+01	5.59E+01	8.40E-04
Construction process stage	Transport	A4	1.78E-03	3.17E-02	1.09E-05
	Construction	A5	4.18E-04	7.12E-02	8.48E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.78E-03	3.17E-02	1.09E-05
	Waste processing	C3	1.25E-02	8.73E-02	6.53E-05
	Disposal	C4	2.23E-04	2.54E-01	9.80E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.16E+00	-2.39E+01	-1.35E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.39E-05	1.45E-08	1.56E-03	0.00E+00	-2.61E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.39E-05	1.45E-08	1.56E-03	0.00E+00	-2.61E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	5.08E-03	8.66E-11	0.00E+00	1.17E-03	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – L1/S 100 1500mm with the weight of 9.98 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	2.49E+01	2.48E+01	1.00E-01	2.32E-02	1.39E-06	3.22E-01	1.19E-02
	Transport	A2	1.20E-01	1.20E-01	1.02E-04	4.72E-05	2.78E-08	4.89E-04	7.74E-06
	Manufacturing	A3	1.38E-01	1.65E-01	-3.02E-02	2.11E-04	1.49E-08	7.51E-04	3.55E-05
	Total (Consumption grid)	A1-3	2.52E+01	2.51E+01	7.03E-02	2.34E-02	1.43E-06	3.23E-01	1.19E-02
Construction process stage	Transport	A4	8.30E-02	8.29E-02	7.07E-05	3.26E-05	1.92E-08	3.37E-04	5.34E-06
	Construction	A5	8.90E-02	1.54E-03	8.74E-02	1.26E-06	2.03E-10	2.63E-05	8.03E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	8.30E-02	8.29E-02	7.07E-05	3.26E-05	1.92E-08	3.37E-04	5.34E-06
	Waste processing	C3	5.40E-01	5.39E-01	1.90E-04	5.38E-05	1.15E-07	5.60E-03	1.67E-05
	Disposal	C4	2.13E-02	2.13E-02	1.54E-05	3.80E-06	1.43E-09	3.53E-05	4.29E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	9.82E+00	9.85E+00	3.09E-02	-2.79E-03	-3.93E-07	-3.57E-02	-3.89E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.32E-02	1.18E+00	1.11E-01	9.22E-04	2.81E+02	1.24E+01	3.96E-06
	Transport	A2	1.47E-04	1.61E-03	4.93E-04	4.18E-07	1.82E+00	8.17E-03	1.04E-08
	Manufacturing	A3	3.15E-04	2.43E-03	6.99E-04	1.83E-06	3.31E+00	4.29E-02	1.26E-08
	Total (Consumption grid)	A1-3	3.37E-02	1.19E+00	1.12E-01	9.25E-04	2.86E+02	1.25E+01	3.98E-06
Construction process stage	Transport	A4	1.01E-04	1.11E-03	3.39E-04	2.88E-07	1.25E+00	5.64E-03	7.16E-09
	Construction	A5	1.20E-05	1.29E-04	3.44E-05	3.51E-09	2.23E-02	1.58E-03	3.00E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	
End of life	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	1.01E-04	1.11E-03	3.39E-04	2.88E-07	1.25E+00	5.64E-03	7.16E-09
	Waste processing	C3	2.48E-03	2.72E-02	7.48E-03	2.77E-07	7.40E+00	1.71E-02	1.50E-07
	Disposal	C4	9.25E-05	1.33E-04	4.27E-05	1.02E-08	1.02E-01	4.65E-03	7.07E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.48E-03	-9.00E-02	-4.95E-02	-7.42E-06	-9.96E+01	-7.06E-01	-6.59E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.43E+00	9.74E+02	1.76E-07	9.51E-07	8.77E+01
	Transport	A2	9.34E-03	1.42E+00	4.59E-11	1.49E-09	1.25E+00
	Manufacturing	A3	8.22E-02	3.62E+00	1.09E-09	2.40E-09	7.46E+00
	Total (Consumption grid)	A1-3	1.52E+00	9.79E+02	1.78E-07	9.55E-07	9.65E+01
Construction process stage	Transport	A4	6.45E-03	9.79E-01	3.17E-11	1.03E-09	8.61E-01
	Construction	A5	3.03E-04	2.24E-02	1.82E-11	5.95E-11	4.12E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.45E-03	9.79E-01	3.17E-11	1.03E-09	8.61E-01
	Waste processing	C3	3.33E-02	4.33E+00	1.67E-10	3.14E-09	9.42E-01
	Disposal	C4	4.64E-04	8.55E-02	2.18E-12	5.17E-11	2.22E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.76E-01	-2.95E+02	-5.27E-08	-2.03E-07	-1.95E+01

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
Product stage	Raw material supply	A1	2.40E+01	0.00E+00	2.40E+01	2.74E+02	4.64E+00	2.78E+02
	Transport	A2	2.56E-02	0.00E+00	2.56E-02	1.78E+00	0.00E+00	1.78E+00
	Manufacturing	A3	8.06E-01	1.03E+00	1.84E+00	3.79E+00	2.06E-01	3.99E+00
	Total (Consumption grid)	A1-3	2.48E+01	1.03E+00	2.58E+01	2.79E+02	4.85E+00	2.84E+02
Construction process stage	Transport	A4	1.77E-02	0.00E+00	1.77E-02	1.23E+00	0.00E+00	1.23E+00
	Construction	A5	-7.89E-01	7.89E-01	2.46E-04	1.48E-02	0.00E+00	1.48E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.77E-02	0.00E+00	1.77E-02	1.23E+00	0.00E+00	1.23E+00
	Waste processing	C3	4.15E-02	0.00E+00	4.15E-02	7.26E+00	0.00E+00	7.26E+00
	Disposal	C4	1.18E-03	0.00E+00	1.18E-03	-4.54E+00	4.64E+00	1.00E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.05E+00	0.00E+00	-2.05E+00	-9.86E+01	0.00E+00	-9.86E+01

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	3.73E+00	0.00E+00	0.00E+00	3.06E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.02E-04
	Manufacturing	A3	7.57E-03	1.98E-06	0.00E+00	1.48E-03
	Total (Consumption grid)	A1-3	3.73E+00	1.98E-06	0.00E+00	3.08E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.40E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.76E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.40E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.22E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.09E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.71E-02

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)

