Statement of Verification

BREG EN EPD No: 000785 Issue: 02

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

Teknion Furniture Systems (M) Sdn Bhd

are in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:
1m of Tek Vue (Single) and Focus (double) glaze partition wall frame (excluding glazing). Service life of 10 years.

Company Address

Teknion Furniture Systems (M) Sdn Bhd
Lot 761, Jalan Haji Sirat,
Off Jalan Meru,
42100 Klang,
Selangor

teknion

Signed for BRE Global Limited — Hayley Thomson, Operator

Date of this Issue	Date of First Issue	Expiry Date
27 April 2026	21 April 2026	20 April 2031

BRE Global Verified EPD

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ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EPD Number: 000785

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2025 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.2
Commissioner of LCA study	**LCA consultant/Tool**
Teknion Furniture Systems (M) Sdn Bhd Lot 761, Jalan Haji Sirat, Off Jalan Meru, 42100 Klang, Selangor	LCA consultant: Grace Ong LCA Tool: BRE LINA A2
Declared/Functional Unit	**Applicability/Coverage**
1m of Tek Vue (Single) and Focus (double) glaze partition wall frame (excluding glazing). Service life of 10 years.	Other (please specify). Applicability – Product specific
EPD Type	**Background database**
Cradle to Grave	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: Kim Allbury
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)

Teknion Malaysia
Teknion Furniture Systems (M) Sdn Bhd
Lot 761, Jalan Haji Sirat, Off Jalan Meru,
42100 Klang,
Selangor

Construction Product:

Product Description

Focus and Tek Vue is a demountable wall system that seamlessly integrates a variety of glass and solid fascia to create an array of modern, architecturally refined enclosures. They are used in office buildings to enhance workplace flexibility, providing a sustainable, modular alternative to traditional drywall that allows for rapid reconfigurations without significant downtime, mess, or demolition costs.

Focus and Tek Vue system consist of ceiling, base and vertical frames and are available to accommodate 10mm and 12mm glass fascias. Focus frame offer the option of single (centered or offset) or double glazing while Tek Vue is a single glazed (centered only) frame. Both the wall system consists of aluminium extruded profile which is cut to size and fusion welded together to form frames. In this analysis, the aluminium extruded frame profile manufactured has been modelled and the glass used at the final installation is excluded in the analysis.

The declared products are 1m x 1m demounted wall system frame with contains approximately length of 2-meters' aluminium profile, with an average mass of 8.25 kg/m for Focus wall system and 6.5kg/m for Tek Vue wall system.

	Focus Frame	Tek Vue Frame
Dimension	1m x 1m	1m x 1m
Packaging Weight (Cardboard & plastic)	0.27kg	0.11kg

** More product information can be found in brochure and price guide, please reach out to Teknion technical team for more information.

Technical Information

Key technical properties and certifications are shown in the table below. The Reference Service Life (RSL) for all two products included in the EPD is 10 years.

Technical Properties (Tests)	Focus Value	Tek Vue Value
ANSI/BIFMA X5.6-2016	Complies	Complies
ACOUSTICS: ASTM E90-2009 ASTM E413-2016	STC-45	STC-36
FLAMMABILITY: ASTM E84-19a [ASTM E84-16]	Complies	Complies
International Building code 2021 California Building Code 2022 National Building Code of Canada 2020	Complies	Complies
ANSI/BIFMA Furniture Emissions Standard (M7.1/X7.1-2011 R2021) Indoor Advantage™ Gold - Registration # SCS-IAQ-11172	Pass	Pass

Notes: The above listed technical properties are from the Certificate of Compliance (CoC), and it's an internal document which will be available upon request. Please contact the technical team for more information.

