Statement of Verification

BREG EN EPD No: 000763 Issue: 01

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

CPV Ltd Woodington Mill

are in accordance with the requirements of:

EN 15804:2012+A2:2019

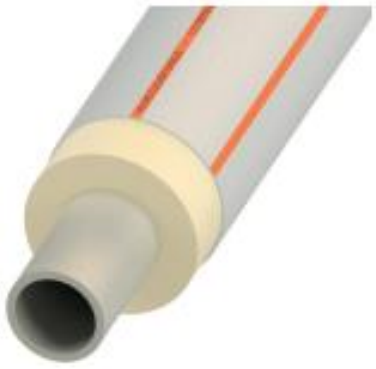
and

BRE Global Scheme Document SD207

This declaration is for:
1m of Hiline Clover pipes ranging from 25mm Internal Pipe with a weight of 1.67 kg/m to 250mm Internal Pipe with a weight of 30.548 kg/m

Company Address

Woodington Mill,
CPV Ltd Woodington Mill,
East Wellow Romsey,
Hampshire.
SO51 6DQ



Signed for BRE Global Limited	Hayley Thomson Operator	
10 February 2026 Date of this Issue	10 February 2026 Date of First Issue	09 February 2031 Expiry Date

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Environmental Product Declaration

EPD Number: 000763

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE 2025 Product Category Rules (PN 514 Rev 3.2) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019
Commissioner of LCA study	**LCA consultant/Tool**
Woodington Mill, CPV Ltd Woodington Mill, East Wellow Romsey, Hampshire. SO51 6DQ	LCA consultant: Chris Wilson - Trident Utilities LCA Tool: BRE LINA A2
Declared/Functional Unit	**Applicability/Coverage**
1m of Hiline Clover pipes ranging from 25mm Internal Pipe with a weight of 1.67 kg/m to 250mm Internal Pipe with a weight of 30.548 kg/m.	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 [a]	
Independent verification of the declaration and data according to EN ISO 14025:2010 ☒Internal ☐ External	
(Where appropriate [b]) Third party verifier: Francis Yu / Regina Poveda	
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
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☑	☑	☑	☑		☑

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Woodington Mill,
CPV Ltd Woodington Mill,
East Wellow Romsey,
Hampshire.
SO51 6DQ

Construction Product:

Product Description

CPV's next generation pre-insulated pipe system enables heat networks to play a leading role in the drive to decarbonise heat.

Hiline Clover is available in sizes from DN20 to DN250, with continuous operating temperatures up to 80°C and peaks up to 95°C.

The system's performance capabilities have a 50-year service life expectancy and are validated by compliance with international material performance standards.

Hiline Clover is compatible with CPV's other ranges of pre-insulated composite polymer pipe systems to provide both flexible pipes and large diameter pipes up to DN600.

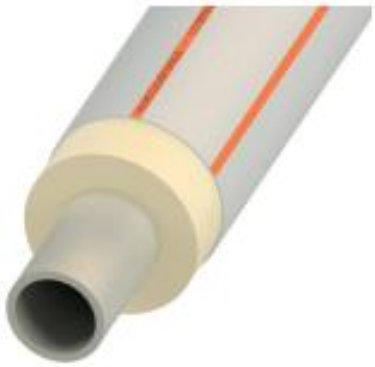
Electrofusion couplers utilise built in electric heating elements within the fittings that, when activated, melt the inside of the fitting and the outside of the pipe, creating a highly durable homogeneous joint.

This EPD covers Hiline Clover pipes ranging from 25mm Internal Pipe with a Declared Unit of 1.67 kg/m to 250mm Internal Pipe with a Declared Functional Unit of 30.548 kg/m. The composition and manufacturing processes are the same across the product range.

Technical Information

Technical properties	Value, Unit
Maximum continuous operating temperature:	+80°C
Maximum peak operating temperature:	95°C
Maximum continuous operating pressure:	10 bars
Operational service life:	50 years
Thermal conductivity:	0.027 W/mK
Thermal Insulation:	PUR (CFC free, water blown)

Note: The above technical properties are same for all the products included in the EPD. In addition, the technical properties are taken from the product technical sheet and for more information please contact CPV ltd. Contact Technical support for service life for specific operating parameters.



Main Product Contents

Material/Chemical Input	Average %
Polypropylene	70-75
Isocyanate	10-15
Polyol	10-15
Others	<1

Note: The above composition is an average for all the products included in the EPD

Manufacturing Process

Hiline Clover Inner pipe and Outer Casing Extrusion Process for all the product ranges included in the EPD.

1. Raw Material Preparation:
    - Granules: The raw material for extrusion is in the form of plastic polypropylene (PP & PP-RCT) granules.
    - Additives: The specified colorant is added to the mix, which is also in granular form.

2. Feeding the Extruder:
    - Hopper: The plastic pellets are fed into a hopper, which is a large container that holds the raw material.
    - Gravimetric Feeder: The hopper has a feeder that controls the amount of material entering the extruder to ensure consistent flow.

3. Melting and Mixing:
    - Extruder Barrel and Screw: The material moves from the hopper into the extruder barrel, which contains a rotating screw. This moves the material at a set speed.
    - Heating Zones: The barrel is divided into several heating zones that progressively increase in temperature, melting the plastic as it moves through.
    - Mixing: The screw not only pushes the material forward but also mixes it thoroughly to ensure uniform melting and consistency.

4. Extrusion:
    - Die: At the end of the extruder, the molten plastic is forced through a die, which shapes the material into the desired dimensions. The shape of the die determines the shape of the final product.
    - Cooling: As the extruded plastic exits the die, it is still hot and needs to be cooled to maintain its shape. This is done with several water baths.

5. Post-Extrusion Processing:
    - Haul-Off: A haul-off unit continuously draws the extruded product away from the die at a controlled speed, ensuring consistent thickness and shape.
    - Cutting: A cutting machine then cuts the pipe at the set length.
    - Processing: Any further processing to reach the desired finish (e.g. roughening or routering) is now done at this stage.

6. Quality Control/Inspection and Packing:
    - Inspection: The final product is inspected for quality, ensuring it meets specified dimensions, surface finish, and other properties.
    - Testing: Pipes are subject to testing as per the international standard (hydrostatic etc).

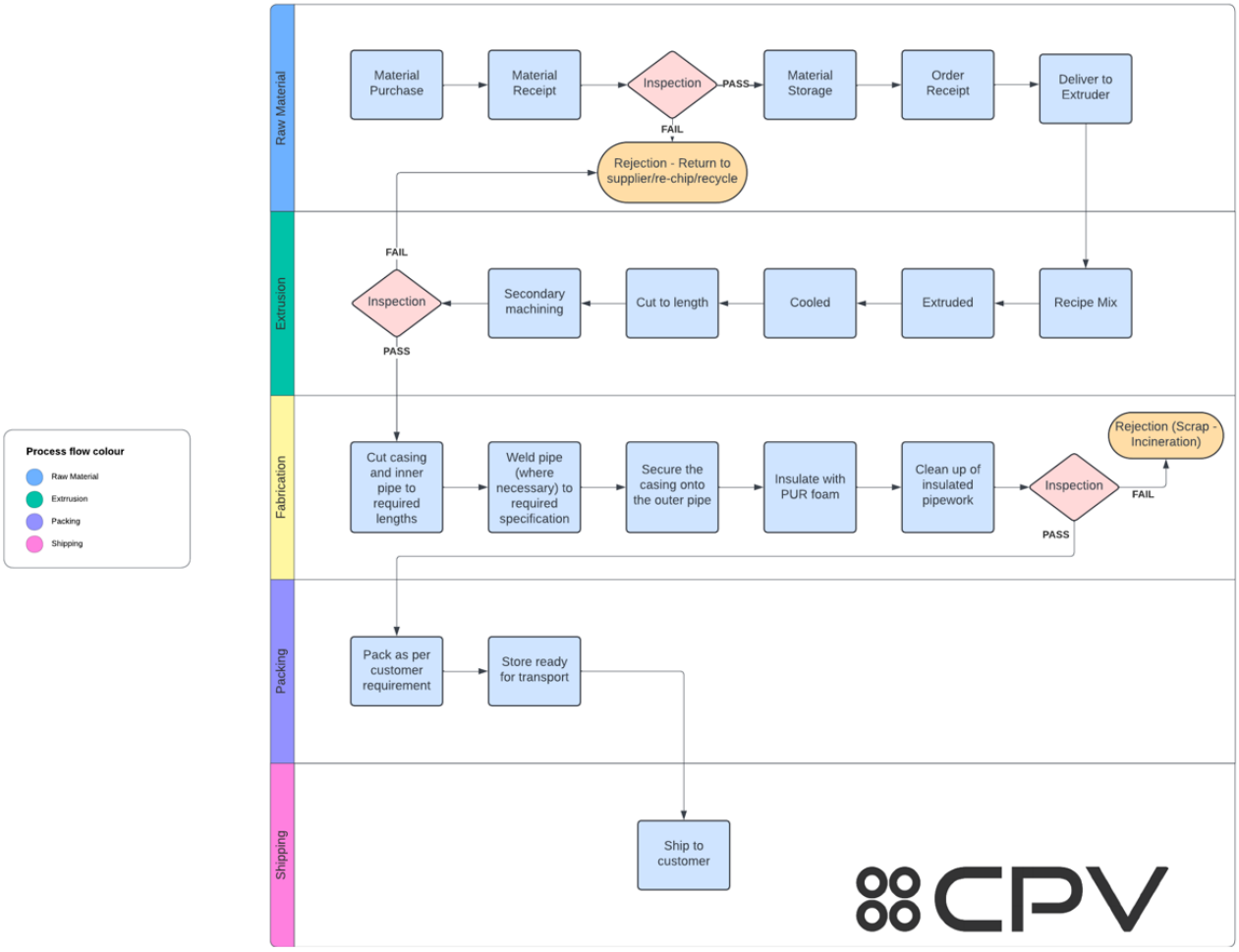
Hiline Clover Pre-Insulation Process:

1. Pipework Fabrication:
    - Length: As required, the inner and outer casing pipework are cut to the desired length using a saw.
    - Fabrication: If there pipework needs fabricating into different shapes, e.g. bends, tee's. It is welded into place using butt welding techniques.
    - Inspection: Dimensions are checked against the customer requirements.
    - Testing: Butt welds are inspected and tested for integrity.

2. Pre-foam preparation:
    - Pipework assembly: The outer casing is slid over the inner pipe and secured in place with spiders.
    - End Caps: End caps are secured onto the ends of the pipe to keep foam contained.

3. Foaming Process:
    - Foam Shooting: PUR foam is made by shooting a mix of Polyol and Isocyanate to a specified ratio suitable for the application into the void between the inner pipe and outer casing.
    - Inspection: A thermal imaging camera is used to ensure the foam has reached all areas of the void.
    - Clean Up: Once the foam has cooled any excesses can be cleaned off and the pipe prepped for packing.
    - Packing: The pipe can then be packed as per the customer specification and shipped.

Process flow diagram



Construction Installation

CPV - The waste involves cutting the inner pipe to suit, no more than 1% of the pipe wasted. Then welding the inner together with an electrofusion coupler. The outer casing is then welded using an electrofusion oversleeve. No outer casing should be wasted in the normal process. Following this the gap between the inner and outer is filled with a bottle pour ISO/POLY foam mix. If the pipe is to be buried a trench is dug using a standard mini excavator and the pipe laid in the trench and buried. The installation is complete after that.

End of Life

At End-of-Life Pipework is dug out of its trench, then cut using a powered saw into manageable length to be disposed of. It's assumed as 100% of the product will be recovered at its end of life.

According to BRE 2025 Product Category Rules (PN 514 Rev 3.2), 100% of pipework will be placed in skips ad sent to incineration for energy recovery. 100% of product will be incinerated at waste processing facility, therefore no waste to end up in landfill.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m of Hiline Clover pipes ranging from 25mm Internal Pipe with a weight of 1.67 kg/m to 250mm Internal Pipe with a weight of 30.548 kg/m.

System boundary

This is a Cradle-to-Gate with Options EPD, reporting the upstream processing stages A1 to A3, construction stages A4-A5, end-of-life stages C1-C4 and D in accordance with EN 15804:2012+A2:2019 and BRE 2025 Product Category Rules (PN 514 Rev 3.2).

Data sources, quality 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 Hiline Clover pipe on a product specific basis with a weight of 1.6811 kg/m, and it includes the total amount of polypropylene granulate used to manufacture Hiline Clover over the period of one year (from 01/01/2023 to 31/12/2023) which resulted at 11% of the total production. The results of this EPD refer to a Hiline Clover pipes ranging from 25mm inner pipe to with a weight of 1.6811 kg/m to 250mm with a weight of 30.5479 kg/m.

In addition to Hiline Clover pipe, other products are manufactured in the CPV manufacturing unit. Therefore, the allocation of electricity, fuel, waste, water consumption, and discharge are required. This allocation has been done according to the provisions of BRE PCR PN514 and EN 15804. Energy, water consumption/discharge, and non- production waste is allocated by using “metre” production quantity and production waste is from the actual product waste calculation. The manufacturer has confirmed that the manufacturing department is the main consumer of the company’s electricity and that on-site solar power is used for production. The on-site electricity generation period covers April 2023 to December 2023.

• The UK Location-based approach has been used for energy in the LCA modelling, the consumption mix was used for electricity with an emissions factor of 0.239kgCO2e/kWh
• The UK Natural gas at industrial furnace was used with an emissions factor of 0.232 kgCO2eq/kWh
• The UK renewable electricity (roof, mono solar PV) was used with an emission factor of 0.125 kgCO2e/kWh

Figures for the raw materials, ancillary materials and packaging were from actual usages. During the production process, wood waste is sent for recycling & incineration. Plastic waste is sent to incineration in accordance with product Category Rules. Further, the mass balance with the range for all the product ranges i.e., total raw material quantity is equal to the production output of the product.

Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production) from the ecoinvent 3.8 database. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN 15804:2012+A2:2019

ISO14044 guidance. Quality Level	**Geographical representativeness**	**Technical representativeness**	**Time representativeness**
Very Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e., identical technology).	There is approximately less than 3 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific European 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 3 years difference between the reference year according to the documentation, and the time period for which data are representative.

Cut-off criteria

All raw materials and energy input to the manufacturing process have been included, except for direct emissions to air, water, and soil, which are not measured. The inventory process in this LCA includes all data related to raw material, packaging material and consumable items

Summary table

Hiline Clover	Weight per m	GWP total
25 mm	1.68	6.13E+00
32 mm	2.01	8.80E+00
40 mm	2.22	7.05E+00
50 mm	2.74	7.98E+00
63 mm	3.55	1.03E+01
75 mm	4.18	1.24E+01
90 mm	6.13	1.82E+01
110 mm	8.43	2.41E+01
125 mm	9.86	2.86E+01
160 mm	16.65	4.77E+01
200 mm	25.27	7.35E+01
250 mm	30.55	8.78E+01

LCA Results – 1m of Hiline Clover 25mm with the weight of 1.68 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	4.78E+00	4.72E+00	5.36E-02	1.91E-03	3.80E-07	2.21E-02	9.83E-04
	Transport	A2	1.08E-01	1.08E-01	7.09E-05	4.97E-05	2.43E-08	1.06E-03	6.27E-06
	Manufacturing	A3	1.25E+00	4.87E-01	7.30E-01	1.92E-04	1.96E-08	1.59E-03	1.39E-04
	Total (Consumption grid)	A1-3	6.13E+00	5.32E+00	7.84E-01	2.16E-03	4.24E-07	2.47E-02	1.13E-03
Construction process stage	Transport	A4	3.04E-02	3.04E-02	2.59E-05	1.19E-05	7.03E-09	1.23E-04	1.96E-06
	Construction	A5	2.63E+00	2.50E+00	1.27E-01	5.30E-04	2.35E-07	1.55E-02	2.83E-04
End of life	Deconstruction, demolition	C1	2.17E+00	2.17E+00	3.46E-03	4.43E-04	2.57E-07	1.04E-02	1.86E-04
	Transport	C2	3.06E-03	3.05E-03	2.96E-06	1.10E-06	7.29E-10	1.27E-05	1.90E-07
	Waste processing	C3	4.38E+00	4.38E+00	2.21E-04	2.55E-05	8.58E-09	1.52E-03	1.05E-05
	Disposal	C4	0.00E+00	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	-1.68E+00	-1.66E+00	-1.81E-02	-2.05E-03	-1.13E-07	-8.22E-03	-7.64E-04

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

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

LCA Results (continued)

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

Parameters describing environmental impacts

			EP-marine	EP-terrestrial	POCP	ADP-mineral &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	5.25E-03	3.94E-02	1.64E-02	3.97E-05	1.38E+02	3.55E+00	3.08E-07
	Transport	A2	2.79E-04	3.08E-03	8.53E-04	3.30E-07	1.58E+00	6.52E-03	8.12E-09
	Manufacturing	A3	1.44E-03	2.82E-03	9.15E-04	3.23E-05	3.10E+00	-4.99E-01	1.10E-08
	Total (Consumption grid)	A1-3	6.97E-03	4.53E-02	1.82E-02	7.23E-05	1.43E+02	3.06E+00	3.27E-07
Construction process stage	Transport	A4	3.72E-05	4.06E-04	1.24E-04	1.06E-07	4.60E-01	2.07E-03	2.62E-09
	Construction	A5	5.44E-03	5.70E-02	1.69E-02	1.88E-05	5.46E+01	1.31E+00	4.02E-07
End of life	Deconstruction, demolition	C1	4.39E-03	4.77E-02	1.30E-02	2.86E-06	2.05E+01	1.47E-01	2.53E-07
	Transport	C2	3.88E-06	4.25E-05	1.37E-05	7.00E-09	4.76E-02	2.30E-04	3.59E-10
	Waste processing	C3	1.05E-03	7.95E-03	1.90E-03	2.63E-07	1.00E+00	1.12E-01	5.72E-09
	Disposal	C4	0.00E+00	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	-1.36E-03	-1.38E-02	-3.71E-03	-2.15E-06	-3.23E+01	-6.13E-01	-5.18E-08

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.49E-01	2.01E+02	2.87E-08	3.03E-07	6.28E+00
	Transport	A2	7.96E-03	1.19E+00	4.60E-11	1.18E-09	9.33E-01
	Manufacturing	A3	4.11E-02	1.92E+01	1.18E-09	2.56E-07	7.57E+00
	Total (Consumption grid)	A1-3	3.98E-01	2.21E+02	2.99E-08	5.60E-07	1.48E+01
Construction process stage	Transport	A4	2.36E-03	3.59E-01	1.16E-11	3.76E-10	3.16E-01
	Construction	A5	3.02E-01	8.91E+01	1.25E-09	4.84E-08	5.38E+00
End of life	Deconstruction, demolition	C1	2.79E-01	1.96E+01	6.79E-10	1.22E-08	4.38E+00
	Transport	C2	2.41E-04	3.71E-02	1.03E-12	4.06E-11	5.44E-02
	Waste processing	C3	1.62E-03	4.19E+00	2.39E-10	8.66E-09	2.17E-01
	Disposal	C4	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	-8.05E-01	-2.25E+01	-4.02E-10	-1.23E-08	-1.04E+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	3.92E+00	0.00E+00	3.92E+00	8.47E+01	5.21E+01	1.37E+02
	Transport	A2	2.02E-02	0.00E+00	2.02E-02	1.55E+00	0.00E+00	1.55E+00
	Manufacturing	A3	-5.78E+00	7.78E+00	2.00E+00	-3.33E+00	6.61E+00	3.29E+00
	Total (Consumption grid)	A1-3	-1.84E+00	7.78E+00	5.94E+00	8.29E+01	5.87E+01	1.42E+02
Construction process stage	Transport	A4	6.47E-03	0.00E+00	6.47E-03	4.51E-01	0.00E+00	4.51E-01
	Construction	A5	1.91E+00	8.39E-01	2.75E+00	4.32E+01	1.29E+01	5.60E+01
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	1.23E+01	7.95E+00	2.03E+01
	Transport	C2	6.05E-04	0.00E+00	6.05E-04	4.67E-02	0.00E+00	4.67E-02
	Waste processing	C3	6.84E-03	0.00E+00	6.84E-03	-3.94E+01	3.97E+01	2.97E-01
	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	-5.29E+00	0.00E+00	-5.29E+00	-3.23E+01	0.00E+00	-3.23E+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^3
Product stage	Raw material supply	A1	3.42E-03	0.00E+00	0.00E+00	8.38E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.62E-04
	Manufacturing	A3	4.56E-03	7.76E-07	0.00E+00	-1.14E-02
	Total (Consumption grid)	A1-3	7.98E-03	7.76E-07	0.00E+00	7.26E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	5.12E-05
	Construction	A5	6.44E-03	5.58E-06	0.00E+00	3.17E-02
End of life	Deconstruction, demolition	C1	5.31E-03	5.56E-06	0.00E+00	4.59E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	5.66E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2.63E-03
	Disposal	C4	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	-1.53E-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	1.88E-01	3.98E+00	1.22E-04
	Transport	A2	1.81E-03	2.86E-02	1.07E-05
	Manufacturing	A3	3.61E-02	1.53E+00	1.55E-05
	Total (Consumption grid)	A1-3	2.26E-01	5.54E+00	1.49E-04
Construction process stage	Transport	A4	5.07E-04	9.00E-03	3.11E-06
	Construction	A5	7.02E-02	8.74E-01	1.54E-04
End of life	Deconstruction, demolition	C1	3.37E-02	5.75E-01	1.37E-04
	Transport	C2	5.01E-05	8.71E-04	3.19E-01
	Waste processing	C3	2.24E-02	1.25E+00	4.83E-07
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.04E-01	-4.50E+00	-2.17E-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	1.35E-05	3.63E-02	6.19E-04	1.31E-01	2.13E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	3.63E-02	6.19E-04	1.31E-01	2.13E-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	9.67E-05	9.39E-03	4.46E-03	2.78E-02	2.13E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	2.58E-01	4.44E-03	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 – 1m of Hiline Clover 32mm with the weight of 2.01 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	5.82E+00	5.75E+00	6.67E-02	2.37E-03	4.80E-07	2.72E-02	1.22E-03
	Transport	A2	1.28E-01	1.28E-01	8.42E-05	5.87E-05	2.87E-08	1.24E-03	7.42E-06
	Manufacturing	A3	2.85E+00	4.81E-01	2.22E+00	4.12E-04	3.22E-08	6.63E-03	5.92E-04
	Total (Consumption grid)	A1-3	8.80E+00	6.35E+00	2.29E+00	2.84E-03	5.41E-07	3.50E-02	1.82E-03
Construction process stage	Transport	A4	3.64E-02	3.63E-02	3.10E-05	1.43E-05	8.41E-09	1.47E-04	2.34E-06
	Construction	A5	4.39E+00	4.21E+00	1.72E-01	9.39E-04	2.93E-07	2.17E-02	4.90E-04
End of life	Deconstruction, demolition	C1	3.94E+00	3.94E+00	3.78E-03	4.75E-04	2.71E-07	1.09E-02	2.14E-04
	Transport	C2	3.65E-03	3.65E-03	3.54E-06	1.31E-06	8.71E-10	1.52E-05	2.27E-07
	Waste processing	C3	5.24E+00	5.24E+00	2.73E-04	3.13E-05	1.06E-08	1.89E-03	1.29E-05
	Disposal	C4	0.00E+00	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	-2.01E+00	-1.98E+00	-2.11E-02	-2.47E-03	-1.36E-07	-9.75E-03	-8.99E-04

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

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

LCA Results (continued)

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

Parameters describing environmental impacts

			EP-marine	EP-terrestrial	POCP	ADP-mineral &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	6.53E-03	4.85E-02	2.01E-02	4.88E-05	1.66E+02	4.40E+00	3.82E-07
	Transport	A2	3.28E-04	3.62E-03	1.00E-03	3.91E-07	1.87E+00	7.73E-03	9.62E-09
	Manufacturing	A3	6.94E-03	7.57E-03	2.58E-03	1.94E-04	5.01E+00	-3.04E+00	3.18E-08
	Total (Consumption grid)	A1-3	1.38E-02	5.97E-02	2.37E-02	2.44E-04	1.73E+02	1.37E+00	4.23E-07
Construction process stage	Transport	A4	4.44E-05	4.85E-04	1.49E-04	1.26E-07	5.49E-01	2.47E-03	3.14E-09
	Construction	A5	6.69E-03	6.93E-02	2.22E-02	3.03E-05	1.11E+02	2.11E+00	4.90E-07
End of life	Deconstruction, demolition	C1	4.64E-03	4.99E-02	1.36E-02	3.14E-06	2.12E+01	2.67E-01	2.56E-07
	Transport	C2	4.64E-06	5.08E-05	1.63E-05	8.36E-09	5.68E-02	2.75E-04	4.29E-10
	Waste processing	C3	1.32E-03	9.90E-03	2.37E-03	3.25E-07	1.24E+00	1.42E-01	7.05E-09
	Disposal	C4	0.00E+00	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	-1.62E-03	-1.65E-02	-4.43E-03	-2.66E-06	-3.90E+01	-7.24E-01	-6.12E-08