(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
Product stage	Raw material supply	A1	8.67E+00	4.35E+01	6.21E-04
	Transport	A2	2.00E-03	3.56E-02	1.23E-05
	Manufacturing	A3	4.55E-02	1.95E-01	2.36E-05
	Total (Consumption grid)	A1-3	8.72E+00	4.37E+01	6.57E-04
Construction process stage	Transport	A4	1.38E-03	2.46E-02	8.48E-06
	Construction	A5	3.27E-04	5.57E-02	6.64E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.38E-03	2.46E-02	8.48E-06
	Waste processing	C3	9.74E-03	6.82E-02	5.11E-05
	Disposal	C4	1.36E-04	1.22E-01	6.51E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.09E-01	-1.87E+01	-1.06E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.44E-05	1.47E-08	1.58E-03	0.00E+00	-2.04E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.44E-05	1.47E-08	1.58E-03	0.00E+00	-2.04E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	3.90E-03	6.66E-11	0.00E+00	8.98E-04	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – L1/S 110 1500mm with the weight of 11.94 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	2.99E+01	2.97E+01	1.21E-01	2.77E-02	1.66E-06	3.85E-01	1.42E-02
	Transport	A2	1.44E-01	1.44E-01	1.23E-04	5.65E-05	3.33E-08	5.86E-04	9.27E-06
	Manufacturing	A3	1.49E-01	1.82E-01	-3.59E-02	2.35E-04	1.66E-08	8.62E-04	4.01E-05
	Total (Consumption grid)	A1-3	3.02E+01	3.00E+01	8.47E-02	2.80E-02	1.71E-06	3.86E-01	1.42E-02
Construction process stage	Transport	A4	9.93E-02	9.92E-02	8.46E-05	3.90E-05	2.30E-08	4.03E-04	6.39E-06
	Construction	A5	1.06E-01	1.82E-03	1.04E-01	1.51E-06	2.39E-10	3.13E-05	9.59E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	9.93E-02	9.92E-02	8.46E-05	3.90E-05	2.30E-08	4.03E-04	6.39E-06
	Waste processing	C3	6.44E-01	6.44E-01	2.27E-04	6.43E-05	1.38E-07	6.69E-03	2.00E-05
	Disposal	C4	2.81E-02	2.80E-02	2.02E-05	4.75E-06	1.77E-09	4.40E-05	5.42E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	1.17E+01	1.18E+01	3.69E-02	-3.33E-03	-4.70E-07	-4.27E-02	-4.64E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.97E-02	1.41E+00	1.32E-01	1.10E-03	3.37E+02	1.49E+01	4.74E-06
	Transport	A2	1.76E-04	1.93E-03	5.90E-04	5.00E-07	2.18E+00	9.79E-03	1.24E-08
	Manufacturing	A3	3.67E-04	2.80E-03	8.09E-04	2.09E-06	3.53E+00	5.00E-02	1.49E-08
	Total (Consumption grid)	A1-3	4.03E-02	1.42E+00	1.34E-01	1.10E-03	3.43E+02	1.50E+01	4.76E-06
Construction process stage	Transport	A4	1.21E-04	1.33E-03	4.06E-04	3.45E-07	1.50E+00	6.75E-03	8.56E-09
	Construction	A5	1.43E-05	1.54E-04	4.09E-05	4.18E-09	2.65E-02	1.89E-03	3.57E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.21E-04	1.33E-03	4.06E-04	3.45E-07	1.50E+00	6.75E-03	8.56E-09
	Waste processing	C3	2.96E-03	3.25E-02	8.93E-03	3.31E-07	8.84E+00	2.04E-02	1.79E-07
	Disposal	C4	1.22E-04	1.65E-04	5.34E-05	1.28E-08	1.27E-01	5.77E-03	8.80E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.01E-02	-1.07E-01	-5.91E-02	-8.86E-06	-1.19E+02	-8.43E-01	-7.87E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.70E+00	1.16E+03	2.11E-07	1.14E-06	1.05E+02
	Transport	A2	1.12E-02	1.70E+00	5.50E-11	1.78E-09	1.49E+00
	Manufacturing	A3	8.44E-02	4.13E+00	1.30E-09	2.74E-09	8.75E+00
	Total (Consumption grid)	A1-3	1.80E+00	1.17E+03	2.12E-07	1.14E-06	1.15E+02
Construction process stage	Transport	A4	7.71E-03	1.17E+00	3.79E-11	1.23E-09	1.03E+00
	Construction	A5	3.61E-04	2.66E-02	2.17E-11	7.10E-11	4.89E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	7.71E-03	1.17E+00	3.79E-11	1.23E-09	1.03E+00
	Waste processing	C3	3.98E-02	5.17E+00	2.00E-10	3.75E-09	1.13E+00
	Disposal	C4	5.77E-04	1.08E-01	2.76E-12	6.50E-11	2.77E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.10E-01	-3.52E+02	-6.29E-08	-2.42E-07	-2.32E+01

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
Product stage	Raw material supply	A1	2.86E+01	0.00E+00	2.86E+01	3.28E+02	6.19E+00	3.34E+02
	Transport	A2	3.06E-02	0.00E+00	3.06E-02	2.14E+00	0.00E+00	2.14E+00
	Manufacturing	A3	8.63E-01	1.23E+00	2.09E+00	3.97E+00	2.48E-01	4.22E+00
	Total (Consumption grid)	A1-3	2.95E+01	1.23E+00	3.08E+01	3.34E+02	6.44E+00	3.40E+02
Construction process stage	Transport	A4	2.11E-02	0.00E+00	2.11E-02	1.47E+00	0.00E+00	1.47E+00
	Construction	A5	-9.37E-01	9.38E-01	2.85E-04	1.74E-02	0.00E+00	1.74E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.11E-02	0.00E+00	2.11E-02	1.47E+00	0.00E+00	1.47E+00
	Waste processing	C3	4.95E-02	0.00E+00	4.95E-02	8.66E+00	0.00E+00	8.66E+00
	Disposal	C4	1.49E-03	0.00E+00	1.49E-03	-6.06E+00	6.19E+00	1.25E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.45E+00	0.00E+00	-2.45E+00	-1.18E+02	0.00E+00	-1.18E+02

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	4.45E+00	0.00E+00	0.00E+00	3.67E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.42E-04
	Manufacturing	A3	8.98E-03	2.01E-06	0.00E+00	1.67E-03
	Total (Consumption grid)	A1-3	4.46E+00	2.01E-06	0.00E+00	3.69E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.67E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	4.49E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.67E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.04E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.35E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.05E-02

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)