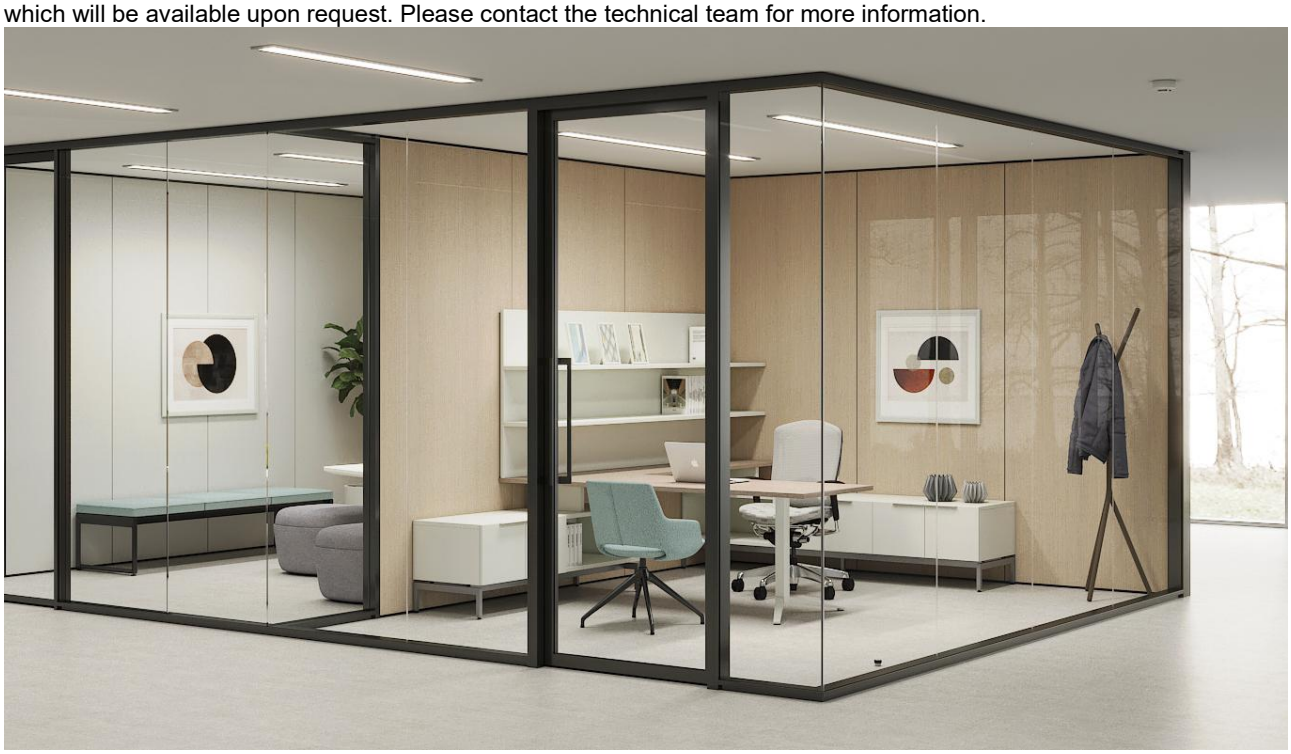


Image 1: The modelled configuration is Focus demountable wall system with a pivot door. This modelling does not include all other furniture (desks, seating, storage systems) and glass wall showed in the picture. The LCA results in this EPD cover only the aluminium frame and exclude the glass, as glass is not part of Teknion production.

Image 2. Notes: The modelled configuration is Tek Vue demountable wall system with a pivot door. This modelling does not include all other furniture (desks, seating, storage systems) and glass wall showed in the picture. The LCA results in this EPD cover only the aluminium frame and exclude the glass, as glass is not part of Teknion production.

Main Product Contents

Like many commercial furniture products, Focus and Tek Vue is available in multitude of configurations. For this particular study, a representative configuration was used. This composition of the configuration is provided in the table below:

	Focus	Tek Vue
Weight	8.25kg/m	6.50kg/m
Dimension	1m x 1m	
Material/Chemical Input	**%**	**%**
Aluminium	86.86%	76.30%
Steel	5.55%	21.07%
Zinc	2.68%	0.44%
Polyoxymethylene (POM)	2.06%	0.00%
Polycarbonate (PC)	1.08%	0.23%
Acrylonitrile Butadiene Styrene (ABS)	0.00%	0.05%
Other	1.77%	1.92%

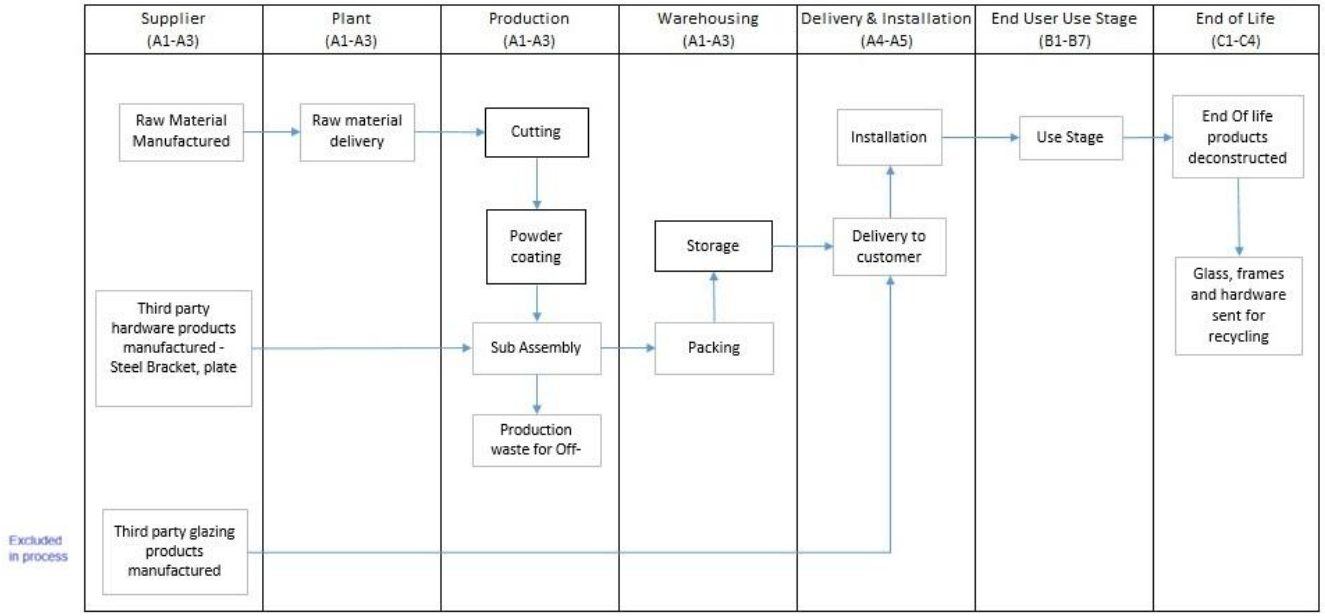
Manufacturing Process

Metal parts undergo several processes, including cutting, welding, followed by powder coating. Glass, sub assembly components and metal hardware components are assembled and packed ready for delivery.

Notes: The manufacturing process is the same for all the products in the EPD.