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	4.31E-01	2.54E+02	3.65E-08	3.84E-07	7.78E+00
	Transport	A2	9.42E-03	1.41E+00	5.44E-11	1.39E-09	1.11E+00
	Manufacturing	A3	5.74E-02	9.37E+01	5.84E-09	1.58E-06	1.20E+01
	Total (Consumption grid)	A1-3	4.98E-01	3.49E+02	4.24E-08	1.97E-06	2.08E+01
Construction process stage	Transport	A4	2.82E-03	4.29E-01	1.39E-11	4.50E-10	3.77E-01
	Construction	A5	3.88E-01	1.11E+02	1.84E-09	7.72E-08	8.25E+00
End of life	Deconstruction, demolition	C1	2.82E-01	2.47E+01	8.80E-10	1.85E-08	4.57E+00
	Transport	C2	2.88E-04	4.44E-02	1.23E-12	4.86E-11	6.50E-02
	Waste processing	C3	1.99E-03	5.25E+00	2.91E-10	1.06E-08	2.66E-01
	Disposal	C4	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	-9.88E-01	-2.69E+01	-4.82E-10	-1.47E-08	-1.26E+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	4.86E+00	0.00E+00	4.86E+00	1.03E+02	6.19E+01	1.65E+02
	Transport	A2	2.40E-02	0.00E+00	2.40E-02	1.84E+00	0.00E+00	1.84E+00
	Manufacturing	A3	-1.74E+01	2.01E+01	2.71E+00	-1.01E+01	1.49E+01	4.86E+00
	Total (Consumption grid)	A1-3	-1.25E+01	2.01E+01	7.59E+00	9.44E+01	7.69E+01	1.71E+02
Construction process stage	Transport	A4	7.74E-03	0.00E+00	7.74E-03	5.39E-01	0.00E+00	5.39E-01
	Construction	A5	2.54E+00	1.11E+00	3.65E+00	7.48E+01	3.71E+01	1.12E+02
End of life	Deconstruction, demolition	C1	1.62E+00	0.00E+00	1.62E+00	-9.22E+00	2.98E+01	2.06E+01
	Transport	C2	7.23E-04	0.00E+00	7.23E-04	5.58E-02	0.00E+00	5.58E-02
	Waste processing	C3	7.98E-03	0.00E+00	7.98E-03	-4.59E+01	4.62E+01	3.46E-01
	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	-6.43E+00	0.00E+00	-6.43E+00	-3.91E+01	0.00E+00	-3.91E+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^3
Product stage	Raw material supply	A1	3.99E-03	0.00E+00	0.00E+00	1.04E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.91E-04
	Manufacturing	A3	8.00E-03	7.75E-07	0.00E+00	-7.04E-02
	Total (Consumption grid)	A1-3	1.20E-02	7.75E-07	0.00E+00	3.37E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	6.12E-05
	Construction	A5	8.40E-03	5.57E-06	0.00E+00	5.06E-02
End of life	Deconstruction, demolition	C1	5.30E-03	5.57E-06	0.00E+00	7.39E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	6.76E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.32E-03
	Disposal	C4	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	-1.81E-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	2.34E-01	4.92E+00	1.52E-04
	Transport	A2	2.14E-03	3.38E-02	1.27E-05
	Manufacturing	A3	3.99E-02	4.54E+00	2.34E-05
	Total (Consumption grid)	A1-3	2.76E-01	9.50E+00	1.88E-04
Construction process stage	Transport	A4	6.06E-04	1.08E-02	3.72E-06
	Construction	A5	1.11E-01	1.74E+00	1.93E-04
End of life	Deconstruction, demolition	C1	5.95E-02	1.28E+00	1.38E-04
	Transport	C2	5.99E-05	1.04E-03	3.81E-01
	Waste processing	C3	2.61E-02	1.45E+00	5.63E-07
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.24E-01	-5.28E+00	-2.65E-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	1.34E-05	4.23E-02	6.19E-04	3.14E-03	2.55E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.34E-05	4.23E-02	6.19E-04	3.14E-03	2.55E-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	9.66E-05	1.14E-02	4.45E-03	3.16E-02	2.55E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.66E-05	9.68E-01	4.45E-03	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 – 1m of Hiline Clover 40mm with the weight of 2.22 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	6.18E+00	6.11E+00	6.74E-02	2.42E-03	4.69E-07	2.81E-02	1.24E-03
	Transport	A2	1.45E-01	1.45E-01	9.46E-05	6.68E-05	3.25E-08	1.43E-03	8.38E-06
	Manufacturing	A3	7.30E-01	3.87E-01	3.28E-01	1.97E-04	1.84E-08	1.20E-03	9.74E-05
	Total (Consumption grid)	A1-3	7.05E+00	6.64E+00	3.95E-01	2.68E-03	5.20E-07	3.07E-02	1.35E-03
Construction process stage	Transport	A4	4.01E-02	4.01E-02	3.42E-05	1.57E-05	9.27E-09	1.63E-04	2.58E-06
	Construction	A5	2.86E+00	2.70E+00	1.56E-01	5.55E-04	2.39E-07	1.66E-02	3.33E-04
End of life	Deconstruction, demolition	C1	2.30E+00	2.30E+00	3.62E-03	4.61E-04	2.67E-07	1.05E-02	2.09E-04
	Transport	C2	4.03E-03	4.02E-03	3.91E-06	1.45E-06	9.60E-10	1.68E-05	2.50E-07
	Waste processing	C3	5.76E+00	5.76E+00	2.80E-04	3.26E-05	1.08E-08	1.91E-03	1.33E-05
	Disposal	C4	0.00E+00	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	-2.20E+00	-2.18E+00	-2.44E-02	-2.69E-03	-1.49E-07	-1.09E-02	-1.02E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	6.62E-03	5.03E-02	2.11E-02	5.07E-05	1.81E+02	4.50E+00	3.89E-07
	Transport	A2	3.77E-04	4.16E-03	1.15E-03	4.41E-07	2.12E+00	8.72E-03	1.09E-08
	Manufacturing	A3	8.18E-04	2.22E-03	7.46E-04	2.11E-05	3.18E+00	-2.20E-01	9.49E-09
	Total (Consumption grid)	A1-3	7.82E-03	5.67E-02	2.30E-02	7.22E-05	1.86E+02	4.28E+00	4.09E-07
Construction process stage	Transport	A4	4.90E-05	5.35E-04	1.64E-04	1.39E-07	6.06E-01	2.73E-03	3.46E-09
	Construction	A5	5.64E-03	5.88E-02	1.75E-02	2.61E-05	5.95E+01	1.53E+00	4.28E-07
End of life	Deconstruction, demolition	C1	4.42E-03	4.80E-02	1.31E-02	3.02E-06	2.08E+01	1.63E-01	2.54E-07
	Transport	C2	5.12E-06	5.60E-05	1.80E-05	9.22E-09	6.27E-02	3.03E-04	4.73E-10
	Waste processing	C3	1.31E-03	1.00E-02	2.39E-03	3.34E-07	1.27E+00	1.38E-01	7.27E-09
	Disposal	C4	0.00E+00	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	-1.79E-03	-1.81E-02	-4.89E-03	-2.72E-06	-4.19E+01	-8.18E-01	-6.91E-08

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	4.44E-01	2.47E+02	3.52E-08	3.72E-07	7.94E+00
	Transport	A2	1.07E-02	1.59E+00	6.18E-11	1.57E-09	1.25E+00
	Manufacturing	A3	4.09E-02	1.21E+01	8.60E-10	1.63E-07	9.24E+00
	Total (Consumption grid)	A1-3	4.95E-01	2.61E+02	3.61E-08	5.37E-07	1.84E+01
Construction process stage	Transport	A4	3.11E-03	4.73E-01	1.53E-11	4.96E-10	4.16E-01
	Construction	A5	3.06E-01	1.05E+02	1.44E-09	5.70E-08	5.61E+00
End of life	Deconstruction, demolition	C1	2.81E-01	2.13E+01	7.33E-10	1.29E-08	4.46E+00
	Transport	C2	3.17E-04	4.90E-02	1.35E-12	5.36E-11	7.17E-02
	Waste processing	C3	2.05E-03	5.22E+00	3.07E-10	1.11E-08	2.78E-01
	Disposal	C4	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	-1.03E+00	-2.96E+01	-5.28E-10	-1.62E-08	-1.34E+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	4.97E+00	0.00E+00	4.97E+00	1.10E+02	6.92E+01	1.79E+02
	Transport	A2	2.71E-02	0.00E+00	2.71E-02	2.08E+00	0.00E+00	2.08E+00
	Manufacturing	A3	-2.29E+00	4.62E+00	2.33E+00	-1.52E+00	4.92E+00	3.40E+00
	Total (Consumption grid)	A1-3	2.70E+00	4.62E+00	7.32E+00	1.10E+02	7.41E+01	1.85E+02
Construction process stage	Transport	A4	8.53E-03	0.00E+00	8.53E-03	5.95E-01	0.00E+00	5.95E-01
	Construction	A5	1.89E+00	1.05E+00	2.94E+00	4.64E+01	1.45E+01	6.08E+01
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	1.16E+01	8.61E+00	2.03E+01
	Transport	C2	7.97E-04	0.00E+00	7.97E-04	6.15E-02	0.00E+00	6.15E-02
	Waste processing	C3	9.28E-03	0.00E+00	9.28E-03	-5.34E+01	5.38E+01	4.02E-01
	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	-6.85E+00	0.00E+00	-6.85E+00	-4.21E+01	0.00E+00	-4.21E+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^3
Product stage	Raw material supply	A1	4.63E-03	0.00E+00	0.00E+00	1.06E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.16E-04
	Manufacturing	A3	5.63E-03	7.76E-07	0.00E+00	-4.92E-03
	Total (Consumption grid)	A1-3	1.03E-02	7.76E-07	0.00E+00	1.01E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	6.75E-05
	Construction	A5	6.69E-03	5.57E-06	0.00E+00	3.68E-02
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	4.96E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	7.46E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.24E-03
	Disposal	C4	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	-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	2.38E-01	5.04E+00	1.54E-04
	Transport	A2	2.42E-03	3.82E-02	1.44E-05
	Manufacturing	A3	2.46E-02	9.36E-01	1.51E-05
	Total (Consumption grid)	A1-3	2.65E-01	6.02E+00	1.84E-04
Construction process stage	Transport	A4	6.68E-04	1.19E-02	4.10E-06
	Construction	A5	7.81E-02	1.02E+00	1.56E-04
End of life	Deconstruction, demolition	C1	3.44E-02	5.52E-01	1.37E-04
	Transport	C2	6.60E-05	1.15E-03	4.20E-01
	Waste processing	C3	3.03E-02	1.69E+00	6.54E-07
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.37E-01	-6.04E+00	-2.78E-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	1.35E-05	4.92E-02	6.19E-04	6.95E-02	2.81E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	4.92E-02	6.19E-04	6.95E-02	2.81E-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	9.66E-05	1.24E-02	4.45E-03	3.56E-02	2.81E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	2.80E-01	4.44E-03	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 – 1m of Hiline Clover 50mm with the weight of 2.74 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	7.55E+00	7.46E+00	8.14E-02	2.93E-03	5.64E-07	3.42E-02	1.50E-03
	Transport	A2	1.79E-01	1.79E-01	1.17E-04	8.27E-05	4.02E-08	1.77E-03	1.04E-05
	Manufacturing	A3	2.53E-01	2.80E-01	-3.36E-02	2.05E-04	1.85E-08	8.74E-04	5.85E-05
	Total (Consumption grid)	A1-3	7.98E+00	7.92E+00	4.79E-02	3.22E-03	6.22E-07	3.68E-02	1.57E-03
Construction process stage	Transport	A4	4.96E-02	4.96E-02	4.23E-05	1.95E-05	1.15E-08	2.01E-04	3.19E-06
	Construction	A5	3.24E+00	3.06E+00	1.85E-01	8.03E-04	2.51E-07	2.69E-02	1.10E-03
End of life	Deconstruction, demolition	C1	9.15E+00	9.14E+00	1.03E-02	1.18E-03	6.39E-07	1.59E-02	1.09E-03
	Transport	C2	4.98E-03	4.98E-03	4.84E-06	1.79E-06	1.19E-09	2.08E-05	3.10E-07
	Waste processing	C3	7.13E+00	7.13E+00	3.43E-04	4.01E-05	1.33E-08	2.34E-03	1.64E-05
	Disposal	C4	0.00E+00	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	-2.73E+00	-2.69E+00	-3.03E-02	-3.32E-03	-1.84E-07	-1.36E-02	-1.27E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	8.01E-03	6.11E-02	2.57E-02	6.17E-05	2.22E+02	5.44E+00	4.70E-07
	Transport	A2	4.68E-04	5.16E-03	1.43E-03	5.45E-07	2.62E+00	1.08E-02	1.34E-08
	Manufacturing	A3	4.00E-04	1.92E-03	6.70E-04	9.77E-06	3.36E+00	-3.13E-02	9.75E-09
	Total (Consumption grid)	A1-3	8.88E-03	6.82E-02	2.78E-02	7.21E-05	2.28E+02	5.42E+00	4.93E-07
Construction process stage	Transport	A4	6.06E-05	6.62E-04	2.03E-04	1.72E-07	7.50E-01	3.37E-03	4.28E-09
	Construction	A5	6.30E-03	6.70E-02	2.00E-02	2.52E-04	6.70E+01	1.90E+00	4.77E-07
End of life	Deconstruction, demolition	C1	5.92E-03	6.22E-02	1.69E-02	9.40E-06	3.57E+01	8.68E-01	3.02E-07
	Transport	C2	6.33E-06	6.93E-05	2.23E-05	1.14E-08	7.76E-02	3.75E-04	5.85E-10
	Waste processing	C3	1.61E-03	1.23E-02	2.93E-03	4.10E-07	1.55E+00	1.69E-01	8.93E-09
	Disposal	C4	0.00E+00	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	-2.22E-03	-2.24E-02	-6.06E-03	-3.35E-06	-5.18E+01	-1.01E+00	-8.58E-08

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results (continued)