(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
Product stage	Raw material supply	A1	1.04E+01	5.19E+01	7.42E-04
	Transport	A2	2.40E-03	4.26E-02	1.47E-05
	Manufacturing	A3	5.38E-02	2.23E-01	2.46E-05
	Total (Consumption grid)	A1-3	1.04E+01	5.22E+01	7.81E-04
Construction process stage	Transport	A4	1.65E-03	2.94E-02	1.01E-05
	Construction	A5	3.89E-04	6.65E-02	7.77E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.65E-03	2.94E-02	1.01E-05
	Waste processing	C3	1.16E-02	8.15E-02	6.10E-05
	Disposal	C4	1.72E-04	1.63E-01	8.07E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.09E+00	-2.23E+01	-1.26E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.48E-05	1.48E-08	1.61E-03	0.00E+00	-2.46E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.48E-05	1.48E-08	1.61E-03	0.00E+00	-2.46E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	3.90E-03	6.66E-11	0.00E+00	8.98E-04	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – L1/S 150 1500mm with the weight of 12.93 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	3.24E+01	3.22E+01	1.31E-01	2.98E-02	1.79E-06	4.16E-01	1.53E-02
	Transport	A2	1.57E-01	1.56E-01	1.33E-04	6.14E-05	3.62E-08	6.37E-04	1.01E-05
	Manufacturing	A3	1.54E-01	1.90E-01	-3.89E-02	2.48E-04	1.75E-08	9.16E-04	4.25E-05
	Total (Consumption grid)	A1-3	3.27E+01	3.26E+01	9.27E-02	3.02E-02	1.85E-06	4.17E-01	1.53E-02
Construction process stage	Transport	A4	1.08E-01	1.07E-01	9.16E-05	4.22E-05	2.49E-08	4.36E-04	6.92E-06
	Construction	A5	1.15E-01	1.98E-03	1.13E-01	1.63E-06	2.61E-10	3.38E-05	1.04E-06
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.08E-01	1.07E-01	9.16E-05	4.22E-05	2.49E-08	4.36E-04	6.92E-06
	Waste processing	C3	6.95E-01	6.95E-01	2.45E-04	6.93E-05	1.48E-07	7.22E-03	2.15E-05
	Disposal	C4	3.77E-02	3.77E-02	2.69E-05	5.68E-06	2.07E-09	5.20E-05	6.62E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.27E+01	-1.27E+01	3.98E-02	-3.59E-03	-5.07E-07	-4.60E-02	-5.01E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.29E-02	1.53E+00	1.43E-01	1.19E-03	3.68E+02	1.62E+01	5.12E-06
	Transport	A2	1.92E-04	2.09E-03	6.41E-04	5.44E-07	2.36E+00	1.06E-02	1.35E-08
	Manufacturing	A3	3.92E-04	2.97E-03	8.62E-04	2.21E-06	3.65E+00	5.38E-02	1.59E-08
	Total (Consumption grid)	A1-3	4.35E-02	1.53E+00	1.45E-01	1.19E-03	3.74E+02	1.63E+01	5.15E-06
Construction process stage	Transport	A4	1.31E-04	1.44E-03	4.40E-04	3.74E-07	1.62E+00	7.31E-03	9.27E-09
	Construction	A5	1.55E-05	1.67E-04	4.43E-05	4.53E-09	2.87E-02	2.04E-03	3.86E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	1.31E-04	1.44E-03	4.40E-04	3.74E-07	1.62E+00	7.31E-03	9.27E-09
	Waste processing	C3	3.20E-03	3.50E-02	9.63E-03	3.57E-07	9.53E+00	2.20E-02	1.93E-07
	Disposal	C4	1.65E-04	1.95E-04	6.41E-05	1.55E-08	1.49E-01	6.78E-03	1.04E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.09E-02	-1.16E-01	-6.37E-02	-9.56E-06	-1.28E+02	-9.10E-01	-8.49E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.84E+00	1.26E+03	2.27E-07	1.23E-06	1.13E+02
	Transport	A2	1.22E-02	1.85E+00	5.98E-11	1.93E-09	1.62E+00
	Manufacturing	A3	8.59E-02	4.39E+00	1.39E-09	2.90E-09	9.40E+00
	Total (Consumption grid)	A1-3	1.94E+00	1.26E+03	2.29E-07	1.23E-06	1.24E+02
Construction process stage	Transport	A4	8.35E-03	1.27E+00	4.11E-11	1.33E-09	1.12E+00
	Construction	A5	3.91E-04	2.88E-02	2.35E-11	7.68E-11	5.31E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.35E-03	1.27E+00	4.11E-11	1.33E-09	1.12E+00
	Waste processing	C3	4.30E-02	5.58E+00	2.16E-10	4.04E-09	1.21E+00
	Disposal	C4	6.82E-04	1.33E-01	3.39E-12	7.90E-11	3.28E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.27E-01	-3.80E+02	-6.78E-08	-2.61E-07	-2.51E+01

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
Product stage	Raw material supply	A1	3.09E+01	0.00E+00	3.09E+01	3.55E+02	8.51E+00	3.64E+02
	Transport	A2	3.33E-02	0.00E+00	3.33E-02	2.32E+00	0.00E+00	2.32E+00
	Manufacturing	A3	8.90E-01	1.34E+00	2.23E+00	4.08E+00	2.67E-01	4.34E+00
	Total (Consumption grid)	A1-3	3.19E+01	1.34E+00	3.32E+01	3.62E+02	8.77E+00	3.71E+02
Construction process stage	Transport	A4	2.29E-02	0.00E+00	2.29E-02	1.60E+00	0.00E+00	1.60E+00
	Construction	A5	-1.02E+00	1.02E+00	3.19E-04	1.90E-02	0.00E+00	1.90E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.29E-02	0.00E+00	2.29E-02	1.60E+00	0.00E+00	1.60E+00
	Waste processing	C3	5.34E-02	0.00E+00	5.34E-02	9.35E+00	0.00E+00	9.35E+00
	Disposal	C4	1.84E-03	0.00E+00	1.84E-03	-8.36E+00	8.51E+00	1.47E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.64E+00	0.00E+00	-2.64E+00	-1.27E+02	0.00E+00	-1.27E+02

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	4.80E+00	0.00E+00	0.00E+00	3.99E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.63E-04
	Manufacturing	A3	9.63E-03	2.03E-06	0.00E+00	1.77E-03
	Total (Consumption grid)	A1-3	4.81E+00	2.03E-06	0.00E+00	4.01E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.81E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	4.85E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.81E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.44E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.59E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.21E-02

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)

(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
Product stage	Raw material supply	A1	1.12E+01	5.60E+01	8.01E-04
	Transport	A2	2.61E-03	4.63E-02	1.60E-05
	Manufacturing	A3	5.74E-02	2.37E-01	2.52E-05
	Total (Consumption grid)	A1-3	1.12E+01	5.63E+01	8.42E-04
Construction process stage	Transport	A4	1.79E-03	3.18E-02	1.10E-05
	Construction	A5	4.22E-04	7.18E-02	8.54E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.79E-03	3.18E-02	1.10E-05
	Waste processing	C3	1.26E-02	8.79E-02	6.58E-05
	Disposal	C4	2.10E-04	2.24E-01	9.45E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.17E+00	-2.41E+01	-1.36E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.51E-05	1.50E-08	1.62E-03	0.00E+00	-2.64E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.51E-05	1.50E-08	1.62E-03	0.00E+00	-2.64E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	5.15E-03	8.79E-11	0.00E+00	1.19E-03	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results - L1/E 100 1500mm with the weight of 9.65 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	2.81E+01	2.80E+01	1.35E-01	2.63E-02	1.52E-06	3.06E-01	1.23E-02
	Transport	A2	4.12E-01	4.12E-01	3.46E-04	1.63E-04	9.51E-08	1.82E-03	2.63E-05
	Manufacturing	A3	4.84E-02	1.10E-01	-6.21E-02	1.54E-04	1.08E-08	6.02E-04	2.79E-05
	Total (Consumption grid)	A1-3	2.86E+01	2.85E+01	7.28E-02	2.66E-02	1.63E-06	3.09E-01	1.23E-02
Construction process stage	Transport	A4	8.03E-02	8.01E-02	6.83E-05	3.15E-05	1.85E-08	3.25E-04	5.16E-06
	Construction	A5	8.42E-02	1.45E-03	8.27E-02	1.20E-06	1.92E-10	2.48E-05	7.60E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	8.03E-02	8.01E-02	6.83E-05	3.15E-05	1.85E-08	3.25E-04	5.16E-06
	Waste processing	C3	5.20E-01	5.20E-01	1.83E-04	5.19E-05	1.11E-07	5.40E-03	1.61E-05
	Disposal	C4	2.59E-02	2.59E-02	1.85E-05	4.09E-06	1.50E-09	3.76E-05	4.73E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	9.45E+00	9.48E+00	2.97E-02	-2.68E-03	-3.78E-07	-3.44E-02	-3.74E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.47E-02	1.04E+00	1.16E-01	9.51E-04	3.20E+02	1.30E+01	3.83E-06
	Transport	A2	5.39E-04	5.90E-03	1.79E-03	1.42E-06	6.21E+00	2.78E-02	3.52E-08
	Manufacturing	A3	2.20E-04	1.94E-03	5.69E-04	1.43E-06	1.98E+00	4.27E-02	1.10E-08
	Total (Consumption grid)	A1-3	3.54E-02	1.05E+00	1.19E-01	9.54E-04	3.28E+02	1.30E+01	3.88E-06
Construction process stage	Transport	A4	9.80E-05	1.07E-03	3.28E-04	2.79E-07	1.21E+00	5.45E-03	6.92E-09
	Construction	A5	1.13E-05	1.22E-04	3.24E-05	3.33E-09	2.11E-02	1.49E-03	2.81E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	9.80E-05	1.07E-03	3.28E-04	2.79E-07	1.21E+00	5.45E-03	6.92E-09
	Waste processing	C3	2.39E-03	2.62E-02	7.21E-03	2.67E-07	7.13E+00	1.65E-02	1.45E-07
	Disposal	C4	1.13E-04	1.41E-04	4.61E-05	1.11E-08	1.08E-01	4.92E-03	7.52E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.16E-03	-8.66E-02	-4.76E-02	-7.14E-06	-9.59E+01	-6.80E-01	-6.34E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.72E+00	1.03E+03	3.07E-07	9.64E-07	1.13E+02
	Transport	A2	3.19E-02	4.84E+00	1.58E-10	5.05E-09	4.23E+00
	Manufacturing	A3	3.99E-02	3.03E+00	9.80E-10	1.94E-09	6.63E+00
	Total (Consumption grid)	A1-3	1.79E+00	1.04E+03	3.08E-07	9.71E-07	1.24E+02
Construction process stage	Transport	A4	6.23E-03	9.46E-01	3.06E-11	9.92E-10	8.33E-01
	Construction	A5	2.87E-04	2.11E-02	1.72E-11	5.63E-11	3.91E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.23E-03	9.46E-01	3.06E-11	9.92E-10	8.33E-01
	Waste processing	C3	3.21E-02	4.17E+00	1.61E-10	3.03E-09	9.08E-01
	Disposal	C4	4.93E-04	9.45E-02	2.42E-12	5.65E-11	2.37E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.70E-01	-2.84E+02	-5.07E-08	-1.95E-07	-1.87E+01