Process flow diagram

Wall System Product Process Flow:



Construction Installation

The product is installed manually using basic hand tools, requiring minimal energy input. For detailed installation guidance, please contact the Teknion technical team.

In this LCA analysis, the glass installed on-site is not included in the analysis. The end user of this EPD can take the frame and A5 impacts, and they can add the glass impacts to calculate the impacts of the whole window frame.

An end-user calculation table has been provided at the end of the document to customise the impacts. Accordingly, the Ecoinvent 3.8 glass impacts (per kg CO_2-eq) are included. The end user may either apply the Ecoinvent figure or refer to the supplier's EPD.

Note: The wall system frame profiles are manufactured in lengths based on customer requirements; therefore, an installation waste rate of 0% has been assumed and only the waste from the packaging is included.

Use Information

Provided recommended care procedures are followed, Focus/Tek Vue is designed to outlast its intended lifespan without the need for specialized maintenance.

End of Life

At the end of its life, Focus/Tek Vue is designed for manual disassembly, requiring minimal energy as no machinery or powered equipment is needed for the dismantling process. It is assumed that 100% of the product is recovered at the demolition and sent to the waste processing facility for waste treatment.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m of Tek Vue (Single) and Focus (double) glaze partition wall frame (excluding glazing). Service life of 10 years.

System boundary

This is a Cradle-to-Grave EPD, reporting the upstream processing stages A1 to A3, construction and Installation (A4-A5), use stages (B1 to B7), end-of-life stages (C1 to C4) and Module D in accordance with EN15804:2012+A2:2019 and BRE 2025 Product Category Rules (PN 514 Rev 3.2). Study period use for the LCA analysis is 10 years.

Data sources, quality and allocation

For the Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD), Teknion utilised specific primary data extracted from its production operations at Teknion Malaysia, modelled using the LINA A2 LCA and the Ecoinvent 3.8 database. In accordance with the requirements of EN15804:2012 + A2:2019, the most current available data has been used. Manufacturer-specific data has been used for the LCA analysis. The data represents 1m x 1m of single and double glaze partition wall frame, based on production period between 01/12/2023 and 30/11/2024 from Teknion Malaysia's factory. A production quantity of one-meter square was used, as the data was sourced directly from the ERP system.

The primary production figures are taken from the manufacturers ERP system, and the secondary datasets are derived from Ecoinvent v3.8, and the LCA tool used was BRE LINA A2. The LCA analysis is conducted for the 1m x 1m demounted wall system frame with contains approximately with the length of 2 meters' aluminium profile, with an average mass of 8.25 kg/m for Focus wall system and 6.5kg/m for Tek Vue wall system. For the production process, the facility uses the national grid consumption mix for the production.

In addition to the demounted wall system, other products are manufactured in the factory. Therefore, the allocation of electricity, fuel, water consumption, and discharge are required. There are multiple configurations and combinations of products produced on the production line (in terms of size, door type, accessories, etc.). Therefore, allocating energy consumption, water, and wastewater based on mass would assign higher values to certain products. Instead, using the sales revenue of the product line relative to the total revenue is both more accurate. Therefore, Energy, water, and wastewater leaving the factory has been allocated based on the % revenue of the product line over the total revenue. This allocation has been done according to the provisions of BRE PCR PN514 and EN 15804, using the unit production quantity. Actual usage figures were employed for raw materials, ancillary materials, and packaging. All waste from production is recycled and quantities are directly taken from the ERP system, in addition, the water used for the powder coating (paint line) was taken directly from the ERP system. Upon data review, it was noted that the mass balance is within the acceptable range, and no data uplift has been performed. In addition, no proxy dataset was used for the LCA modelling.

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 EN15804+A2:2019. BRE LINA+A2 uses the characterisation factors that are specified in annex C of the 15804 A2 standard.

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 1-2 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

The data quality assessment presented above has been carried out in accordance with Table E.1 in the Annex section of the BRE PCR EN 15804+A2 V3.2. Manufacturer country specific datasets have been selected from the Ecoinvent LCI for this LCA. Teknion Malaysia uses national grid electricity and natural gas for production; therefore, location-based modelling has been followed the LCA analysis following the BRE PCR. The GWP carbon footprint for using 1 kWh of electricity, Malaysia is 0.840 kgCO2e/kWh. The GWP carbon footprint for using 1 kWh of Natural gas (RoW) is 0.256 kgCO2e/kWh. The quality level of time representativeness is also Very Good as the background LCI datasets are based on Ecoinvent v3.8 which was compiled in 2021.

Therefore, there is less than 5 years between the Ecoinvent LCI reference year and the time period for which the LCA was undertaken.

Cut-off criteria

In both manufacturing sites, all raw materials and energy inputs to the manufacturing process have been included, except for direct emissions to air, water, and soil, which are not measured at either manufacturing facility.
In the Teknion Malaysia LCA inventory process, all data related to raw materials, packaging materials, and consumable items are included in the modelling.