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

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	5.39E-01	2.96E+02	4.22E-08	4.46E-07	9.63E+00
	Transport	A2	1.32E-02	1.97E+00	7.65E-11	1.95E-09	1.54E+00
	Manufacturing	A3	4.13E-02	6.18E+00	5.44E-10	6.92E-08	1.09E+01
	Total (Consumption grid)	A1-3	5.94E-01	3.04E+02	4.28E-08	5.17E-07	2.21E+01
Construction process stage	Transport	A4	3.85E-03	5.85E-01	1.89E-11	6.13E-10	5.15E-01
	Construction	A5	3.25E-01	1.93E+02	3.28E-09	1.86E-07	8.84E+00
End of life	Deconstruction, demolition	C1	3.78E-01	8.92E+01	3.00E-09	4.80E-08	7.75E+00
	Transport	C2	3.92E-04	6.06E-02	1.68E-12	6.63E-11	8.87E-02
	Waste processing	C3	2.53E-03	6.39E+00	3.78E-10	1.37E-08	3.42E-01
	Disposal	C4	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	-1.26E+00	-3.67E+01	-6.53E-10	-2.00E-08	-1.65E+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	6.02E+00	0.00E+00	6.02E+00	1.35E+02	8.54E+01	2.20E+02
	Transport	A2	3.35E-02	0.00E+00	3.35E-02	2.57E+00	0.00E+00	2.57E+00
	Manufacturing	A3	8.82E-01	1.78E+00	2.67E+00	1.90E-01	3.41E+00	3.60E+00
	Total (Consumption grid)	A1-3	6.94E+00	1.78E+00	8.72E+00	1.37E+02	8.88E+01	2.26E+02
Construction process stage	Transport	A4	1.06E-02	0.00E+00	1.06E-02	7.36E-01	0.00E+00	7.36E-01
	Construction	A5	2.26E+00	1.26E+00	3.52E+00	5.17E+01	1.66E+01	6.83E+01
End of life	Deconstruction, demolition	C1	1.63E+00	0.00E+00	1.63E+00	-3.63E+01	5.73E+01	2.10E+01
	Transport	C2	9.87E-04	0.00E+00	9.87E-04	7.62E-02	0.00E+00	7.62E-02
	Waste processing	C3	1.15E-02	0.00E+00	1.15E-02	-6.64E+01	6.69E+01	5.00E-01
	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	-8.45E+00	0.00E+00	-8.45E+00	-5.19E+01	0.00E+00	-5.19E+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^3
Product stage	Raw material supply	A1	5.76E-03	0.00E+00	0.00E+00	1.28E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.67E-04
	Manufacturing	A3	6.67E-03	7.76E-07	0.00E+00	-5.32E-04
	Total (Consumption grid)	A1-3	1.24E-02	7.76E-07	0.00E+00	1.28E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	8.36E-05
	Construction	A5	1.26E-02	5.57E-06	0.00E+00	4.56E-02
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	2.18E-02
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	9.23E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.95E-03
	Disposal	C4	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	-2.54E-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	2.88E-01	6.12E+00	1.87E-04
	Transport	A2	3.00E-03	4.72E-02	1.78E-05
	Manufacturing	A3	1.20E-02	3.78E-01	1.53E-05
	Total (Consumption grid)	A1-3	3.03E-01	6.54E+00	2.20E-04
Construction process stage	Transport	A4	8.26E-04	1.47E-02	5.07E-06
	Construction	A5	1.23E-01	3.75E+00	1.64E-04
End of life	Deconstruction, demolition	C1	9.20E-02	2.21E+00	1.39E-04
	Transport	C2	8.17E-05	1.42E-03	5.20E-01
	Waste processing	C3	3.77E-02	2.10E+00	8.14E-07
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.69E-01	-7.51E+00	-3.42E-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	1.35E-05	6.12E-02	6.19E-04	2.95E-04	3.48E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	6.12E-02	6.19E-04	2.95E-04	3.48E-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	9.66E-05	1.53E-02	4.45E-03	4.31E-02	3.48E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	1.86E+00	4.44E-03	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 – 1m of Hiline Clover 63mm with the weight of 3.55 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	9.81E+00	9.70E+00	1.06E-01	3.80E-03	7.30E-07	4.43E-02	1.95E-03
	Transport	A2	2.33E-01	2.32E-01	1.52E-04	1.07E-04	5.22E-08	2.31E-03	1.35E-05
	Manufacturing	A3	2.50E-01	3.45E-01	-9.83E-02	2.41E-04	1.84E-08	7.98E-04	5.45E-05
	Total (Consumption grid)	A1-3	1.03E+01	1.03E+01	7.34E-03	4.15E-03	8.01E-07	4.75E-02	2.02E-03
Construction process stage	Transport	A4	6.42E-02	6.42E-02	5.47E-05	2.52E-05	1.48E-08	2.60E-04	4.13E-06
	Construction	A5	3.44E+00	3.21E+00	2.32E-01	6.39E-04	2.50E-07	1.94E-02	4.65E-04
End of life	Deconstruction, demolition	C1	2.65E+00	2.65E+00	3.97E-03	4.99E-04	2.86E-07	1.08E-02	2.55E-04
	Transport	C2	6.45E-03	6.44E-03	6.26E-06	2.32E-06	1.54E-09	2.69E-05	4.01E-07
	Waste processing	C3	9.22E+00	9.22E+00	4.40E-04	5.15E-05	1.70E-08	2.99E-03	2.10E-05
	Disposal	C4	0.00E+00	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	-3.53E+00	-3.48E+00	-3.94E-02	-4.30E-03	-2.38E-07	-1.76E-02	-1.65E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	1.04E-02	7.94E-02	3.34E-02	8.02E-05	2.89E+02	7.06E+00	6.10E-07
	Transport	A2	6.09E-04	6.72E-03	1.86E-03	7.07E-07	3.40E+00	1.40E-02	1.74E-08
	Manufacturing	A3	2.67E-04	1.83E-03	6.70E-04	5.74E-06	3.74E+00	5.04E-02	9.45E-09
	Total (Consumption grid)	A1-3	1.13E-02	8.79E-02	3.59E-02	8.66E-05	2.96E+02	7.13E+00	6.37E-07
Construction process stage	Transport	A4	7.84E-05	8.57E-04	2.62E-04	2.23E-07	9.70E-01	4.37E-03	5.54E-09
	Construction	A5	6.13E-03	6.34E-02	1.92E-02	4.76E-05	7.23E+01	2.00E+00	4.86E-07
End of life	Deconstruction, demolition	C1	4.50E-03	4.88E-02	1.33E-02	3.36E-06	2.16E+01	1.99E-01	2.57E-07
	Transport	C2	8.20E-06	8.96E-05	2.88E-05	1.48E-08	1.00E-01	4.85E-04	7.57E-10
	Waste processing	C3	2.05E-03	1.57E-02	3.75E-03	5.26E-07	1.99E+00	2.15E-01	1.14E-08
	Disposal	C4	0.00E+00	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	-2.87E-03	-2.90E-02	-7.84E-03	-4.29E-06	-6.68E+01	-1.32E+00	-1.11E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	7.00E-01	3.83E+02	5.46E-08	5.78E-07	1.25E+01
	Transport	A2	1.71E-02	2.55E+00	9.94E-11	2.53E-09	2.00E+00
	Manufacturing	A3	4.29E-02	4.73E+00	5.08E-10	3.58E-08	1.39E+01
	Total (Consumption grid)	A1-3	7.60E-01	3.90E+02	5.52E-08	6.16E-07	2.84E+01
Construction process stage	Transport	A4	4.99E-03	7.57E-01	2.45E-11	7.94E-10	6.66E-01
	Construction	A5	3.20E-01	1.39E+02	1.97E-09	7.93E-08	6.35E+00
End of life	Deconstruction, demolition	C1	2.87E-01	2.48E+01	8.51E-10	1.47E-08	4.64E+00
	Transport	C2	5.08E-04	7.84E-02	2.17E-12	8.58E-11	1.15E-01
	Waste processing	C3	3.24E-03	8.15E+00	4.86E-10	1.77E-08	4.39E-01
	Disposal	C4	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	-1.62E+00	-4.75E+01	-8.45E-10	-2.59E-08	-2.12E+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	7.81E+00	0.00E+00	7.81E+00	1.75E+02	1.11E+02	2.86E+02
	Transport	A2	4.34E-02	0.00E+00	4.34E-02	3.34E+00	0.00E+00	3.34E+00
	Manufacturing	A3	1.36E+00	1.87E+00	3.23E+00	-2.74E-02	4.02E+00	3.99E+00
	Total (Consumption grid)	A1-3	9.21E+00	1.87E+00	1.11E+01	1.78E+02	1.15E+02	2.93E+02
Construction process stage	Transport	A4	1.37E-02	0.00E+00	1.37E-02	9.52E-01	0.00E+00	9.52E-01
	Construction	A5	1.76E+00	1.62E+00	3.38E+00	5.45E+01	1.90E+01	7.35E+01
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	9.24E+00	1.11E+01	2.03E+01
	Transport	C2	1.28E-03	0.00E+00	1.28E-03	9.85E-02	0.00E+00	9.85E-02
	Waste processing	C3	1.50E-02	0.00E+00	1.50E-02	-8.65E+01	8.72E+01	6.52E-01
	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	-1.09E+01	0.00E+00	-1.09E+01	-6.70E+01	0.00E+00	-6.70E+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^3
Product stage	Raw material supply	A1	7.51E-03	0.00E+00	0.00E+00	1.67E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.47E-04
	Manufacturing	A3	8.50E-03	7.76E-07	0.00E+00	1.37E-03
	Total (Consumption grid)	A1-3	1.60E-02	7.76E-07	0.00E+00	1.68E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.08E-04
	Construction	A5	7.50E-03	5.57E-06	0.00E+00	4.79E-02
End of life	Deconstruction, demolition	C1	5.30E-03	5.57E-06	0.00E+00	5.83E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.19E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.02E-03
	Disposal	C4	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	-3.30E-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	3.74E-01	7.94E+00	2.43E-04
	Transport	A2	3.89E-03	6.13E-02	2.31E-05
	Manufacturing	A3	1.46E-02	3.62E-01	1.55E-05
	Total (Consumption grid)	A1-3	3.93E-01	8.36E+00	2.82E-04
Construction process stage	Transport	A4	1.07E-03	1.90E-02	6.56E-06
	Construction	A5	9.74E-02	1.44E+00	1.63E-04
End of life	Deconstruction, demolition	C1	3.74E-02	6.36E-01	1.37E-04
	Transport	C2	1.06E-04	1.84E-03	6.73E-01
	Waste processing	C3	4.92E-02	2.74E+00	1.06E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.19E-01	-9.77E+00	-4.40E-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	1.35E-05	7.98E-02	6.19E-04	5.75E-03	4.50E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	7.98E-02	6.19E-04	5.75E-03	4.50E-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	9.66E-05	1.98E-02	4.45E-03	5.59E-02	4.50E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.66E-05	3.60E-01	4.45E-03	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 – 1m of Hiline Clover 75mm with the weight of 4.18 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	1.17E+01	1.16E+01	1.29E-01	4.63E-03	9.03E-07	5.36E-02	2.37E-03
	Transport	A2	2.72E-01	2.72E-01	1.78E-04	1.26E-04	6.11E-08	2.68E-03	1.58E-05
	Manufacturing	A3	3.73E-01	4.13E-01	-4.45E-02	2.71E-04	1.90E-08	9.30E-04	6.17E-05
	Total (Consumption grid)	A1-3	1.24E+01	1.23E+01	8.46E-02	5.02E-03	9.84E-07	5.72E-02	2.45E-03
Construction process stage	Transport	A4	7.57E-02	7.56E-02	6.44E-05	2.97E-05	1.75E-08	3.07E-04	4.87E-06
	Construction	A5	3.76E+00	3.48E+00	2.71E-01	7.09E-04	2.58E-07	2.19E-02	6.19E-04
End of life	Deconstruction, demolition	C1	2.83E+00	2.83E+00	4.14E-03	5.17E-04	2.96E-07	1.09E-02	2.78E-04
	Transport	C2	7.60E-03	7.58E-03	7.37E-06	2.73E-06	1.81E-09	3.17E-05	4.72E-07
	Waste processing	C3	1.09E+01	1.09E+01	5.31E-04	6.17E-05	2.06E-08	3.63E-03	2.53E-05
	Disposal	C4	0.00E+00	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	-4.16E+00	-4.11E+00	-4.58E-02	-5.08E-03	-2.81E-07	-2.06E-02	-1.93E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	1.27E-02	9.59E-02	4.01E-02	9.68E-05	3.43E+02	8.59E+00	7.43E-07
	Transport	A2	7.08E-04	7.82E-03	2.16E-03	8.29E-07	3.98E+00	1.64E-02	2.04E-08
	Manufacturing	A3	3.51E-04	2.05E-03	7.10E-04	9.43E-06	3.96E+00	3.33E-02	9.84E-09
	Total (Consumption grid)	A1-3	1.37E-02	1.06E-01	4.30E-02	1.07E-04	3.51E+02	8.64E+00	7.73E-07
Construction process stage	Transport	A4	9.24E-05	1.01E-03	3.09E-04	2.63E-07	1.14E+00	5.14E-03	6.52E-09
	Construction	A5	6.43E-03	6.64E-02	2.02E-02	8.52E-05	7.90E+01	2.26E+00	5.18E-07
End of life	Deconstruction, demolition	C1	4.53E-03	4.91E-02	1.34E-02	3.52E-06	2.20E+01	2.18E-01	2.57E-07
	Transport	C2	9.66E-06	1.06E-04	3.40E-05	1.74E-08	1.18E-01	5.71E-04	8.92E-10
	Waste processing	C3	2.50E-03	1.90E-02	4.54E-03	6.34E-07	2.41E+00	2.64E-01	1.38E-08
	Disposal	C4	0.00E+00	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	-3.38E-03	-3.42E-02	-9.23E-03	-5.17E-06	-7.93E+01	-1.54E+00	-1.30E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	8.48E-01	4.75E+02	6.79E-08	7.17E-07	1.52E+01
	Transport	A2	2.00E-02	2.99E+00	1.16E-10	2.96E-09	2.34E+00
	Manufacturing	A3	4.42E-02	5.97E+00	5.50E-10	6.56E-08	1.63E+01
	Total (Consumption grid)	A1-3	9.12E-01	4.84E+02	6.86E-08	7.86E-07	3.38E+01
Construction process stage	Transport	A4	5.87E-03	8.92E-01	2.89E-11	9.35E-10	7.85E-01
	Construction	A5	3.29E-01	1.65E+02	2.47E-09	1.07E-07	7.09E+00
End of life	Deconstruction, demolition	C1	2.89E-01	2.66E+01	9.09E-10	1.56E-08	4.72E+00
	Transport	C2	5.98E-04	9.23E-02	2.55E-12	1.01E-10	1.35E-01
	Waste processing	C3	3.90E-03	9.94E+00	5.82E-10	2.11E-08	5.26E-01
	Disposal	C4	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	-1.95E+00	-5.59E+01	-9.97E-10	-3.06E-08	-2.53E+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	9.49E+00	0.00E+00	9.49E+00	2.09E+02	1.31E+02	3.39E+02
	Transport	A2	5.09E-02	0.00E+00	5.09E-02	3.91E+00	0.00E+00	3.91E+00
	Manufacturing	A3	8.21E-01	2.85E+00	3.67E+00	-8.31E-01	5.04E+00	4.21E+00
	Total (Consumption grid)	A1-3	1.04E+01	2.85E+00	1.32E+01	2.12E+02	1.36E+02	3.47E+02
Construction process stage	Transport	A4	1.61E-02	0.00E+00	1.61E-02	1.12E+00	0.00E+00	1.12E+00
	Construction	A5	1.73E+00	1.92E+00	3.65E+00	5.88E+01	2.13E+01	8.01E+01
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	7.97E+00	1.23E+01	2.03E+01
	Transport	C2	1.50E-03	0.00E+00	1.50E-03	1.16E-01	0.00E+00	1.16E-01
	Waste processing	C3	1.74E-02	0.00E+00	1.74E-02	-1.00E+02	1.01E+02	7.55E-01
	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	-1.30E+01	0.00E+00	-1.30E+01	-7.95E+01	0.00E+00	-7.95E+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^3
Product stage	Raw material supply	A1	8.70E-03	0.00E+00	0.00E+00	2.03E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	4.06E-04
	Manufacturing	A3	7.04E-03	7.76E-07	0.00E+00	9.80E-04
	Total (Consumption grid)	A1-3	1.57E-02	7.76E-07	0.00E+00	2.04E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.27E-04
	Construction	A5	8.56E-03	5.57E-06	0.00E+00	5.40E-02
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	6.26E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.41E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	6.17E-03
	Disposal	C4	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	-3.85E-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	4.55E-01	9.64E+00	2.96E-04
	Transport	A2	4.56E-03	7.18E-02	2.71E-05
	Manufacturing	A3	1.63E-02	5.11E-01	1.60E-05
	Total (Consumption grid)	A1-3	4.76E-01	1.02E+01	3.39E-04
Construction process stage	Transport	A4	1.26E-03	2.24E-02	7.73E-06
	Construction	A5	1.12E-01	1.98E+00	1.66E-04
End of life	Deconstruction, demolition	C1	3.89E-02	6.80E-01	1.37E-04
	Transport	C2	1.25E-04	2.16E-03	7.92E-01
	Waste processing	C3	5.70E-02	3.17E+00	1.23E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.58E-01	-1.14E+01	-5.27E-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	1.35E-05	9.24E-02	6.19E-04	2.60E-02	5.30E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	9.24E-02	6.19E-04	2.60E-02	5.30E-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	9.66E-05	2.34E-02	4.45E-03	6.60E-02	5.30E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	4.01E-01	4.44E-03	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 – 1m of Hiline Clover 90mm with the weight of 6.13 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	1.75E+01	1.73E+01	1.97E-01	7.04E-03	1.41E-06	8.10E-02	3.62E-03
	Transport	A2	3.94E-01	3.94E-01	2.59E-04	1.81E-04	8.85E-08	3.84E-03	2.29E-05
	Manufacturing	A3	3.39E-01	5.46E-01	-2.08E-01	3.73E-04	2.27E-08	1.07E-03	7.31E-05
	Total (Consumption grid)	A1-3	1.82E+01	1.82E+01	-1.02E-02	7.59E-03	1.52E-06	8.59E-02	3.71E-03
Construction process stage	Transport	A4	1.11E-01	1.11E-01	9.44E-05	4.35E-05	2.56E-08	4.50E-04	7.14E-06
	Construction	A5	4.33E+00	3.95E+00	3.77E-01	8.27E-04	2.73E-07	2.50E-02	7.82E-04
End of life	Deconstruction, demolition	C1	3.16E+00	3.15E+00	4.33E-03	5.37E-04	3.06E-07	1.11E-02	3.01E-04
	Transport	C2	1.11E-02	1.11E-02	1.08E-05	4.00E-06	2.66E-09	4.64E-05	6.92E-07
	Waste processing	C3	1.60E+01	1.60E+01	8.14E-04	9.36E-05	3.16E-08	5.60E-03	3.85E-05
	Disposal	C4	0.00E+00	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	-6.12E+00	-6.04E+00	-6.54E-02	-7.50E-03	-4.13E-07	-2.99E-02	-2.77E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	1.93E-02	1.45E-01	6.02E-02	1.46E-04	5.04E+02	1.31E+01	1.13E-06
	Transport	A2	1.02E-03	1.12E-02	3.10E-03	1.20E-06	5.77E+00	2.38E-02	2.96E-08
	Manufacturing	A3	2.94E-04	2.69E-03	1.01E-03	4.18E-06	5.31E+00	1.37E-01	1.46E-08
	Total (Consumption grid)	A1-3	2.06E-02	1.59E-01	6.43E-02	1.51E-04	5.16E+02	1.32E+01	1.18E-06
Construction process stage	Transport	A4	1.35E-04	1.48E-03	4.53E-04	3.85E-07	1.67E+00	7.54E-03	9.56E-09
	Construction	A5	6.88E-03	7.08E-02	2.19E-02	1.19E-04	9.15E+01	2.60E+00	5.58E-07
End of life	Deconstruction, demolition	C1	4.59E-03	4.97E-02	1.36E-02	3.70E-06	2.24E+01	2.46E-01	2.59E-07
	Transport	C2	1.42E-05	1.55E-04	4.98E-05	2.55E-08	1.73E-01	8.37E-04	1.31E-09
	Waste processing	C3	3.89E-03	2.94E-02	7.01E-03	9.69E-07	3.70E+00	4.16E-01	2.10E-08
	Disposal	C4	0.00E+00	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	-4.95E-03	-5.03E-02	-1.35E-02	-7.92E-06	-1.18E+02	-2.23E+00	-1.88E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.28E+00	7.42E+02	1.06E-07	1.12E-06	2.31E+01
	Transport	A2	2.90E-02	4.33E+00	1.68E-10	4.30E-09	3.41E+00
	Manufacturing	A3	5.00E-02	5.30E+00	7.19E-10	2.13E-08	2.36E+01
	Total (Consumption grid)	A1-3	1.36E+00	7.52E+02	1.07E-07	1.15E-06	5.01E+01
Construction process stage	Transport	A4	8.61E-03	1.31E+00	4.23E-11	1.37E-09	1.15E+00
	Construction	A5	3.48E-01	1.93E+02	3.24E-09	1.34E-07	8.12E+00
End of life	Deconstruction, demolition	C1	2.91E-01	2.86E+01	9.82E-10	1.71E-08	4.81E+00
	Transport	C2	8.77E-04	1.35E-01	3.74E-12	1.48E-10	1.98E-01
	Waste processing	C3	5.95E-03	1.55E+01	8.76E-10	3.18E-08	7.97E-01
	Disposal	C4	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	-2.96E+00	-8.20E+01	-1.47E-09	-4.49E-08	-3.80E+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	1.44E+01	0.00E+00	1.44E+01	3.10E+02	1.90E+02	4.99E+02
	Transport	A2	7.39E-02	0.00E+00	7.39E-02	5.66E+00	0.00E+00	5.66E+00
	Manufacturing	A3	2.14E+00	2.91E+00	5.05E+00	-6.81E-01	6.23E+00	5.55E+00
	Total (Consumption grid)	A1-3	1.66E+01	2.91E+00	1.96E+01	3.15E+02	1.96E+02	5.11E+02
Construction process stage	Transport	A4	2.36E-02	0.00E+00	2.36E-02	1.64E+00	0.00E+00	1.64E+00
	Construction	A5	1.22E+00	2.80E+00	4.02E+00	6.62E+01	2.63E+01	9.25E+01
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	4.79E+00	1.56E+01	2.04E+01
	Transport	C2	2.20E-03	0.00E+00	2.20E-03	1.70E-01	0.00E+00	1.70E-01
	Waste processing	C3	2.48E-02	0.00E+00	2.48E-02	-1.43E+02	1.44E+02	1.07E+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	-1.94E+01	0.00E+00	-1.94E+01	-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^3
Product stage	Raw material supply	A1	1.24E-02	0.00E+00	0.00E+00	3.08E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	5.89E-04
	Manufacturing	A3	1.45E-02	7.76E-07	0.00E+00	3.41E-03
	Total (Consumption grid)	A1-3	2.69E-02	7.76E-07	0.00E+00	3.12E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.87E-04
	Construction	A5	9.79E-03	5.57E-06	0.00E+00	6.21E-02
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	6.92E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.06E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	9.73E-03
	Disposal	C4	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	-5.58E-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	6.93E-01	1.46E+01	4.50E-04
	Transport	A2	6.60E-03	1.04E-01	3.92E-05
	Manufacturing	A3	2.30E-02	5.04E-01	1.81E-05
	Total (Consumption grid)	A1-3	7.23E-01	1.52E+01	5.07E-04
Construction process stage	Transport	A4	1.85E-03	3.28E-02	1.13E-05
	Construction	A5	1.30E-01	2.61E+00	1.75E-04
End of life	Deconstruction, demolition	C1	4.27E-02	7.90E-01	1.37E-04
	Transport	C2	1.83E-04	3.17E-03	1.16E+00
	Waste processing	C3	8.10E-02	4.51E+00	1.75E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.78E-01	-1.63E+01	-7.96E-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	1.35E-05	1.31E-01	6.19E-04	1.28E-02	7.77E-02
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	1.31E-01	6.19E-04	1.28E-02	7.77E-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	9.66E-05	3.42E-02	4.45E-03	9.65E-02	7.77E-04
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	5.06E-01	4.44E-03	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 – 1m of Hiline Clover 110mm with the weight of 8.43 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.31E+01	2.29E+01	2.47E-01	8.92E-03	1.70E-06	1.04E-01	4.57E-03
	Transport	A2	5.56E-01	5.55E-01	3.62E-04	2.57E-04	1.25E-07	5.52E-03	3.21E-05
	Manufacturing	A3	4.34E-01	7.45E-01	-3.12E-01	4.91E-04	2.66E-08	1.34E-03	9.12E-05
	Total (Consumption grid)	A1-3	2.41E+01	2.42E+01	-6.47E-02	9.67E-03	1.85E-06	1.11E-01	4.70E-03
Construction process stage	Transport	A4	1.53E-01	1.52E-01	1.30E-04	5.99E-05	3.53E-08	6.19E-04	9.82E-06
	Construction	A5	4.03E+00	3.56E+00	4.77E-01	8.85E-04	2.77E-07	2.45E-02	8.34E-04
End of life	Deconstruction, demolition	C1	3.34E+00	3.34E+00	4.66E-03	5.73E-04	3.25E-07	1.13E-02	3.46E-04
	Transport	C2	1.53E-02	1.53E-02	1.49E-05	5.50E-06	3.65E-09	6.39E-05	9.53E-07
	Waste processing	C3	2.19E+01	2.19E+01	1.03E-03	1.21E-04	3.99E-08	7.02E-03	4.94E-05
	Disposal	C4	0.00E+00	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	-8.37E+00	-8.27E+00	-9.42E-02	-1.02E-02	-5.65E-07	-4.19E-02	-3.94E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.43E-02	1.87E-01	7.86E-02	1.88E-04	6.84E+02	1.66E+01	1.43E-06
	Transport	A2	1.46E-03	1.61E-02	4.44E-03	1.69E-06	8.13E+00	3.34E-02	4.16E-08
	Manufacturing	A3	3.54E-04	3.49E-03	1.32E-03	3.55E-06	6.72E+00	1.98E-01	1.93E-08
	Total (Consumption grid)	A1-3	2.62E-02	2.06E-01	8.44E-02	1.94E-04	6.99E+02	1.68E+01	1.49E-06
Construction process stage	Transport	A4	1.86E-04	2.04E-03	6.24E-04	5.30E-07	2.30E+00	1.04E-02	1.32E-08
	Construction	A5	6.48E-03	6.81E-02	2.09E-02	1.55E-04	8.34E+01	1.95E+00	4.74E-07
End of life	Deconstruction, demolition	C1	4.65E-03	5.02E-02	1.37E-02	4.02E-06	2.31E+01	2.71E-01	2.61E-07
	Transport	C2	1.95E-05	2.13E-04	6.85E-05	3.51E-08	2.38E-01	1.15E-03	1.80E-09
	Waste processing	C3	4.81E-03	3.67E-02	8.79E-03	1.24E-06	4.67E+00	5.01E-01	2.69E-08
	Disposal	C4	0.00E+00	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	-6.82E-03	-6.89E-02	-1.86E-02	-1.01E-05	-1.58E+02	-3.14E+00	-2.65E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.64E+00	8.90E+02	1.27E-07	1.34E-06	2.93E+01
	Transport	A2	4.09E-02	6.10E+00	2.38E-10	6.03E-09	4.78E+00
	Manufacturing	A3	5.65E-02	6.24E+00	9.28E-10	1.46E-08	3.22E+01
	Total (Consumption grid)	A1-3	1.74E+00	9.02E+02	1.28E-07	1.36E-06	6.63E+01
Construction process stage	Transport	A4	1.18E-02	1.80E+00	5.82E-11	1.89E-09	1.58E+00
	Construction	A5	3.55E-01	1.55E+02	3.50E-09	1.38E-07	8.80E+00
End of life	Deconstruction, demolition	C1	2.96E-01	3.18E+01	1.08E-09	1.83E-08	4.97E+00
	Transport	C2	1.21E-03	1.86E-01	5.15E-12	2.04E-10	2.73E-01
	Waste processing	C3	7.62E-03	1.91E+01	1.15E-09	4.17E-08	1.03E+00
	Disposal	C4	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	-3.82E+00	-1.13E+02	-2.01E-09	-6.16E-08	-5.01E+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	1.83E+01	0.00E+00	1.83E+01	4.13E+02	2.64E+02	6.77E+02
	Transport	A2	1.04E-01	0.00E+00	1.04E-01	7.98E+00	0.00E+00	7.98E+00
	Manufacturing	A3	2.91E+00	3.78E+00	6.69E+00	-1.62E+00	8.57E+00	6.95E+00
	Total (Consumption grid)	A1-3	2.13E+01	3.78E+00	2.51E+01	4.19E+02	2.73E+02	6.92E+02
Construction process stage	Transport	A4	3.25E-02	0.00E+00	3.25E-02	2.26E+00	0.00E+00	2.26E+00
	Construction	A5	-2.73E-01	3.85E+00	3.58E+00	5.92E+01	2.52E+01	8.45E+01
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	4.48E+00	1.59E+01	2.04E+01
	Transport	C2	3.03E-03	0.00E+00	3.03E-03	2.34E-01	0.00E+00	2.34E-01
	Waste processing	C3	3.60E-02	0.00E+00	3.60E-02	-2.07E+02	2.08E+02	1.56E+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	-2.57E+01	0.00E+00	-2.57E+01	-1.58E+02	0.00E+00	-1.58E+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^3
Product stage	Raw material supply	A1	1.79E-02	0.00E+00	0.00E+00	3.91E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	8.28E-04
	Manufacturing	A3	1.99E-02	7.76E-07	0.00E+00	4.85E-03
	Total (Consumption grid)	A1-3	3.79E-02	7.76E-07	0.00E+00	3.96E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.57E-04
	Construction	A5	1.08E-02	5.57E-06	0.00E+00	4.69E-02
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	7.54E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.84E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.17E-02
	Disposal	C4	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	-7.86E-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	8.77E-01	1.86E+01	5.70E-04
	Transport	A2	9.31E-03	1.46E-01	5.53E-05
	Manufacturing	A3	2.99E-02	6.35E-01	2.06E-05
	Total (Consumption grid)	A1-3	9.16E-01	1.94E+01	6.45E-04
Construction process stage	Transport	A4	2.54E-03	4.51E-02	1.56E-05
	Construction	A5	1.19E-01	3.13E+00	1.77E-04
End of life	Deconstruction, demolition	C1	4.31E-02	8.00E-01	1.37E-04
	Transport	C2	2.51E-04	4.37E-03	1.60E+00
	Waste processing	C3	1.18E-01	6.55E+00	2.54E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.21E-01	-2.33E+01	-1.04E-03