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
Product stage	Raw material supply	A1	3.82E+01	0.00E+00	3.82E+01	3.10E+02	6.95E+00	3.17E+02
	Transport	A2	8.70E-02	0.00E+00	8.70E-02	6.10E+00	0.00E+00	6.10E+00
	Manufacturing	A3	7.61E-01	7.07E-01	1.47E+00	2.20E+00	5.21E-02	2.26E+00
	Total (Consumption grid)	A1-3	3.91E+01	7.07E-01	3.98E+01	3.18E+02	7.00E+00	3.25E+02
Construction process stage	Transport	A4	1.71E-02	0.00E+00	1.71E-02	1.19E+00	0.00E+00	1.19E+00
	Construction	A5	-7.55E-01	7.55E-01	2.44E-04	1.41E-02	0.00E+00	1.41E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.71E-02	0.00E+00	1.71E-02	1.19E+00	0.00E+00	1.19E+00
	Waste processing	C3	4.00E-02	0.00E+00	4.00E-02	6.99E+00	0.00E+00	6.99E+00
	Disposal	C4	1.31E-03	0.00E+00	1.31E-03	-5.69E+00	5.80E+00	1.06E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.97E+00	0.00E+00	-1.97E+00	-9.49E+01	0.00E+00	-9.49E+01

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	3.84E+00	0.00E+00	0.00E+00	3.32E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	6.89E-04
	Manufacturing	A3	6.85E-03	8.74E-07	0.00E+00	1.26E-03
	Total (Consumption grid)	A1-3	3.85E+00	8.74E-07	0.00E+00	3.34E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.35E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.56E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.35E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.07E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.15E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.65E-02

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)

(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
Product stage	Raw material supply	A1	1.40E+01	4.87E+01	7.23E-04
	Transport	A2	6.86E-03	1.21E-01	4.20E-05
	Manufacturing	A3	3.99E-02	1.20E-01	1.25E-05
	Total (Consumption grid)	A1-3	1.41E+01	4.90E+01	7.77E-04
Construction process stage	Transport	A4	1.34E-03	2.37E-02	8.20E-06
	Construction	A5	3.11E-04	5.27E-02	6.31E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.34E-03	2.37E-02	8.20E-06
	Waste processing	C3	9.39E-03	6.57E-02	4.92E-05
	Disposal	C4	1.50E-04	1.53E-01	6.86E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.75E-01	-1.80E+01	-1.02E-04

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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	4.54E-04	6.47E-09	6.97E-04	0.00E+00	-1.90E-02
	Total (Consumption grid)	A1-3	0.00E+00	4.54E-04	6.47E-09	6.97E-04	0.00E+00	-1.90E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.76E-03	8.13E-11	0.00E+00	1.10E-03	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – BOX 100 1500mm with the weight of 7.49 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	2.17E+01	2.16E+01	1.03E-01	2.07E-02	1.19E-06	2.40E-01	9.66E-03
	Transport	A2	3.24E-01	3.23E-01	2.71E-04	1.28E-04	7.47E-08	1.43E-03	2.07E-05
	Manufacturing	A3	4.07E-02	8.93E-02	-4.89E-02	1.24E-04	8.74E-09	4.81E-04	2.23E-05
	Total (Consumption grid)	A1-3	2.21E+01	2.20E+01	5.39E-02	2.10E-02	1.28E-06	2.42E-01	9.71E-03
Construction process stage	Transport	A4	6.23E-02	6.22E-02	5.31E-05	2.44E-05	1.44E-08	2.53E-04	4.01E-06
	Construction	A5	6.64E-02	1.15E-03	6.52E-02	9.42E-07	1.51E-10	1.95E-05	5.99E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
Operational water use	B7	MND	MND	MND	MND	MND	MND	MND	
End of life	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	6.23E-02	6.22E-02	5.31E-05	2.44E-05	1.44E-08	2.53E-04	4.01E-06
	Waste processing	C3	4.03E-01	4.02E-01	1.42E-04	4.02E-05	8.60E-08	4.18E-03	1.25E-05
	Disposal	C4	2.22E-02	2.22E-02	1.58E-05	3.31E-06	1.21E-09	3.03E-05	3.87E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.33E+00	-7.35E+00	2.30E-02	-2.08E-03	-2.93E-07	-2.67E-02	-2.90E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.71E-02	8.19E-01	9.05E-02	7.49E-04	2.43E+02	9.90E+00	3.00E-06
	Transport	A2	4.24E-04	4.64E-03	1.40E-03	1.12E-06	4.88E+00	2.18E-02	2.77E-08
	Manufacturing	A3	1.76E-04	1.55E-03	4.55E-04	1.14E-06	1.62E+00	3.38E-02	8.75E-09
	Total (Consumption grid)	A1-3	2.77E-02	8.25E-01	9.24E-02	7.51E-04	2.50E+02	9.96E+00	3.04E-06
Construction process stage	Transport	A4	7.61E-05	8.31E-04	2.55E-04	2.16E-07	9.41E-01	4.23E-03	5.37E-09
	Construction	A5	8.92E-06	9.60E-05	2.55E-05	2.62E-09	1.66E-02	1.18E-03	2.21E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	7.61E-05	8.31E-04	2.55E-04	2.16E-07	9.41E-01	4.23E-03	5.37E-09
	Waste processing	C3	1.85E-03	2.03E-02	5.58E-03	2.07E-07	5.52E+00	1.28E-02	1.12E-07
	Disposal	C4	9.75E-05	1.14E-04	3.74E-05	9.09E-09	8.71E-02	3.95E-03	6.06E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.33E-03	-6.71E-02	-3.69E-02	-5.54E-06	-7.43E+01	-5.27E-01	-4.92E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.35E+00	8.11E+02	2.41E-07	7.58E-07	8.91E+01
	Transport	A2	2.50E-02	3.80E+00	1.24E-10	3.97E-09	3.32E+00
	Manufacturing	A3	3.36E-02	2.42E+00	7.72E-10	1.55E-09	5.25E+00
	Total (Consumption grid)	A1-3	1.41E+00	8.17E+02	2.42E-07	7.63E-07	9.76E+01
Construction process stage	Transport	A4	4.84E-03	7.34E-01	2.38E-11	7.70E-10	6.47E-01
	Construction	A5	2.26E-04	1.67E-02	1.36E-11	4.44E-11	3.08E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.84E-03	7.34E-01	2.38E-11	7.70E-10	6.47E-01
	Waste processing	C3	2.49E-02	3.23E+00	1.25E-10	2.34E-09	7.03E-01
	Disposal	C4	3.98E-04	7.76E-02	1.98E-12	4.62E-11	1.91E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.32E-01	-2.20E+02	-3.93E-08	-1.51E-07	-1.45E+01