LCA Results – Focus frame, Weight: 8.25 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	6.07E+01	6.03E+01	1.63E-01	1.37E-01	2.46E-06	3.66E-01	2.31E-02
	Transport	A2	2.00E-01	1.99E-01	5.82E-05	1.30E-04	4.02E-08	2.67E-03	1.56E-05
	Manufacturing	A3	9.53E+00	9.52E+00	-3.14E-02	3.90E-02	5.14E-07	3.53E-02	2.98E-03
	Total (Consumption grid)	A1-3	7.04E+01	7.01E+01	1.32E-01	1.76E-01	3.01E-06	4.04E-01	2.61E-02
Construction process stage	Transport	A4	1.77E-01	1.77E-01	1.60E-04	8.32E-05	3.98E-08	7.03E-04	1.33E-05
	Construction	A5	4.15E-02	4.15E-02	6.75E-06	1.59E-06	2.09E-09	6.29E-05	3.43E-07
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.49E-01	4.48E-01	2.22E-04	2.77E-04	9.12E-08	1.80E-03	4.51E-05
	Waste processing	C3	2.77E+00	2.75E+00	1.29E-02	2.71E-03	1.46E-07	9.42E-03	5.68E-04
	Disposal	C4	1.50E-02	1.48E-02	1.33E-04	1.65E-05	1.65E-09	9.87E-05	4.35E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.20E+02	-1.20E+02	3.49E-01	-1.60E-01	-3.56E-06	-7.69E-01	-3.60E-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& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	6.25E-02	6.45E-01	2.02E-01	9.77E-04	6.65E+02	2.05E+01	8.88E-06
	Transport	A2	6.69E-04	7.40E-03	2.00E-03	8.82E-07	2.75E+00	1.27E-02	1.06E-08
	Manufacturing	A3	6.73E-03	5.49E-02	1.64E-02	1.53E-05	1.20E+02	2.58E+00	1.27E-07
	Total (Consumption grid)	A1-3	6.99E-02	7.08E-01	2.21E-01	9.93E-04	7.88E+02	2.31E+01	9.02E-06
Construction process stage	Transport	A4	2.05E-04	2.24E-03	6.87E-04	8.06E-07	2.64E+00	1.34E-02	1.32E-08
	Construction	A5	2.62E-05	2.79E-04	9.45E-05	1.28E-08	1.24E-01	8.54E-04	1.28E-09
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.80E-04	5.23E-03	1.62E-03	2.66E-06	6.41E+00	3.60E-02	2.86E-08
	Waste processing	C3	1.78E-03	1.94E-02	5.49E-03	8.83E-05	1.63E+01	3.74E-01	1.48E-07
	Disposal	C4	2.46E-05	2.64E-04	7.85E-05	3.28E-08	2.13E-01	6.77E-03	1.48E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.29E-01	-1.34E+00	-3.87E-01	-1.04E-04	-1.08E+03	-1.43E+01	-9.92E-06

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	4.58E+00	1.68E+03	1.30E-07	1.45E-06	1.49E+02
	Transport	A2	1.25E-02	2.43E+00	1.10E-10	2.04E-09	1.04E+00
	Manufacturing	A3	8.04E-02	1.09E+02	2.27E-09	7.12E-08	2.30E+01
	Total (Consumption grid)	A1-3	4.68E+00	1.79E+03	1.32E-07	1.53E-06	1.73E+02
Construction process stage	Transport	A4	1.40E-02	2.15E+00	7.87E-11	2.18E-09	1.56E+00
	Construction	A5	5.78E-04	1.55E-01	7.75E-12	1.06E-10	2.24E-02
Use Stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.92E-02	6.44E+00	2.38E-10	5.72E-09	3.10E+00
	Waste processing	C3	1.53E-01	4.73E+01	1.53E-09	5.94E-08	1.48E+01
	Disposal	C4	1.24E-03	2.33E+02	1.37E-11	3.62E-10	2.75E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.48E+00	-3.09E+03	-1.26E-07	-2.64E-06	-2.25E+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	7.21E+01	0.00E+00	7.21E+01	6.48E+02	9.50E+00	6.57E+02
	Transport	A2	5.67E-03	0.00E+00	5.67E-03	8.25E-01	0.00E+00	8.25E-01
	Manufacturing	A3	4.95E+00	3.26E+00	8.21E+00	8.39E+01	1.44E+00	8.54E+01
	Total (Consumption grid)	A1-3	7.71E+01	3.26E+00	8.03E+01	7.33E+02	1.09E+01	7.44E+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	-3.60E+00	3.61E+00	5.94E-03	1.58E-01	0.00E+00	1.58E-01
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	1.34E+00	0.00E+00	1.34E+00	9.56E+00	0.00E+00	9.56E+00
	Disposal	C4	1.36E-02	0.00E+00	1.36E-02	2.10E-01	0.00E+00	2.10E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.63E+01	0.00E+00	-6.63E+01	-1.08E+03	0.00E+00	-1.08E+03

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	2.00E+00	0.00E+00	0.00E+00	5.18E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.13E-04
	Manufacturing	A3	2.53E-01	0.00E+00	0.00E+00	6.17E-02
	Total (Consumption grid)	A1-3	2.26E+00	0.00E+00	0.00E+00	5.80E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.34E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.05E-05
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	8.88E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	9.22E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.64E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	5.59E+00	0.00E+00	0.00E+00	-3.86E-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	1.06E+01	9.91E+01	1.65E-03
	Transport	A2	1.13E-03	9.16E-03	5.84E-06
	Manufacturing	A3	6.76E-01	1.37E+01	3.85E-05
	Total (Consumption grid)	A1-3	1.13E+01	1.13E+02	1.70E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	6.96E-04	1.43E-02	1.03E-06
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	1.45E-01	3.33E+00	3.92E-05
	Disposal	C4	5.73E-03	4.11E-01	8.51E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.37E+01	-1.50E+02	-1.25E-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
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	1.28E-02	2.39E-05	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	1.28E-02	2.39E-05	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.99E-01	8.52E-09	0.00E+00
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	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
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