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	1.35E-05	1.91E-01	6.19E-04	1.25E-02	1.07E-01
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	1.91E-01	6.19E-04	1.25E-02	1.07E-01
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	9.66E-05	4.72E-02	4.45E-03	1.33E-01	1.07E-03
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	5.16E-01	4.44E-03	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 – 1m of Hiline Clover 125mm with the weight of 9.86 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.75E+01	2.72E+01	3.00E-01	1.08E-02	2.10E-06	1.25E-01	5.54E-03
	Transport	A2	6.44E-01	6.43E-01	4.21E-04	2.97E-04	1.45E-07	6.34E-03	3.73E-05
	Manufacturing	A3	5.01E-01	8.56E-01	-3.56E-01	5.66E-04	2.91E-08	1.56E-03	1.07E-04
	Total (Consumption grid)	A1-3	2.86E+01	2.87E+01	-5.55E-02	1.17E-02	2.27E-06	1.33E-01	5.68E-03
Construction process stage	Transport	A4	1.78E-01	1.78E-01	1.52E-04	7.00E-05	4.12E-08	7.24E-04	1.15E-05
	Construction	A5	5.52E+00	4.92E+00	5.89E-01	1.04E-03	2.98E-07	3.21E-02	1.18E-03
End of life	Deconstruction, demolition	C1	3.77E+00	3.77E+00	4.93E-03	6.02E-04	3.40E-07	1.16E-02	3.81E-04
	Transport	C2	1.79E-02	1.79E-02	1.74E-05	6.43E-06	4.27E-09	7.47E-05	1.11E-06
	Waste processing	C3	2.56E+01	2.56E+01	1.25E-03	1.45E-04	4.84E-08	8.53E-03	5.94E-05
	Disposal	C4	0.00E+00	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	-9.81E+00	-9.69E+00	-1.08E-01	-1.20E-02	-6.63E-07	-4.86E-02	-4.55E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.95E-02	2.24E-01	9.39E-02	2.26E-04	8.05E+02	2.00E+01	1.73E-06
	Transport	A2	1.68E-03	1.85E-02	5.11E-03	1.96E-06	9.42E+00	3.88E-02	4.83E-08
	Manufacturing	A3	4.17E-04	4.03E-03	1.53E-03	4.82E-06	7.61E+00	2.24E-01	2.23E-08
	Total (Consumption grid)	A1-3	3.16E-02	2.47E-01	1.01E-01	2.33E-04	8.22E+02	2.03E+01	1.80E-06
Construction process stage	Transport	A4	2.18E-04	2.38E-03	7.29E-04	6.20E-07	2.69E+00	1.21E-02	1.54E-08
	Construction	A5	7.90E-03	8.06E-02	2.54E-02	2.07E-04	1.15E+02	3.49E+00	6.67E-07
End of life	Deconstruction, demolition	C1	4.73E-03	5.09E-02	1.39E-02	4.28E-06	2.38E+01	3.09E-01	2.63E-07
	Transport	C2	2.28E-05	2.49E-04	8.01E-05	4.10E-08	2.79E-01	1.35E-03	2.10E-09
	Waste processing	C3	5.88E-03	4.47E-02	1.07E-02	1.49E-06	5.66E+00	6.20E-01	3.24E-08
	Disposal	C4	0.00E+00	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	-7.97E-03	-8.08E-02	-2.18E-02	-1.22E-05	-1.87E+02	-3.63E+00	-3.07E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.98E+00	1.10E+03	1.57E-07	1.66E-06	3.54E+01
	Transport	A2	4.74E-02	7.07E+00	2.75E-10	7.00E-09	5.54E+00
	Manufacturing	A3	6.06E-02	7.37E+00	1.11E-09	2.41E-08	3.76E+01
	Total (Consumption grid)	A1-3	2.09E+00	1.12E+03	1.59E-07	1.70E-06	7.86E+01
Construction process stage	Transport	A4	1.39E-02	2.10E+00	6.81E-11	2.21E-09	1.85E+00
	Construction	A5	3.78E-01	2.71E+02	4.73E-09	2.05E-07	1.02E+01
End of life	Deconstruction, demolition	C1	3.00E-01	3.48E+01	1.19E-09	2.02E-08	5.11E+00
	Transport	C2	1.41E-03	2.18E-01	6.02E-12	2.38E-10	3.19E-01
	Waste processing	C3	9.17E-03	2.33E+01	1.37E-09	4.97E-08	1.24E+00
	Disposal	C4	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	-4.59E+00	-1.32E+02	-2.35E-09	-7.21E-08	-5.96E+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	2.21E+01	0.00E+00	2.21E+01	4.89E+02	3.07E+02	7.97E+02
	Transport	A2	1.20E-01	0.00E+00	1.20E-01	9.25E+00	0.00E+00	9.25E+00
	Manufacturing	A3	3.21E+00	4.49E+00	7.70E+00	-2.03E+00	9.86E+00	7.83E+00
	Total (Consumption grid)	A1-3	2.55E+01	4.49E+00	3.00E+01	4.96E+02	3.17E+02	8.14E+02
Construction process stage	Transport	A4	3.80E-02	0.00E+00	3.80E-02	2.65E+00	0.00E+00	2.65E+00
	Construction	A5	4.19E-01	4.51E+00	4.93E+00	8.12E+01	3.50E+01	1.16E+02
End of life	Deconstruction, demolition	C1	1.61E+00	0.00E+00	1.61E+00	5.44E-01	1.99E+01	2.04E+01
	Transport	C2	3.55E-03	0.00E+00	3.55E-03	2.74E-01	0.00E+00	2.74E-01
	Waste processing	C3	4.12E-02	0.00E+00	4.12E-02	-2.37E+02	2.39E+02	1.79E+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	-3.05E+01	0.00E+00	-3.05E+01	-1.87E+02	0.00E+00	-1.87E+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^3
Product stage	Raw material supply	A1	2.06E-02	0.00E+00	0.00E+00	4.73E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	9.60E-04
	Manufacturing	A3	2.33E-02	7.76E-07	0.00E+00	5.48E-03
	Total (Consumption grid)	A1-3	4.38E-02	7.76E-07	0.00E+00	4.79E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.00E-04
	Construction	A5	1.25E-02	5.57E-06	0.00E+00	8.29E-02
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	8.44E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	3.32E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.45E-02
	Disposal	C4	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	-9.10E-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	1.06E+00	2.25E+01	6.89E-04
	Transport	A2	1.08E-02	1.70E-01	6.40E-05
	Manufacturing	A3	3.48E-02	7.50E-01	2.21E-05
	Total (Consumption grid)	A1-3	1.11E+00	2.34E+01	7.76E-04
Construction process stage	Transport	A4	2.97E-03	5.28E-02	1.82E-05
	Construction	A5	1.74E-01	4.03E+00	1.88E-04
End of life	Deconstruction, demolition	C1	4.78E-02	9.37E-01	1.38E-04
	Transport	C2	2.94E-04	5.11E-03	1.87E+00
	Waste processing	C3	1.35E-01	7.50E+00	2.90E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.09E-01	-2.68E+01	-1.24E-03