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
Product stage	Raw material supply	A1	3.01E+01	0.00E+00	3.01E+01	2.39E+02	1.29E+00	2.41E+02
	Transport	A2	6.83E-02	0.00E+00	6.83E-02	4.79E+00	0.00E+00	4.79E+00
	Manufacturing	A3	6.15E-01	5.58E-01	1.17E+00	1.82E+00	4.12E-02	1.86E+00
	Total (Consumption grid)	A1-3	3.07E+01	5.58E-01	3.13E+01	2.46E+02	1.33E+00	2.47E+02
Construction process stage	Transport	A4	1.33E-02	0.00E+00	1.33E-02	9.24E-01	0.00E+00	9.24E-01
	Construction	A5	-5.95E-01	5.95E-01	1.92E-04	1.11E-02	0.00E+00	1.11E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.33E-02	0.00E+00	1.33E-02	9.24E-01	0.00E+00	9.24E-01
	Waste processing	C3	3.09E-02	0.00E+00	3.09E-02	5.41E+00	0.00E+00	5.41E+00
	Disposal	C4	1.07E-03	0.00E+00	1.07E-03	-4.94E+00	5.03E+00	8.56E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.53E+00	0.00E+00	-1.53E+00	-7.36E+01	0.00E+00	-7.36E+01

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	3.03E+00	0.00E+00	0.00E+00	2.54E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	5.41E-04
	Manufacturing	A3	5.40E-03	7.44E-07	0.00E+00	1.00E-03
	Total (Consumption grid)	A1-3	3.03E+00	7.44E-07	0.00E+00	2.56E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.05E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.80E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	1.05E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.15E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	9.26E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.28E-02

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)

(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
Product stage	Raw material supply	A1	1.10E+01	3.84E+01	5.69E-04
	Transport	A2	5.39E-03	9.50E-02	3.30E-05
	Manufacturing	A3	3.15E-02	9.64E-02	1.04E-05
	Total (Consumption grid)	A1-3	1.11E+01	3.85E+01	6.12E-04
Construction process stage	Transport	A4	1.04E-03	1.84E-02	6.37E-06
	Construction	A5	2.45E-04	4.16E-02	4.96E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.04E-03	1.84E-02	6.37E-06
	Waste processing	C3	7.27E-03	5.09E-02	3.81E-05
	Disposal	C4	1.23E-04	1.32E-01	5.50E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.79E-01	-1.40E+01	-7.87E-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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.60E-04	5.51E-09	5.95E-04	0.00E+00	-1.50E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.60E-04	5.51E-09	5.95E-04	0.00E+00	-1.50E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	3.71E-03	6.33E-11	0.00E+00	8.53E-04	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results – L7/50 1500mm with the weight of 6.62 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	1.93E+01	1.92E+01	9.09E-02	1.84E-02	1.06E-06	2.12E-01	8.57E-03
	Transport	A2	2.87E-01	2.86E-01	2.40E-04	1.14E-04	6.61E-08	1.27E-03	1.83E-05
	Manufacturing	A3	3.00E-02	7.31E-02	-4.34E-02	1.03E-04	7.31E-09	4.16E-04	1.90E-05
	Total (Consumption grid)	A1-3	1.96E+01	1.95E+01	4.77E-02	1.86E-02	1.13E-06	2.14E-01	8.61E-03
Construction process stage	Transport	A4	5.51E-02	5.50E-02	4.69E-05	2.16E-05	1.27E-08	2.23E-04	3.54E-06
	Construction	A5	5.88E-02	1.06E-03	5.77E-02	8.39E-07	1.43E-10	1.77E-05	5.31E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	5.51E-02	5.50E-02	4.69E-05	2.16E-05	1.27E-08	2.23E-04	3.54E-06
	Waste processing	C3	3.62E-01	3.62E-01	1.28E-04	3.61E-05	7.74E-08	3.76E-03	1.12E-05
	Disposal	C4	1.75E-03	1.74E-03	1.73E-06	1.65E-06	7.05E-10	1.64E-05	1.60E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.59E+00	-6.61E+00	2.07E-02	-1.87E-03	-2.64E-07	-2.40E-02	-2.61E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.40E-02	7.25E-01	8.02E-02	6.64E-04	2.15E+02	8.76E+00	2.66E-06
	Transport	A2	3.75E-04	4.11E-03	1.24E-03	9.88E-07	4.32E+00	1.93E-02	2.45E-08
	Manufacturing	A3	1.53E-04	1.34E-03	3.96E-04	9.78E-07	1.27E+00	2.96E-02	7.74E-09
	Total (Consumption grid)	A1-3	2.45E-02	7.30E-01	8.18E-02	6.66E-04	2.21E+02	8.81E+00	2.69E-06
Construction process stage	Transport	A4	6.73E-05	7.35E-04	2.25E-04	1.91E-07	8.32E-01	3.74E-03	4.75E-09
	Construction	A5	8.09E-06	8.71E-05	2.32E-05	2.35E-09	1.53E-02	1.04E-03	2.08E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	6.73E-05	7.35E-04	2.25E-04	1.91E-07	8.32E-01	3.74E-03	4.75E-09
	Waste processing	C3	1.67E-03	1.83E-02	5.02E-03	1.86E-07	4.97E+00	1.15E-02	1.01E-07
	Disposal	C4	5.70E-06	6.24E-05	1.82E-05	3.98E-09	4.87E-02	2.23E-03	3.30E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.69E-03	-6.03E-02	-3.32E-02	-4.98E-06	-6.68E+01	-4.74E-01	-4.42E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	Dimensionless
Product stage	Raw material supply	A1	1.20E+00	7.19E+02	2.15E-07	6.72E-07	7.92E+01
	Transport	A2	2.22E-02	3.36E+00	1.10E-10	3.51E-09	2.94E+00
	Manufacturing	A3	2.40E-02	2.08E+00	6.90E-10	1.33E-09	4.59E+00
	Total (Consumption grid)	A1-3	1.25E+00	7.24E+02	2.16E-07	6.77E-07	8.67E+01
Construction process stage	Transport	A4	4.28E-03	6.49E-01	2.10E-11	6.81E-10	5.71E-01
	Construction	A5	2.03E-04	1.51E-02	1.20E-11	3.96E-11	2.81E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.28E-03	6.49E-01	2.10E-11	6.81E-10	5.71E-01
	Waste processing	C3	2.24E-02	2.91E+00	1.12E-10	2.11E-09	6.32E-01
	Disposal	C4	2.16E-04	3.07E-02	7.80E-13	2.02E-11	1.02E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.18E-01	-1.98E+02	-3.53E-08	-1.36E-07	-1.30E+01