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results – Tek Vue frame, Weight: 6.5kg/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	4.31E+01	4.29E+01	1.16E-01	9.67E-02	1.84E-06	2.60E-01	1.70E-02
	Transport	A2	1.36E-01	1.36E-01	5.57E-05	8.62E-05	2.76E-08	1.09E-03	1.24E-05
	Manufacturing	A3	5.86E+00	5.84E+00	-4.06E-03	2.21E-02	3.30E-07	2.06E-02	1.70E-03
	Total (Consumption grid)	A1-3	4.91E+01	4.89E+01	1.12E-01	1.19E-01	2.20E-06	2.82E-01	1.87E-02
Construction process stage	Transport	A4	1.40E-01	1.40E-01	1.27E-04	6.57E-05	3.14E-08	5.55E-04	1.05E-05
	Construction	A5	2.61E-02	2.61E-02	3.95E-06	8.31E-07	9.21E-10	2.82E-05	1.93E-07
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.54E-01	3.54E-01	1.75E-04	2.18E-04	7.20E-08	1.42E-03	3.56E-05
	Waste processing	C3	1.57E+00	1.56E+00	8.74E-03	1.84E-03	1.09E-07	6.91E-03	3.86E-04
	Disposal	C4	1.05E-02	1.04E-02	9.07E-05	1.15E-05	1.24E-09	6.97E-05	2.98E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.26E+01	-8.27E+01	2.43E-01	-1.09E-01	-2.45E-06	-5.26E-01	-2.48E-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& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.51E-02	4.63E-01	1.48E-01	5.78E-04	4.73E+02	1.50E+01	6.22E-06
	Transport	A2	2.78E-04	3.06E-03	8.62E-04	7.21E-07	1.92E+00	9.98E-03	8.08E-09
	Manufacturing	A3	3.85E-03	3.20E-02	9.76E-03	9.58E-06	7.43E+01	1.36E+00	7.41E-08
	Total (Consumption grid)	A1-3	4.92E-02	4.98E-01	1.58E-01	5.88E-04	5.49E+02	1.64E+01	6.31E-06
Construction process stage	Transport	A4	1.62E-04	1.76E-03	5.42E-04	6.36E-07	2.08E+00	1.06E-02	1.04E-08
	Construction	A5	1.19E-05	1.25E-04	4.15E-05	6.74E-09	5.27E-02	5.36E-04	5.40E-10
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.79E-04	4.13E-03	1.28E-03	2.10E-06	5.06E+00	2.84E-02	2.26E-08
	Waste processing	C3	1.43E-03	1.56E-02	4.43E-03	6.00E-05	1.18E+01	2.49E-01	1.16E-07
	Disposal	C4	1.76E-05	1.90E-04	5.63E-05	2.29E-08	1.52E-01	4.96E-03	1.06E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.82E-02	-9.21E-01	-2.68E-01	-7.12E-05	-7.46E+02	-9.76E+00	-6.80E-06

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	3.32E+00	1.19E+03	1.07E-07	1.04E-06	1.12E+02
	Transport	A2	8.74E-03	1.83E+00	7.36E-11	1.59E-09	8.44E-01
	Manufacturing	A3	4.52E-02	6.55E+01	1.47E-09	4.27E-08	1.18E+01
	Total (Consumption grid)	A1-3	3.37E+00	1.25E+03	1.09E-07	1.09E-06	1.24E+02
Construction process stage	Transport	A4	1.11E-02	1.70E+00	6.21E-11	1.72E-09	1.23E+00
	Construction	A5	2.52E-04	8.78E-02	4.98E-12	6.04E-11	9.71E-03
Use Stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.30E-02	5.08E+00	1.88E-10	4.51E-09	2.45E+00
	Waste processing	C3	1.07E-01	3.16E+01	9.87E-10	4.00E-08	1.01E+01
	Disposal	C4	8.74E-04	1.59E+02	9.45E-12	2.49E-10	2.03E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.90E-01	-2.13E+03	-9.14E-08	-1.82E-06	-1.54E+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	5.24E+01	0.00E+00	5.24E+01	4.66E+02	2.12E+00	4.68E+02
	Transport	A2	1.64E-03	0.00E+00	1.64E-03	2.39E-01	0.00E+00	2.39E-01
	Manufacturing	A3	3.02E+00	1.34E+00	4.36E+00	4.92E+01	1.12E+00	5.03E+01
	Total (Consumption grid)	A1-3	5.54E+01	1.34E+00	5.68E+01	5.16E+02	3.25E+00	5.19E+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	-1.48E+00	1.48E+00	2.44E-03	6.51E-02	0.00E+00	6.51E-02
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	9.18E-01	0.00E+00	9.18E-01	7.28E+00	0.00E+00	7.28E+00
	Disposal	C4	9.28E-03	0.00E+00	9.28E-03	1.51E-01	0.00E+00	1.51E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.49E+01	0.00E+00	-4.49E+01	-7.40E+02	0.00E+00	-7.40E+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	1.73E+00	0.00E+00	0.00E+00	3.79E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.46E-04
	Manufacturing	A3	1.04E-01	0.00E+00	0.00E+00	3.27E-02
	Total (Consumption grid)	A1-3	1.84E+00	0.00E+00	0.00E+00	4.11E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.63E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.28E-05
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	7.01E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	6.13E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.20E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	4.43E+00	0.00E+00	0.00E+00	-2.62E-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	8.24E+00	7.33E+01	1.21E-03
	Transport	A2	3.26E-04	2.65E-03	1.69E-06
	Manufacturing	A3	3.88E-01	7.88E+00	2.18E-05
	Total (Consumption grid)	A1-3	8.63E+00	8.12E+01	1.23E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	2.86E-04	5.87E-03	4.25E-07
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	9.96E-02	2.27E+00	3.22E-05
	Disposal	C4	3.90E-03	2.79E-01	6.30E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.62E+01	-1.03E+02	-8.50E-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
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	8.88E-03	1.66E-05	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	8.88E-03	1.66E-05	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	2.05E-01	3.50E-09	0.00E+00
Use stage	Use stage	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	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
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