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	1.35E-05	2.18E-01	6.19E-04	1.64E-02	1.25E-01
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	2.18E-01	6.19E-04	1.64E-02	1.25E-01
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	9.66E-05	5.51E-02	4.45E-03	1.55E-01	1.25E-03
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	6.46E-01	4.44E-03	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 – 1m of Hiline Clover 160mm with the weight of 16.65 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	4.58E+01	4.53E+01	4.90E-01	1.77E-02	3.38E-06	2.07E-01	9.08E-03
	Transport	A2	1.10E+00	1.10E+00	7.14E-04	5.07E-04	2.46E-07	1.09E-02	6.34E-05
	Manufacturing	A3	7.82E-01	1.41E+00	-6.34E-01	9.16E-04	4.07E-08	2.38E-03	1.65E-04
	Total (Consumption grid)	A1-3	4.77E+01	4.78E+01	-1.43E-01	1.91E-02	3.67E-06	2.20E-01	9.31E-03
Construction process stage	Transport	A4	3.02E-01	3.01E-01	2.57E-04	1.18E-04	6.97E-08	1.22E-03	1.94E-05
	Construction	A5	7.02E+00	6.06E+00	9.53E-01	1.41E-03	3.38E-07	4.29E-02	1.86E-03
End of life	Deconstruction, demolition	C1	4.48E+00	4.47E+00	5.31E-03	6.42E-04	3.60E-07	1.19E-02	4.28E-04
	Transport	C2	3.03E-02	3.02E-02	2.94E-05	1.09E-05	7.22E-09	1.26E-04	1.88E-06
	Waste processing	C3	4.33E+01	4.33E+01	2.05E-03	2.40E-04	7.91E-08	1.39E-02	9.80E-05
	Disposal	C4	0.00E+00	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	-1.65E+01	-1.63E+01	-1.86E-01	-2.01E-02	-1.12E-06	-8.26E-02	-7.78E-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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.83E-02	3.70E-01	1.56E-01	3.74E-04	1.35E+03	3.29E+01	2.84E-06
	Transport	A2	2.87E-03	3.17E-02	8.76E-03	3.34E-06	1.60E+01	6.60E-02	8.21E-08
	Manufacturing	A3	6.27E-04	6.40E-03	2.46E-03	4.05E-06	1.18E+01	3.88E-01	3.63E-08
	Total (Consumption grid)	A1-3	5.18E-02	4.08E-01	1.67E-01	3.81E-04	1.38E+03	3.33E+01	2.96E-06
Construction process stage	Transport	A4	3.68E-04	4.02E-03	1.23E-03	1.05E-06	4.55E+00	2.05E-02	2.60E-08
	Construction	A5	9.11E-03	9.33E-02	2.99E-02	3.79E-04	1.45E+02	4.31E+00	7.62E-07
End of life	Deconstruction, demolition	C1	4.85E-03	5.21E-02	1.42E-02	4.63E-06	2.46E+01	3.68E-01	2.66E-07
	Transport	C2	3.85E-05	4.21E-04	1.35E-04	6.93E-08	4.71E-01	2.28E-03	3.55E-09
	Waste processing	C3	9.54E-03	7.29E-02	1.74E-02	2.45E-06	9.25E+00	9.96E-01	5.34E-08
	Disposal	C4	0.00E+00	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	-1.35E-02	-1.36E-01	-3.68E-02	-2.00E-05	-3.12E+02	-6.19E+00	-5.24E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	4.83E-02	3.70E-01	1.56E-01	3.74E-04	1.35E+03
	Transport	A2	2.87E-03	3.17E-02	8.76E-03	3.34E-06	1.60E+01
	Manufacturing	A3	6.27E-04	6.40E-03	2.46E-03	4.05E-06	1.18E+01
	Total (Consumption grid)	A1-3	5.18E-02	4.08E-01	1.67E-01	3.81E-04	1.38E+03
Construction process stage	Transport	A4	3.68E-04	4.02E-03	1.23E-03	1.05E-06	4.55E+00
	Construction	A5	9.11E-03	9.33E-02	2.99E-02	3.79E-04	1.45E+02
End of life	Deconstruction, demolition	C1	4.85E-03	5.21E-02	1.42E-02	4.63E-06	2.46E+01
	Transport	C2	3.85E-05	4.21E-04	1.35E-04	6.93E-08	4.71E-01
	Waste processing	C3	9.54E-03	7.29E-02	1.74E-02	2.45E-06	9.25E+00
	Disposal	C4	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	-1.35E-02	-1.36E-01	-3.68E-02	-2.00E-05	-3.12E+02