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
Product stage	Raw material supply	A1	2.67E+01	0.00E+00	2.67E+01	2.12E+02	8.20E-01	2.13E+02
	Transport	A2	6.05E-02	0.00E+00	6.05E-02	4.24E+00	0.00E+00	4.24E+00
	Manufacturing	A3	5.04E-01	4.94E-01	9.97E-01	1.39E+00	3.65E-02	1.43E+00
	Total (Consumption grid)	A1-3	2.73E+01	4.94E-01	2.78E+01	2.18E+02	8.57E-01	2.19E+02
Construction process stage	Transport	A4	1.17E-02	0.00E+00	1.17E-02	8.17E-01	0.00E+00	8.17E-01
	Construction	A5	-5.29E-01	5.30E-01	1.78E-04	1.05E-02	0.00E+00	1.05E-02
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.17E-02	0.00E+00	1.17E-02	8.17E-01	0.00E+00	8.17E-01
	Waste processing	C3	2.78E-02	0.00E+00	2.78E-02	4.87E+00	0.00E+00	4.87E+00
	Disposal	C4	4.15E-04	0.00E+00	4.15E-04	4.78E-02	0.00E+00	4.78E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.37E+00	0.00E+00	-1.37E+00	-6.62E+01	0.00E+00	-6.62E+01

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	2.68E+00	0.00E+00	0.00E+00	2.25E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	4.79E-04
	Manufacturing	A3	4.80E-03	5.07E-07	0.00E+00	8.54E-04
	Total (Consumption grid)	A1-3	2.69E+00	5.07E-07	0.00E+00	2.26E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	9.27E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.49E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	9.27E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2.83E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	5.22E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.15E-02

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)

(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
Product stage	Raw material supply	A1	9.82E+00	3.41E+01	5.05E-04
	Transport	A2	4.77E-03	8.42E-02	2.92E-05
	Manufacturing	A3	2.80E-02	8.19E-02	7.77E-06
	Total (Consumption grid)	A1-3	9.85E+00	3.42E+01	5.42E-04
Construction process stage	Transport	A4	9.17E-04	1.63E-02	5.63E-06
	Construction	A5	2.18E-04	3.68E-02	4.85E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	9.17E-04	1.63E-02	5.63E-06
	Waste processing	C3	6.54E-03	4.58E-02	3.43E-05
	Disposal	C4	5.06E-05	7.15E-04	3.19E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.10E-01	-1.26E+01	-7.08E-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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.15E-04	3.75E-09	4.04E-04	0.00E+00	-1.33E-02
	Total (Consumption grid)	A1-3	0.00E+00	3.15E-04	3.75E-09	4.04E-04	0.00E+00	-1.33E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	3.71E-03	6.33E-11	0.00E+00	8.53E-04	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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

## LCA Results - L10 1500mm with the weight of 5.89 kg/unit

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	1.71E+01	1.70E+01	8.04E-02	1.63E-02	9.37E-07	1.89E-01	7.61E-03
	Transport	A2	2.54E-01	2.54E-01	2.13E-04	1.01E-04	5.87E-08	1.13E-03	1.63E-05
	Manufacturing	A3	2.76E-02	6.61E-02	-3.86E-02	9.34E-05	6.53E-09	3.77E-04	1.75E-05
	Total (Consumption grid)	A1-3	1.74E+01	1.73E+01	4.20E-02	1.65E-02	1.00E-06	1.90E-01	7.64E-03
Construction process stage	Transport	A4	4.90E-02	4.89E-02	4.17E-05	1.92E-05	1.13E-08	1.99E-04	3.15E-06
	Construction	A5	5.22E-02	9.04E-04	5.13E-02	7.41E-07	1.19E-10	1.54E-05	4.71E-07
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	4.90E-02	4.89E-02	4.17E-05	1.92E-05	1.13E-08	1.99E-04	3.15E-06
	Waste processing	C3	3.22E-01	3.22E-01	1.14E-04	3.22E-05	6.89E-08	3.35E-03	9.99E-06
	Disposal	C4	1.56E-03	1.55E-03	1.54E-06	1.47E-06	6.28E-10	1.46E-05	1.42E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	5.86E+00	5.88E+00	1.84E-02	-1.66E-03	-2.35E-07	-2.13E-02	-2.32E-03

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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.13E-02	6.45E-01	7.12E-02	5.90E-04	1.91E+02	7.77E+00	2.36E-06
	Transport	A2	3.33E-04	3.64E-03	1.10E-03	8.77E-07	3.83E+00	1.72E-02	2.17E-08
	Manufacturing	A3	1.36E-04	1.20E-03	3.54E-04	9.09E-07	1.14E+00	2.76E-02	6.95E-09
	Total (Consumption grid)	A1-3	2.18E-02	6.50E-01	7.26E-02	5.91E-04	1.96E+02	7.82E+00	2.39E-06
Construction process stage	Transport	A4	5.98E-05	6.54E-04	2.00E-04	1.70E-07	7.40E-01	3.33E-03	4.22E-09
	Construction	A5	7.02E-06	7.56E-05	2.01E-05	2.06E-09	1.31E-02	9.25E-04	1.75E-10
Use stage	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
	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	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	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	5.98E-05	6.54E-04	2.00E-04	1.70E-07	7.40E-01	3.33E-03	4.22E-09
	Waste processing	C3	1.48E-03	1.63E-02	4.47E-03	1.66E-07	4.42E+00	1.02E-02	8.98E-08
	Disposal	C4	5.08E-06	5.56E-05	1.62E-05	3.54E-09	4.34E-02	1.99E-03	2.94E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.06E-03	-5.37E-02	-2.95E-02	-4.43E-06	-5.95E+01	-4.22E-01	-3.93E-07

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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.06E+00	6.38E+02	1.90E-07	5.97E-07	7.01E+01
	Transport	A2	1.97E-02	2.99E+00	9.78E-11	3.12E-09	2.61E+00
	Manufacturing	A3	2.10E-02	1.90E+00	6.47E-10	1.22E-09	4.10E+00
	Total (Consumption grid)	A1-3	1.11E+00	6.43E+02	1.91E-07	6.01E-07	7.68E+01
Construction process stage	Transport	A4	3.80E-03	5.78E-01	1.87E-11	6.06E-10	5.08E-01
	Construction	A5	1.78E-04	1.31E-02	1.07E-11	3.49E-11	2.42E-03
Use stage	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
	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	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.80E-03	5.78E-01	1.87E-11	6.06E-10	5.08E-01
	Waste processing	C3	1.99E-02	2.59E+00	1.00E-10	1.88E-09	5.63E-01
	Disposal	C4	1.93E-04	2.74E-02	6.95E-13	1.80E-11	9.11E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.05E-01	-1.76E+02	-3.14E-08	-1.21E-07	-1.16E+01

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
Product stage	Raw material supply	A1	2.37E+01	0.00E+00	2.37E+01	1.88E+02	6.56E-01	1.89E+02
	Transport	A2	5.37E-02	0.00E+00	5.37E-02	3.76E+00	0.00E+00	3.76E+00
	Manufacturing	A3	4.45E-01	4.46E-01	8.92E-01	1.23E+00	3.39E-02	1.27E+00
	Total (Consumption grid)	A1-3	2.42E+01	4.46E-01	2.46E+01	1.93E+02	6.90E-01	1.94E+02
Construction process stage	Transport	A4	1.04E-02	0.00E+00	1.04E-02	7.27E-01	0.00E+00	7.27E-01
	Construction	A5	-4.67E-01	4.68E-01	1.52E-04	8.76E-03	0.00E+00	8.76E-03
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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-02	0.00E+00	1.04E-02	7.27E-01	0.00E+00	7.27E-01
	Waste processing	C3	2.48E-02	0.00E+00	2.48E-02	4.34E+00	0.00E+00	4.34E+00
	Disposal	C4	3.70E-04	0.00E+00	3.70E-04	4.26E-02	0.00E+00	4.26E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.22E+00	0.00E+00	-1.22E+00	-5.89E+01	0.00E+00	-5.89E+01