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Information on biogenic carbon content

Biogenic Carbon Content		Units	Results
Focus	Biogenic carbon (product)	kg C	0.00E+00
	Biogenic carbon (packaging)	kg C	1.20E-01
Tek Vue	Biogenic carbon (product)	kg C	0.00E+00
	Biogenic carbon (packaging)	kg C	5.00E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Scenarios and additional technical information

(the result analysis is showing the worst-case scenario)

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	Products manufactured in Malaysia are distributed both domestically within Malaysia and internationally across the Asia region, Australia, and the Middle East. In this LCA analysis, 100km by road has been modelled for module A4 as a typical distance from the Teknion site to the construction unit. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module A4 if required.		
Transport 1	Road transport –16-32 metric ton lorry	km	100
	Fuel consumption	l/km	0.227
	Capacity utilisation (incl. empty returns)	%	26
A5 – Installation in the building	The product is installed manually using basic hand tools, requiring minimal energy input. Therefore, no product waste is generated during installation, and only packaging waste is produced.		
Installation waste - Focus	Installation wastage rate	%	0
	Packaging waste – Cardboard waste to recycling	kg	0.26
	Packaging waste – Plastic waste to incineration	kg	0.01
Installation waste - Tek Vue	Packaging waste – Cardboard waste to recycling	kg	0.11
	Packaging waste – Plastic waste to incineration	kg	0.01
B1 – Use stage	Once installed, no emission to air, water, and soil throughout the service life of the product.		
B2 - Maintenance			
B3 - Repair			

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
B4 - Replacement	Once installed, the product is ready for use. Throughout its 10-years reference service life, this product requires no maintenance, repair, replacement, refurbishment. It is a non-powered system, therefore, no operational energy, and operational water are required.		
B5 - Refurbishment			
B6 - Operational energy use			
B7 - Operational water use			
Reference service life	10 years		
Study period used	10 years		
Design Application Parameters	Use as indicated in product brochure, user instruction and warranty		
C1 – Deconstruction	At the end of the product's life, the wall system is dismantled, and materials are separated. Energy consumption is minimal due to manual dismantling with no involvement of machinery or power. It is assumed that the product is recovered at the demolition and sent to the waste processing facility for waste treatment. As per the BRE PCR EN15804+A2, 95% of the product's metal part will be recycled and reused while the 5% may end up in landfill. The other composite will have 100% recovered.		
C2 – Transportation	Distance from the dismantling site to a disposal site will be no more than 100km. The transport mode is a 3.5-7.5ton truck.		
	Road transport by Lorry 3.5 -7.5 metric ton	km	100
C3 – waste processing	This glass partition system frame is made up of Aluminium, steel, zinc and plastic like POM, PC, powder coating. According to the BRE PCR EN15804+A2, the following end of life scenarios will be applied to the materials: • Metal components such as steel and aluminium will be 95% recycled and reused while 5% may end up in landfill. Steel and aluminium recycling will involve a process of collecting, separating, compacting, shredding, heating, refining, and solidifying. The powder coating cannot be separated out from the final waste so it is assumed that this will end up in landfill. • Mixed plastic components will be incinerated for energy recovery (e.g. heat, electricity.) • Zinc cannot be separated from the final waste because of the less quantity, which is less than 5% of the overall composition, therefore in this analysis its assumed as the zinc waste quantity has been treated as Aluminium waste (same assumption has been followed in the Module D calculation).		
Focus	Steel waste to recycle - 95%	kg	0.44
	Aluminium waste to recycle - 95%	kg	7.16
	Plastic mixed waste to incinerate- 100%	kg	0.26
Tek Vue	Steel waste to recycle - 95%	kg	1.30

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
	Aluminium waste to recycle - 95%	kg	4.87
	Plastic mixed waste to incinerate- 100%	kg	0.02
C4 – Disposal	Some materials cannot be recycled during waste processing process and may end up in landfill.		
Focus	Steel waste to landfill– 5%	kg	0.03
	Aluminium waste to landfill (with powder coating waste) – 5%	kg	0.38
Tek Vue	Steel waste to landfill (with powder coating waste) – 5%	kg	0.07
	Aluminium waste to landfill (with powder coating waste) – 5%	kg	0.26
Module D - Focus	The glass wall partition is made up of post-consumer and virgin materials. When calculating the benefits of recycling steel and aluminium, the pre-existing recycled content has been removed, and the benefits have been calculated only for virgin steel and aluminium. The pre-existing recycled content in the Ecoinvent 3.8 Steel dataset is 36.4%; therefore, the benefits have been calculated by excluding the recycled content. That is, the benefits are calculated based solely on the virgin steel content. Pre - existing recycled content (Post-consumer waste) = 0.16kg Benefits due to recycling of virgin steel = 0.28 kg The pre-existing recycled content in the Ecoinvent 3.8 aluminium alloy dataset is 25.9%; therefore, the benefits have been calculated by excluding the recycled content. That is, the benefits are calculated based solely on the virgin aluminium content. Pre - existing recycled content (Post-consumer waste) = 1.85kg Benefits due to recycling of virgin aluminium = 5.31kg Yield is assumed to be 100% during the recycling process. The incineration benefits have been calculated for Waste plastic mixture. Therefore, the plastic mixture dataset has been used for the analysis. The incinerated energy and heat will replace the European average mix. Benefits due to incineration of waste plastic mixture = 0.26 kg		