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	3.63E+01	0.00E+00	3.63E+01	8.17E+02	5.22E+02	1.34E+03
	Transport	A2	2.05E-01	0.00E+00	2.05E-01	1.58E+01	0.00E+00	1.58E+01
	Manufacturing	A3	5.22E+00	7.31E+00	1.25E+01	-4.41E+00	1.64E+01	1.20E+01
	Total (Consumption grid)	A1-3	4.18E+01	7.31E+00	4.91E+01	8.29E+02	5.38E+02	1.37E+03
Construction process stage	Transport	A4	6.41E-02	0.00E+00	6.41E-02	4.47E+00	0.00E+00	4.47E+00
	Construction	A5	-1.68E+00	7.61E+00	5.93E+00	9.82E+01	4.72E+01	1.45E+02
End of life	Deconstruction, demolition	C1	1.62E+00	0.00E+00	1.62E+00	-6.38E+00	2.69E+01	2.05E+01
	Transport	C2	5.99E-03	0.00E+00	5.99E-03	4.63E-01	0.00E+00	4.63E-01
	Waste processing	C3	7.09E-02	0.00E+00	7.09E-02	-4.08E+02	4.11E+02	3.07E+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	-5.09E+01	0.00E+00	-5.09E+01	-3.13E+02	0.00E+00	-3.13E+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^3
Product stage	Raw material supply	A1	3.54E-02	0.00E+00	0.00E+00	7.75E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.63E-03
	Manufacturing	A3	3.92E-02	7.76E-07	0.00E+00	9.36E-03
	Total (Consumption grid)	A1-3	7.46E-02	7.76E-07	0.00E+00	7.86E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	5.07E-04
	Construction	A5	1.78E-02	5.57E-06	0.00E+00	1.02E-01
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	9.83E-03
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	5.60E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2.33E-02
	Disposal	C4	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	-1.55E-01

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	1.74E+00	3.70E+01	1.13E-03
	Transport	A2	1.84E-02	2.89E-01	1.09E-04
	Manufacturing	A3	5.59E-02	1.17E+00	2.93E-05
	Total (Consumption grid)	A1-3	1.81E+00	3.84E+01	1.27E-03
Construction process stage	Transport	A4	5.02E-03	8.91E-02	3.08E-05
	Construction	A5	2.33E-01	6.70E+00	2.10E-04
End of life	Deconstruction, demolition	C1	5.61E-02	1.18E+00	1.38E-04
	Transport	C2	4.96E-04	8.63E-03	3.16E+00
	Waste processing	C3	2.32E-01	1.29E+01	5.00E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.03E+00	-4.59E+01	-2.05E-03

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	1.35E-05	3.76E-01	6.19E-04	2.19E-02	2.11E-01
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	3.76E-01	6.19E-04	2.19E-02	2.11E-01
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	9.66E-05	9.32E-02	4.45E-03	2.62E-01	2.11E-03
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	8.74E-01	4.44E-03	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 – 1m of Hiline Clover 200mm with the weight of 25.27 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	7.07E+01	6.99E+01	7.75E-01	2.78E-02	5.42E-06	3.23E-01	1.43E-02
	Transport	A2	1.65E+00	1.65E+00	1.08E-03	7.60E-04	3.70E-07	1.62E-02	9.54E-05
	Manufacturing	A3	1.14E+00	2.10E+00	-9.58E-01	1.36E-03	5.55E-08	3.49E-03	2.44E-04
	Total (Consumption grid)	A1-3	7.35E+01	7.36E+01	-1.83E-01	2.99E-02	5.85E-06	3.42E-01	1.46E-02
Construction process stage	Transport	A4	4.58E-01	4.57E-01	3.90E-04	1.79E-04	1.06E-07	1.86E-03	2.94E-05
	Construction	A5	9.01E+00	7.58E+00	1.42E+00	1.81E-03	3.89E-07	5.50E-02	2.57E-03
End of life	Deconstruction, demolition	C1	5.37E+00	5.36E+00	6.02E-03	7.18E-04	3.99E-07	1.25E-02	5.20E-04
	Transport	C2	4.59E-02	4.59E-02	4.46E-05	1.65E-05	1.10E-08	1.91E-04	2.86E-06
	Waste processing	C3	5.02E+01	5.02E+01	2.85E-03	3.20E-04	1.12E-07	1.99E-02	1.33E-04
	Disposal	C4	0.00E+00	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	-2.52E+01	-2.48E+01	-2.76E-01	-3.07E-02	-1.70E-06	-1.24E-01	-1.16E-02

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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	7.62E-02	5.77E-01	2.42E-01	5.82E-04	2.07E+03	5.16E+01	4.47E-06
	Transport	A2	4.29E-03	4.74E-02	1.31E-02	5.02E-06	2.41E+01	9.93E-02	1.24E-07
	Manufacturing	A3	9.24E-04	9.46E-03	3.66E-03	5.28E-06	1.71E+01	5.81E-01	5.42E-08
	Total (Consumption grid)	A1-3	8.14E-02	6.34E-01	2.58E-01	5.92E-04	2.11E+03	5.23E+01	4.64E-06
Construction process stage	Transport	A4	5.59E-04	6.10E-03	1.87E-03	1.59E-06	6.91E+00	3.11E-02	3.94E-08
	Construction	A5	1.07E-02	1.09E-01	3.55E-02	5.44E-04	1.82E+02	5.55E+00	9.09E-07
End of life	Deconstruction, demolition	C1	5.04E-03	5.38E-02	1.46E-02	5.31E-06	2.62E+01	4.52E-01	2.72E-07
	Transport	C2	5.84E-05	6.38E-04	2.05E-04	1.05E-07	7.15E-01	3.45E-03	5.39E-09
	Waste processing	C3	1.41E-02	1.05E-01	2.50E-02	3.37E-06	1.31E+01	1.56E+00	7.30E-08
	Disposal	C4	0.00E+00	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	-2.04E-02	-2.07E-01	-5.58E-02	-3.13E-05	-4.80E+02	-9.30E+00	-7.86E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	5.10E+00	2.85E+03	4.07E-07	4.31E-06	9.13E+01
	Transport	A2	1.21E-01	1.81E+01	7.03E-10	1.79E-08	1.42E+01
	Manufacturing	A3	1.04E-01	1.54E+01	2.64E-09	1.74E-08	9.58E+01
	Total (Consumption grid)	A1-3	5.33E+00	2.89E+03	4.11E-07	4.34E-06	2.01E+02
Construction process stage	Transport	A4	3.55E-02	5.39E+00	1.75E-10	5.65E-09	4.75E+00
	Construction	A5	4.87E-01	4.78E+02	1.05E-08	4.47E-07	1.78E+01
End of life	Deconstruction, demolition	C1	3.15E-01	4.65E+01	1.59E-09	2.75E-08	5.66E+00
	Transport	C2	3.62E-03	5.58E-01	1.54E-11	6.11E-10	8.18E-01
	Waste processing	C3	2.06E-02	5.64E+01	2.94E-09	1.07E-07	2.71E+00
	Disposal	C4	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	-1.18E+01	-3.38E+02	-6.03E-09	-1.85E-07	-1.53E+02

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	5.71E+01	0.00E+00	5.71E+01	1.26E+03	7.88E+02	2.04E+03
	Transport	A2	3.08E-01	0.00E+00	3.08E-01	2.37E+01	0.00E+00	2.37E+01
	Manufacturing	A3	7.52E+00	1.11E+01	1.86E+01	-7.05E+00	2.43E+01	1.72E+01
	Total (Consumption grid)	A1-3	6.49E+01	1.11E+01	7.60E+01	1.27E+03	8.12E+02	2.09E+03
Construction process stage	Transport	A4	9.73E-02	0.00E+00	9.73E-02	6.78E+00	0.00E+00	6.78E+00
	Construction	A5	-4.24E+00	1.16E+01	7.31E+00	1.21E+02	6.18E+01	1.82E+02
End of life	Deconstruction, demolition	C1	1.62E+00	0.00E+00	1.62E+00	-1.36E+01	3.43E+01	2.07E+01
	Transport	C2	9.09E-03	0.00E+00	9.09E-03	7.02E-01	0.00E+00	7.02E-01
	Waste processing	C3	7.09E-02	0.00E+00	7.09E-02	-4.08E+02	4.11E+02	3.07E+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	-7.84E+01	0.00E+00	-7.84E+01	-4.81E+02	0.00E+00	-4.81E+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^3
Product stage	Raw material supply	A1	5.25E-02	0.00E+00	0.00E+00	1.22E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.46E-03
	Manufacturing	A3	5.94E-02	7.76E-07	0.00E+00	1.39E-02
	Total (Consumption grid)	A1-3	1.12E-01	7.76E-07	0.00E+00	1.24E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	7.70E-04
	Construction	A5	2.29E-02	5.57E-06	0.00E+00	1.31E-01
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	1.18E-02
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	8.50E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.64E-02
	Disposal	C4	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	-2.33E-01

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	2.74E+00	5.80E+01	1.78E-03
	Transport	A2	2.76E-02	4.35E-01	1.64E-04
	Manufacturing	A3	8.35E-02	1.75E+00	3.85E-05
	Total (Consumption grid)	A1-3	2.85E+00	6.02E+01	1.98E-03
Construction process stage	Transport	A4	7.62E-03	1.35E-01	4.67E-05
	Construction	A5	3.05E-01	9.44E+00	2.35E-04
End of life	Deconstruction, demolition	C1	6.49E-02	1.43E+00	1.38E-04
	Transport	C2	7.53E-04	1.31E-02	4.79E+00
	Waste processing	C3	2.32E-01	1.29E+01	5.00E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.56E+00	-6.87E+01	-3.19E-03

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	1.35E-05	5.58E-01	6.19E-04	3.50E-02	3.20E-01
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	5.58E-01	6.19E-04	3.50E-02	3.20E-01
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	9.66E-05	1.41E-01	4.45E-03	3.98E-01	3.20E-03
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	1.11E+00	4.44E-03	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 – 1m of Hiline Clover 250mm with the weight of 30.55 kg/m

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

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	8.44E+01	8.34E+01	9.09E-01	3.28E-02	6.30E-06	3.82E-01	1.68E-02
	Transport	A2	2.01E+00	2.01E+00	1.31E-03	9.27E-04	4.51E-07	1.99E-02	1.16E-04
	Manufacturing	A3	1.38E+00	2.55E+00	-1.16E+00	1.64E-03	6.46E-08	4.18E-03	2.93E-04
	Total (Consumption grid)	A1-3	8.78E+01	8.80E+01	-2.53E-01	3.53E-02	6.81E-06	4.06E-01	1.72E-02
Construction process stage	Transport	A4	5.53E-01	5.52E-01	4.71E-04	2.17E-04	1.28E-07	2.24E-03	3.56E-05
	Construction	A5	1.16E+01	9.88E+00	1.71E+00	2.81E-03	4.73E-07	8.55E-02	4.64E-03
End of life	Deconstruction, demolition	C1	7.18E+00	7.17E+00	6.50E-03	7.68E-04	4.22E-07	1.32E-02	5.71E-04
	Transport	C2	5.55E-02	5.54E-02	5.39E-05	1.99E-05	1.32E-08	2.31E-04	3.45E-06
	Waste processing	C3	7.94E+01	7.94E+01	3.79E-03	4.44E-04	1.47E-07	2.58E-02	1.81E-04
	Disposal	C4	0.00E+00	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	-3.04E+01	-3.00E+01	-3.39E-01	-3.70E-02	-2.05E-06	-1.51E-01	-1.42E-02

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 &metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	8.96E-02	6.83E-01	2.87E-01	6.90E-04	2.49E+03	6.08E+01	5.26E-06
	Transport	A2	5.25E-03	5.80E-02	1.60E-02	6.10E-06	2.94E+01	1.21E-01	1.50E-07
	Manufacturing	A3	1.11E-03	1.14E-02	4.40E-03	6.15E-06	2.04E+01	7.01E-01	6.52E-08
	Total (Consumption grid)	A1-3	9.59E-02	7.53E-01	3.08E-01	7.03E-04	2.54E+03	6.17E+01	5.47E-06
Construction process stage	Transport	A4	6.75E-04	7.38E-03	2.26E-03	1.92E-06	8.35E+00	3.76E-02	4.77E-08
	Construction	A5	1.33E-02	1.39E-01	4.61E-02	1.12E-03	2.48E+02	6.98E+00	1.08E-06
End of life	Deconstruction, demolition	C1	5.31E-03	5.62E-02	1.52E-02	5.74E-06	2.73E+01	5.81E-01	2.76E-07
	Transport	C2	7.06E-05	7.72E-04	2.48E-04	1.27E-07	8.64E-01	4.17E-03	6.52E-09
	Waste processing	C3	1.77E-02	1.35E-01	3.23E-02	4.54E-06	1.72E+01	1.86E+00	9.88E-08
	Disposal	C4	0.00E+00	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	-2.47E-02	-2.50E-01	-6.75E-02	-3.70E-05	-5.75E+02	-1.13E+01	-9.58E-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^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	6.03E+00	3.30E+03	4.71E-07	4.98E-06	1.08E+02
	Transport	A2	1.48E-01	2.20E+01	8.57E-10	2.18E-08	1.73E+01
	Manufacturing	A3	1.19E-01	1.84E+01	3.18E-09	1.95E-08	1.16E+02
	Total (Consumption grid)	A1-3	6.30E+00	3.34E+03	4.75E-07	5.03E-06	2.41E+02
Construction process stage	Transport	A4	4.29E-02	6.52E+00	2.11E-10	6.83E-09	5.74E+00
	Construction	A5	6.11E-01	7.01E+02	1.59E-08	7.82E-07	2.85E+01
End of life	Deconstruction, demolition	C1	3.21E-01	5.31E+01	1.84E-09	3.43E-08	5.92E+00
	Transport	C2	4.37E-03	6.75E-01	1.87E-11	7.39E-10	9.89E-01
	Waste processing	C3	2.79E-02	7.04E+01	4.19E-09	1.52E-07	3.78E+00
	Disposal	C4	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	-1.40E+01	-4.09E+02	-7.28E-09	-2.23E-07	-1.83E+02