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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	2.38E+00	0.00E+00	0.00E+00	2.00E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	4.25E-04
	Manufacturing	A3	4.44E-03	4.37E-07	0.00E+00	7.89E-04
	Total (Consumption grid)	A1-3	2.39E+00	4.37E-07	0.00E+00	2.01E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	8.25E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.20E-05
Use stage	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
	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	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	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	8.25E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2.52E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	4.65E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.02E-02

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)

(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
Product stage	Raw material supply	A1	8.69E+00	3.02E+01	4.47E-04
	Transport	A2	4.24E-03	7.47E-02	2.59E-05
	Manufacturing	A3	2.63E-02	7.59E-02	6.84E-06
	Total (Consumption grid)	A1-3	8.72E+00	3.03E+01	4.80E-04
Construction process stage	Transport	A4	8.16E-04	1.45E-02	5.01E-06
	Construction	A5	1.92E-04	3.27E-02	3.94E-08
Use stage Construction process stage	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
	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	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.16E-04	1.45E-02	5.01E-06
	Waste processing	C3	5.82E-03	4.08E-02	3.05E-05
	Disposal	C4	4.51E-05	6.37E-04	2.84E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.43E-01	-1.12E+01	-6.30E-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
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	2.81E-04	3.24E-09	3.49E-04	0.00E+00	-1.16E-02
	Total (Consumption grid)	A1-3	0.00E+00	2.81E-04	3.24E-09	3.49E-04	0.00E+00	-1.16E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	2.95E-03	5.03E-11	0.00E+00	6.78E-04	0.00E+00
Use stage	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
	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	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	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
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	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	Results
A4 – Transportation	50km by road has been modelled for module A4 as a typical distance to the installation site. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module A4 if required		
	Road transport, 16-32 tonne lorry	Km	50
	Capacity Utilisation	%	26
	Fuel consumption	l/km	0.227
A5 – Installation	For the installation procedure please refer the construction Installation section on Page 6 of this document. For the installation of lintels, ancillary materials are generally not required beyond standard mortar or fixings. The packaging used to pack the product will result as recyclable waste at the installation site.		
B1-B5	Once the lintels are installed in the building and in a suitable environment, lintels can last for decades without needing maintenance and replacement. Therefore, no impacts in use stage		
Reference service life	60 years		
C1 – Deconstruction	Steel lintels, used in both internal and external masonry and timber frame walls, are typically made from galvanized or stainless steel. These lintels provide support for masonry above openings such as windows and doors.		
	At the end of life, steel lintels are carefully removed using power tools and separated from other building waste. They are then sent to scrap metal facilities, where they undergo cleaning, shredding, and melting in furnaces. The recycled steel is repurposed into new construction materials, automotive parts, or industrial applications.		
	Recycling steel lintels helps reduce the demand for virgin materials and significantly lowers CO <sub>2</sub> emissions, contributing to a more sustainable construction cycle.		
C2 – Transportation	It's assumed that 100% of the product recovered from the demolition site.		
	50km by road has been modelled for module C2 as a typical distance from the demolition site to the pre-processing unit. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required		
C3 – Waste processing	Road transport	Lorry, 16-32 tonne	50 km
	At the waste processing facility, the recovered steel lintels will undergo waste processing. The lintels are composed primarily of galvanized steel, stainless steel, and a small amount of insulation material. According to the BRE PCR EN 15804 3.1, 95% of the steel will be recycled, while 5% will be sent to landfill.		
Hi Therm+ 100 1500 mm	The insulation material, EPS, is 100% recyclable; however, it has not been considered in this EPD analysis. It is assumed that during the end-of-life phase, the EPS foam remains attached to the steel components and cannot be separated. Consequently, this portion of the material is included in the final waste sent to landfill.		
	Steel waste 95% to recycling	kg	10.62
Hi Therm+ 110 1500 mm	Steel waste 95% to recycling	kg	11.40
Hi Therm+ 150 1500 mm	Steel waste 95% to recycling	kg	11.99
L1/S 100 1500mm	Steel waste 95% to recycling	kg	9.37
L1/S 110 1500mm	Steel waste 95% to recycling	kg	11.19

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
L1/S 150 1500 mm	Steel waste 95% to recycling	kg	12.07
L1/E 100 1500 mm	Steel waste 95% to recycling	kg	8.88
BOX 100 1500mm	Steel waste 95% to recycling	kg	6.99
L7/50 1500mm	Steel waste 95% to recycling	kg	6.29
L10 1500 mm	Steel waste 95% to recycling	kg	5.60
C4 – Disposal	Some of the materials can't be recovered during the waste processing process and they will be end up in landfill		
Hi Therm+ 100 1500 mm	Steel – 5% to landfill	kg	0.56
	EPS waste	kg	0.15
Hi Therm+ 110 1500 mm	Steel – 5% to landfill	kg	0.60
	EPS waste	kg	0.20
Hi Therm+ 150 1500 mm	Steel – 5% to landfill	kg	0.63
	EPS waste	kg	0.25
L1/S 100 1500mm	Steel – 5% to landfill	kg	0.49
	EPS waste	kg	0.12
L1/S 110 1500mm	Steel – 5% to landfill	kg	0.59
	EPS waste	kg	0.16
L1/S 150 1500 mm	Steel – 5% to landfill	kg	0.64
	EPS waste	kg	0.22
L1/E 100 1500 mm	Steel – 5% to landfill	kg	0.47
	EPS waste	kg	0.15
BOX 100 1500mm	Steel – 5% to landfill	kg	0.37
	EPS waste	kg	0.13
L7/50 1500mm	Steel – 5% to landfill	kg	0.33
L10 1500 mm	Steel – 5% to landfill	kg	0.29

**Scenarios and additional technical information**

Scenario	Parameter	Units	Results
Module D	<p>In calculating the benefits of recycling the steel the pre-existing recycled content (37.80%) has been removed, and the benefits have been calculated only for virgin steel. SM = 37.80 %</p> <p>Note: The pre-existing content was sourced from the Ecoinvent 3.8 Galvanised steel dataset.</p>		
	<b>Benefits due to recycling of Hi Therm+ 100 1500mm lintel</b>		
	Steel recovered at C3 waste processing = 10.62 kg	kg	6.61
	Therefore, $10.62 - (37.80 \% \times 10.62 \text{ kg}) = 6.61 \text{ kg}$		
	<b>Benefits due to recycling of Hi Therm+ 110 1500mm lintel.</b>		
	Steel recovered at C3 waste processing = 11.40 kg	kg	7.09
	Therefore, $11.40 - (37.80 \% \times 11.40 \text{ kg}) = 7.09 \text{ kg}$		
	<b>Benefits due to recycling of Hi Therm+ 150 1500mm lintel</b>		
	Steel recovered at C3 waste processing = 11.74 kg	kg	7.46
Therefore, $11.74 - (37.80 \% \times 11.74 \text{ kg}) = 7.30 \text{ kg}$			
<b>Benefits due to recycling of L1/S 100 1500mm lintel</b>			
Steel recovered at C3 waste processing = 9.37 kg	kg	5.83	
Therefore, $9.37 - (37.80 \% \times 9.37 \text{ kg}) = 5.58 \text{ kg}$			
<b>Benefits due to recycling of L1/S 110 1500mm lintel</b>			
Steel recovered at C3 waste processing = 11.19 kg	kg	6.96	
Therefore, $11.19 - (37.80 \% \times 11.19 \text{ kg}) = 6.96 \text{ kg}$			
<b>Benefits due to recycling of L1/S 150 1500mm lintel</b>			
Steel recovered at C3 waste processing = 12.07 kg	kg	7.51	
Therefore, $12.07 - (37.80 \% \times 12.07 \text{ kg}) = 7.51 \text{ kg}$			
<b>Benefits due to recycling of L1/E 1500 mm lintel</b>			
Steel recovered at C3 waste processing = 9.03 kg	kg	5.61	
Therefore, $9.03 - (37.80 \% \times 9.03 \text{ kg}) = 5.61 \text{ kg}$			