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
Tek Vue	The pre-existing recycled content in the Ecoinvent 3.8 Steel dataset is 36.4%; therefore, the benefits have been calculated by excluding the recycled content. That is, the benefits are calculated based solely on the virgin steel content. Pre - existing recycled content (Post-consumer waste) = 0.47kg Benefits due to recycling of virgin steel = 0.83 kg The pre-existing recycled content in the Ecoinvent 3.8 aluminium alloy dataset is 25.9%; therefore, the benefits have been calculated by excluding the recycled content. That is, the benefits are calculated based solely on the virgin aluminium content. Pre - existing recycled content (Post-consumer waste) = 1.26kg Benefits due to recycling of virgin aluminium = 3.61kg Yield is assumed to be 100% during the recycling process. The incineration benefits have been calculated for Waste plastic mixture. Therefore, the plastic mixture dataset has been used for the analysis. The incinerated energy and heat will replace the European average mix. Benefits due to incineration of waste plastic mixture = 0.02 kg		

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 chart illustrates the process contribution to carbon emissions ($kgCO_2eq$), The most significant impact comes from Aluminium alloy production (AlMg3) (A1) which stands out as the dominant contributor far exceeding all other processes, contributes nearly 70% of the total impact. The secondary drivers would be the operational energy - electricity and natural gas uses in manufacturing processes (A3) combined accounts for about 12.2%, followed by treatment of aluminium waste (A1), polycarbonate, powder coating, and steel production which are minor contributors. This indicates that raw material processing, especially aluminium, are the most critical areas for carbon reduction efforts.