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	6.73E+01	0.00E+00	6.73E+01	1.50E+03	9.56E+02	2.46E+03
	Transport	A2	3.75E-01	0.00E+00	3.75E-01	2.88E+01	0.00E+00	2.88E+01
	Manufacturing	A3	9.00E+00	1.34E+01	2.24E+01	-9.12E+00	2.96E+01	2.05E+01
	Total (Consumption grid)	A1-3	7.67E+01	1.34E+01	9.01E+01	1.52E+03	9.85E+02	2.51E+03
Construction process stage	Transport	A4	1.18E-01	0.00E+00	1.18E-01	8.20E+00	0.00E+00	8.20E+00
	Construction	A5	-4.53E+00	1.40E+01	9.43E+00	1.59E+02	8.83E+01	2.47E+02
End of life	Deconstruction, demolition	C1	1.63E+00	0.00E+00	1.63E+00	-3.46E+01	5.56E+01	2.10E+01
	Transport	C2	1.10E-02	0.00E+00	1.10E-02	8.48E-01	0.00E+00	8.48E-01
	Waste processing	C3	1.29E-01	0.00E+00	1.29E-01	-7.43E+02	7.49E+02	5.60E+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	-9.38E+01	0.00E+00	-9.38E+01	-5.77E+02	0.00E+00	-5.77E+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^3
Product stage	Raw material supply	A1	6.45E-02	0.00E+00	0.00E+00	1.44E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.99E-03
	Manufacturing	A3	7.18E-02	7.76E-07	0.00E+00	1.67E-02
	Total (Consumption grid)	A1-3	1.36E-01	7.76E-07	0.00E+00	1.46E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	9.31E-04
	Construction	A5	3.95E-02	5.57E-06	0.00E+00	1.65E-01
End of life	Deconstruction, demolition	C1	5.29E-03	5.56E-06	0.00E+00	1.49E-02
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.03E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.34E-02
	Disposal	C4	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	-2.84E-01

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	3.22E+00	6.84E+01	2.09E-03
	Transport	A2	3.36E-02	5.29E-01	2.00E-04
	Manufacturing	A3	1.00E-01	2.10E+00	4.42E-05
	Total (Consumption grid)	A1-3	3.36E+00	7.10E+01	2.34E-03
Construction process stage	Transport	A4	9.21E-03	1.64E-01	5.65E-05
	Construction	A5	4.49E-01	1.72E+01	2.88E-04
End of life	Deconstruction, demolition	C1	9.01E-02	2.16E+00	1.39E-04
	Transport	C2	9.10E-04	1.58E-02	5.79E+00
	Waste processing	C3	4.23E-01	2.35E+01	9.12E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.89E+00	-8.39E+01	-3.79E-03

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	1.35E-05	6.86E-01	6.19E-04	4.05E-02	3.87E-01
	Total (Consumption grid)	A1-3	0.00E+00	1.35E-05	6.86E-01	6.19E-04	4.05E-02	3.87E-01
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	9.66E-05	1.71E-01	4.45E-03	4.81E-01	3.87E-03
End of life	Deconstruction, demolition	C1	0.00E+00	9.65E-05	1.81E+00	4.44E-03	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 – Transport to the building site	68 miles - This is an average distance to customer (Eton College)		
Scenario 1	Road transport –using 16-32 metric ton lorry	Km	108.8
	Fuel consumption	l/km	0.227
	Capacity utilisation (incl. empty returns)	%	26
	Bulk density of transported products	kg/m^3	-
A5 – Installation in the building	CPV Installation Process The waste involves cutting the inner pipe to size, with no more than 1% of the pipe wasted. The inner pipe is then welded using an electrofusion coupler. The outer casing is welded with an electrofusion oversleeve, and under normal conditions, no outer casing is wasted. After welding, the gap between the inner and outer pipes is filled with a bottle-pour ISO/POLY foam mix. Installation is then complete. LCA Considerations: Ancillary materials and the energy used for welding are included in the LCA analysis. The following quantities are considered for the installation of a 25mm Hiline Clover inner pipe (used as a representative example). All packaging used in A3 – at the factory will result in waste during the installation process.		
	Installation wastage rate	%	1
Energy	Energy	kWh	1.02
	Diesel used for trench	kWh	2.63
Ancillary materials used for the installation	Inner coupling	Kg	0.00825
	Inner coupling (metals)	Kg	0.000917
	Outer sleeve	Kg	0.25
	PUR Foam	Kg	0.183
Packaging waste	Wood waste to incineration	kg	0.054
	Plastic waste to incineration	kg	0.009
	Steel waste to recycling	Kg	0.005
C1 – Deconstruction	Pipework is dug out of its trench, then cut using a powered saw into manageable length to be disposed of. 100% of pipework removed and placed in skips and sent to incineration for energy recovery. It is assumed that 100% of the product is recovered for final disposal. All ancillary materials used in the installation process; Inner Couplings, Outer Sleeves and PUR Foam, will be considered as a deconstruction waste.		
	Inner coupling – plastic waste to incineration	kg	0.00825

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
	Inner coupling (metal waste to recycling	kg	0.000917
	Outer sleeve – plastic waste to incineration	kg	0.25
	PUR Foam waste to incineration	kg	0.183
C2 – Transportation	100% of pipework removed and placed in skips and sent to incineration for energy recovery. Assumed waste processing plant will be a maximum of 20km from point of use.		
	Road transport - Lorry, >32 metric ton	km	20
C3 – Waste processing	Once the Hiline Clover product reaches the waste processing facility, it will undergo appropriate processing. Since the product is made of polypropylene granules and PUR insulation the most suitable end-of-life scenario has been selected. These items can ultimately be collected, cleaned, and repurposed or, more likely, recycled for reuse in new production parts. However, there is currently no process in place to deconstruct or recycle the polypropylene material. Therefore, an industrial average end-of-life of Polypropylene and Polyurethane has been used according to BRE 2025 Product Category Rules (PN 514 Rev 3.2), which is 100% of waste to energy recovery. The benefits of Module D include the energy credits from waste incineration of plastic for energy generation at the end-of-life.		
25 mm	Polypropylene waste to incineration	kg	1.21
	Polyurethane waste to incineration	kg	0.47
32 mm	Polypropylene waste to incineration	kg	1.41
	Polyurethane waste to incineration	kg	0.60
40 mm	Polypropylene waste to incineration	kg	1.64
	Polyurethane waste to incineration	kg	0.58
50 mm	Polypropylene waste to incineration	kg	2.04
	Polyurethane waste to incineration	kg	0.70
63 mm	Polypropylene waste to incineration	kg	2.66
	Polyurethane waste to incineration	kg	0.89
75 mm	Polypropylene waste to incineration	kg	3.08
	Polyurethane waste to incineration	kg	1.10
90 mm	Polypropylene waste to incineration	kg	4.38
	Polyurethane waste to incineration	kg	1.75
110 mm	Polypropylene waste to incineration	kg	6.36
	Polyurethane waste to incineration	kg	2.07

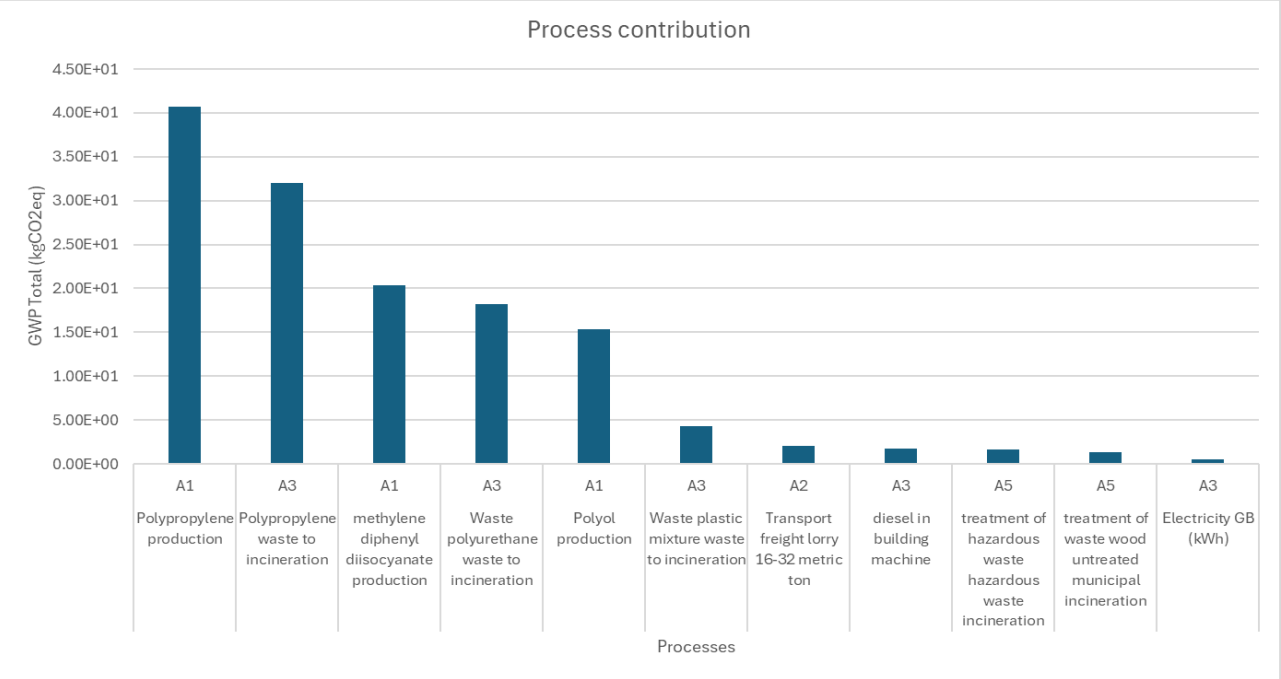
Scenarios and additional technical information			
Scenario	Parameter	Units	Results
125 mm	Polypropylene waste to incineration	kg	7.28
	Polyurethane waste to incineration	kg	2.58
160 mm	Polypropylene waste to incineration	kg	12.53
	Polyurethane waste to incineration	kg	4.12
200 mm	Polypropylene waste to incineration	kg	18.6
	Polyurethane waste to incineration	kg	6.67
250 mm	Propylene waste to incineration	kg	22.85
	Polyurethane waste to incineration	kg	7.70
C4 – Disposal	100% of the waste will be incineration and no waste left to landfill		
Module D	The benefits of Module D include energy credits derived from the waste incineration of wood for energy generation at the end of life. **Benefits due to incineration of Polypropylene:** The scenario is assumed at the end of life, the Polypropylene will be incinerated in the UK, so the UK electricity dataset have been selected. The dataset used to calculate the avoided impacts of electricity consumption in a future system was 'Electricity, medium voltage {GB}| market for | Alloc Def, U'. This process is energy efficient, with 37.4% of the combustion heat recovered after incineration (Environmental agency, 2013) (DEFRA, 2013). Calorific value of the waste polypropylene is 46.4 MJ/kg by Kittle, P. A. (1993) - Alternate Daily Cover Materials and Subtitle D – The Selection Technique. Rusmar Incorporated, West Chester, PA. During the incineration 37.4% of the combustion heat recovered i.e., =-46.4*0.374 = -17.35 kWh/kg **Benefits due to incineration of Polyurethane:** Calorific value of polyurethane is 33.18MJ/kg (Hasanzadeh, R. et al. (2022). Polyurethane Foam Waste Upcycling into an Efficient and Low Pollutant Gasification Syngas. Energies.) The scenario is assumed at the end of life, the Polyurethane foam will be incinerated in the UK, so the UK electricity dataset have been selected. The dataset used to calculate the avoided impacts of electricity consumption in a future system was 'Electricity, medium voltage {GB}| market for | Alloc Def, U'. This process is energy efficient, with 37.4% of the combustion heat recovered after incineration (Environmental agency, 2013) (DEFRA, 2013) During the incineration 37.4% of the combustion heat recovered i.e., =-33.18*0.374= -12.41kWh/kg		
25 mm	Benefits due to incineration of Polypropylene	kg	1.21
	Benefits due to incineration of Polyurethane	kg	0.47
32 mm	Benefits due to incineration of Polypropylene	kg	1.41
	Benefits due to incineration of Polyurethane	kg	0.60

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
40 mm	Benefits due to incineration of Polypropylene	kg	1.64
	Benefits due to incineration of Polyurethane	kg	0.58
50 mm	Benefits due to incineration of Polypropylene	kg	2.04
	Benefits due to incineration of Polyurethane	kg	0.70
63 mm	Benefits due to incineration of Polypropylene	kg	2.66
	Benefits due to incineration of Polyurethane	kg	0.89
75 mm	Benefits due to incineration of Polypropylene	kg	3.08
	Benefits due to incineration of Polyurethane	kg	1.10
90 mm	Benefits due to incineration of Polypropylene	kg	4.38
	Benefits due to incineration of Polyurethane	kg	1.75
110 mm	Benefits due to incineration of Polypropylene	kg	6.36
	Benefits due to incineration of Polyurethane	kg	2.07
125 mm	Benefits due to incineration of Polypropylene	kg	7.28
	Benefits due to incineration of Polyurethane	kg	2.58
160 mm	Benefits due to incineration of Polypropylene	kg	12.53
	Benefits due to incineration of Polyurethane	kg	4.12
200 mm	Benefits due to incineration of Polypropylene	kg	18.6
	Benefits due to incineration of Polyurethane	kg	6.67
250 mm	Benefits due to incineration of Polypropylene	kg	22.85
	Benefits due to incineration of Polyurethane	kg	7.70

Interpretation of results

The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing phase, covered by information modules A1-A3 of EN15804:2012+A2:2019.

The bar chart titled "Process Contribution" displays the carbon footprint (in $kgCO_2eq$) of various processes, in the production of Hiline Clover 200mm pipe (which is taken as a representative by production or most selling product in the Hiline Clover range). Polypropylene production (A1) is the single largest contributor to total GWP, followed by polypropylene waste incineration (A3), indicating that both material intensity and end-of-life treatment of polymers are key hotspots. MDI production (A1) and polyurethane waste incineration (A3) also contribute significantly, reflecting the high embodied carbon of polyurethane chemistry and its disposal route.



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