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
	Benefits due to recycling of <b>BOX 100 1500mm</b> lintel		
	Steel recovered at C3 waste processing = 6.99 kg	kg	4.35
	Therefore, $6.99 - (37.80 \% \times 6.99 \text{ kg}) = 4.35 \text{ kg}$		
	Benefits due to recycling of <b>L7/50 1500mm</b> lintel		
	Steel recovered at C3 waste processing = 6.29 kg	kg	3.91
	Therefore, $6.29 - (37.80 \% \times 6.29 \text{ kg}) = 3.91 \text{ kg}$		
	Benefits due to recycling of <b>L10 1500 mm</b> lintel		
	Steel recovered at C3 waste processing = 5.60 kg	kg	3.48
	Therefore, $5.60 - (37.80 \% \times 5.60 \text{ kg}) = 3.48 \text{ kg}$		

### Interpretation of results:

The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing phase of steel lintels information modules A1-A3 of EN15804:2012+A2:2019. The below bar chart figure 1 represents the Global Warming Potential (GWP) of producing the L1/S 1500mm in kg CO<sub>2</sub> equivalent (random product which is taken as a representative). Steel production has the highest emissions, followed by coating of steel. Steel recycling and EPS production contribute moderately. The data highlights that steel manufacturing are the most carbon-intensive processes, suggesting potential areas for emission reduction efforts.

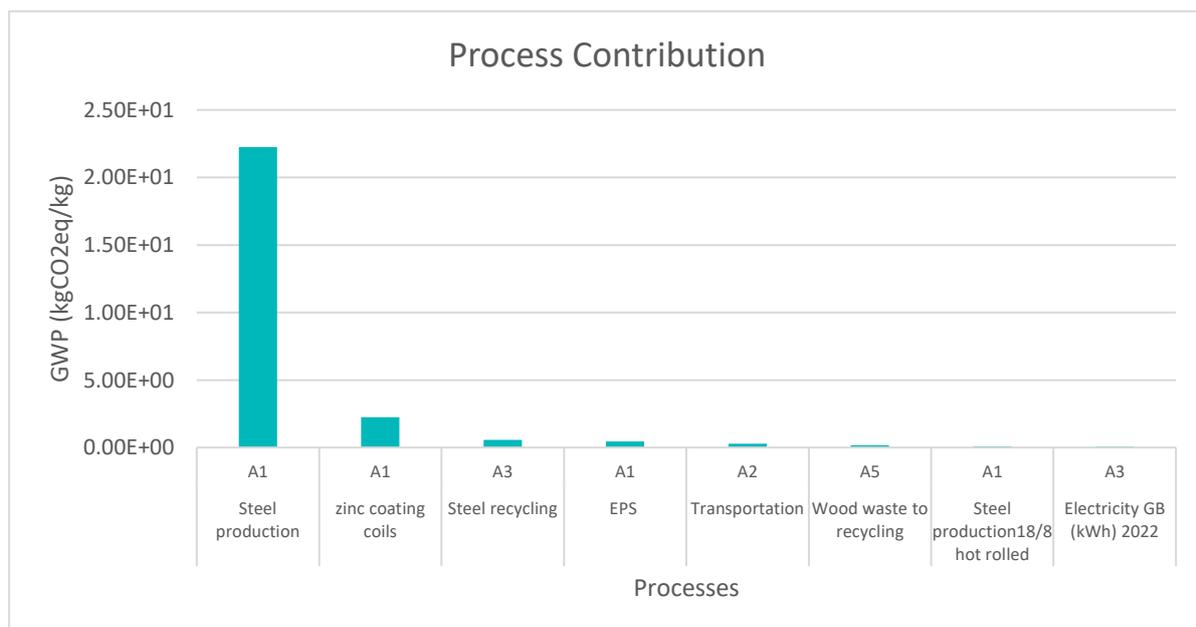
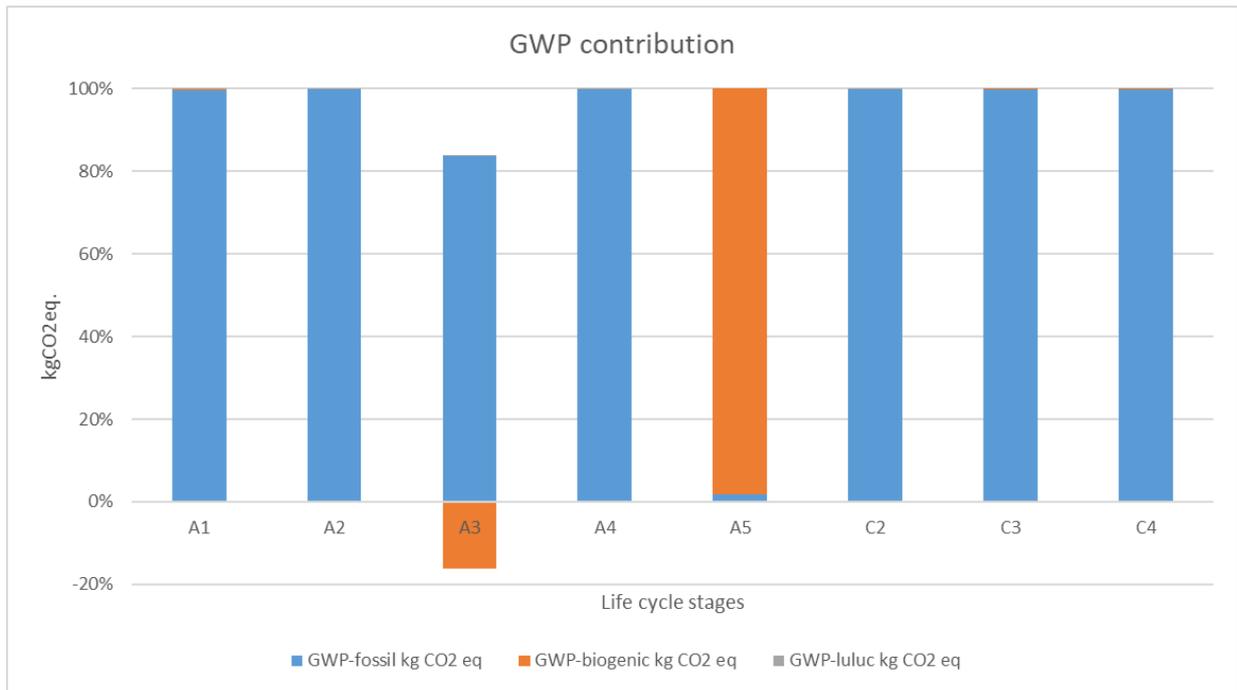


Figure 1 Process contribution graph

The below figure 2 illustrates the global warming potential (GWP) contributions across different life cycle stages, showing how fossil, biogenic, and land-use related emissions vary. Most stages are dominated by fossil-based

emissions, which account for nearly all the impact. However, two stages stand out: in A3, biogenic emissions appear as a negative value, indicating some level of carbon uptake or credit, while in A5, biogenic emissions make up the majority of the impact. This highlights that although fossil emissions are the main driver across the life cycle, biogenic carbon flows can significantly affect results in certain stages.



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