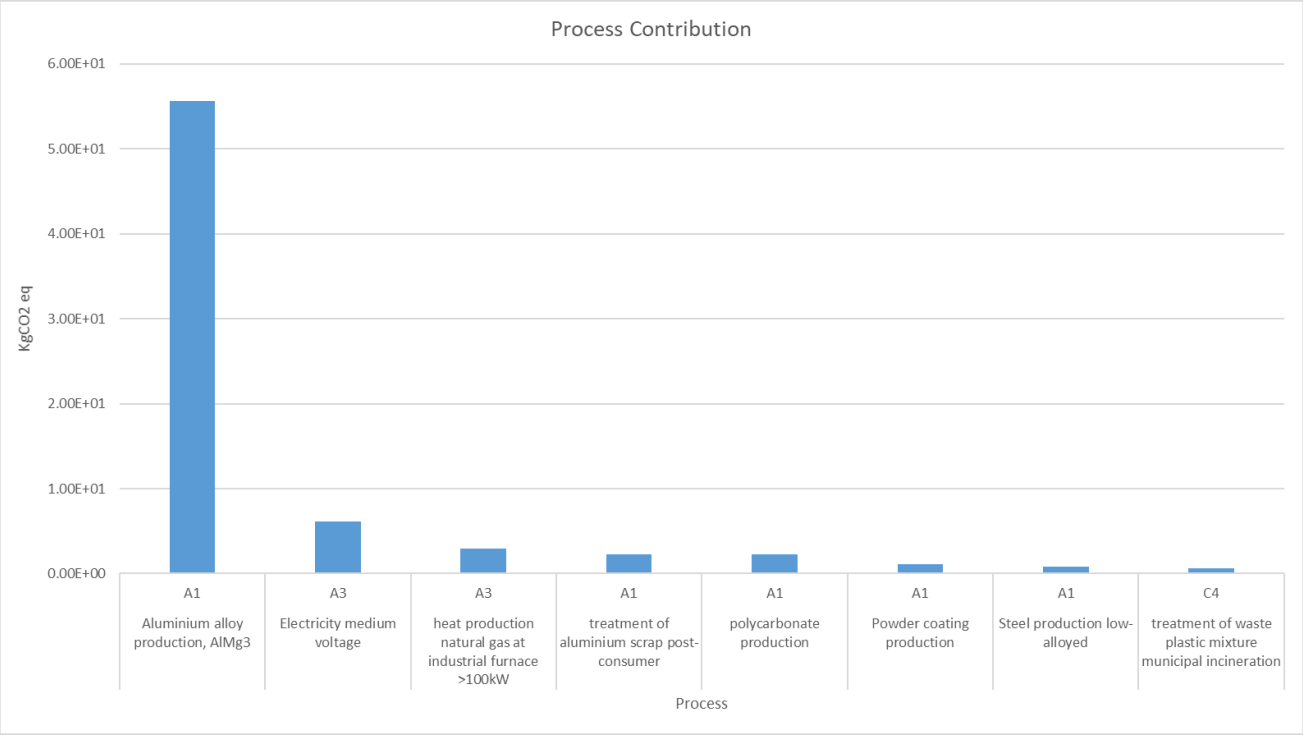


Chart 1: Process contribution chart for Focus

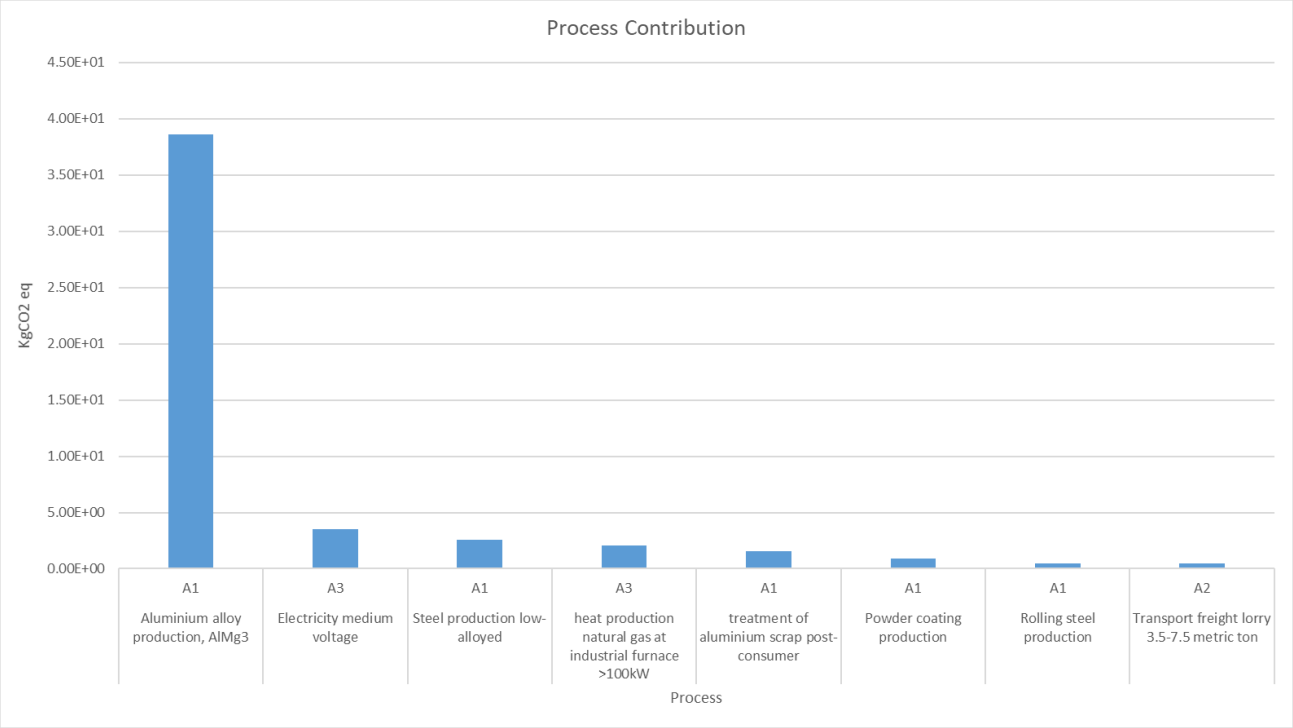


Chart 2: Process contribution chart for Tek Vue

End-User Guidance Calculation

The LCA analysis has been conducted for 1m x 1m demounted wall system frame with contains approximately 2 meters' aluminium profile, with an average mass of 8.25 kg/m for Focus wall system and 6.5kg/m for Tek Vue wall system. Therefore, the total weight of the wall frame used for the analysis is 91 kg(Focus) and 72kg (Tek Vue). This total weight here is only used for the end user calculations references (and not the main EPD results). The Focus and Tek Vue frame are delivered to factory in full-length profiles, which are then cut to size and fusion-welded together in the facility. At the installation site, the glass, fixings, and other components are added to complete the demounted wall system. Therefore, this EPD reports only the impacts of the manufacturing and fabrication of frame; to enable impact calculations for the complete wall system and allow comparisons with similar wall profiles, an end-user guidance table has been provided to customise the impacts based on different frame lengths. This allows comparisons with similar wall profiles beyond the base case.

Scenario	Parameter	Units	Results
Focus	Reference Window (1m x 1m) uses 2m length of Aluminium profile at 8.25 kg/m	m	1m x 1m
	Reference aluminium Frame Weight	kg	91
	Glazing weight for reference wall system	kg	370.67
	Total Reference wall system mass	kg	461.45
	Aluminium wall frame GWP (including the extrusion and fabrication process) – Total for 91 kg weight	kgCO2eq	774.4
	GWP total impact per kg	kgCO2eq/kg	8.53
	Profile 8.25 kg per meter	kg CO_2e/m	70.4
	Glass used for 1 m x 1 m is 33.70 kg; therefore, glazed area is 1 m2	kg/m2	33.70
	GWP total impacts of 1 kg of glass*	kgCO2eq/kg	0.974
Tek Vue	Reference Window (1m x 1m) uses 2 m of Aluminium profile at 6.50 kg/m	m	1m x 1m
	Reference aluminium Frame Weight	kg	72
	Glazing weight for reference wall system	kg	218.45
	Total Reference wall system mass	kg	290.00
	Aluminium wall frame GWP (including the extrusion and fabrication process) – Total for 72 kg weight	kgCO2eq	543.6
	GWP total impact per kg	kgCO2eq/kg	7.55
	Profile 6.5 kg per meter	kg CO_2e/m	49.1
	Glass used for 1 m x 1 m is 26.36 kg; therefore, glazed area is 1 m2	kg/m2	26.36
	GWP total impacts of 1 kg of glass*	kgCO2eq/kg	0.974

* the Ecoinvent 3.8 glass impacts (per kg CO_2-eq) are included. The end user may either apply the Ecoinvent figure or refer to the supplier's EPD.

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A2:2019. London, BSI, 2019.

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

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

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

Indoor Advantage™ Gold - certifies products for low emissions and good indoor air quality

BRE Environmental Profiles 2025 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.2