Statement of Verification

BREG EN EPD No.: 000520 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Mayflex UK Limited

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

1 metre of Excel Enbeam OS2 Singlemode & OM4 Multimode Fibre Optic Tight-Buffered Cables

Company Address

Mayflex UK Limited
Unit 15,
Junction Six Industrial Park,
Electric Avenue
Birmingham
B6 7JJ

MAYFLEX
A Sonepar Company

Signed for BRE Global Ltd	Emma Baker Operator	14 August 2023 Date of this Issue
14 August 2023 Date of First Issue		13 August 2028 Expiry Date

BRE Global Verified EPD

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

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EPD Number: 000520

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE 2021 Product Category Rules (PN 514 Rev 3.0) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019.
Commissioner of LCA study	**LCA consultant/Tool**
Mayflex UK Limited Unit 15, Junction Six Industrial Park, Electric Avenue Birmingham B6 7JJ	LCA Tool: BRE LINA A2 LCA Consultant: Bala Subramanian
Declared Unit	**Applicability/Coverage**
1 metre of Excel Enbeam OS2 Singlemode & OM4 Multimode Fibre Optic Tight-Buffered Cables - LSOH Cca with black sheaths.	Other (please specify). Product Specific
EPD Type	**Background database**
Cradle to Gate with options	ecoinvent

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Pat Hermon
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)

Made in PRC

Construction Product:

Product Description

Excel Enbeam OS2 Singlemode & OM4 Multimode Fibre Optic Tight-Buffered Cables - LSOH Cca with black sheaths. These tight-buffered optical fibre cables have been designed specifically for both internal and external applications – being CPR compliant (Cca) and water & UV resistant. They are compact, lightweight cables and are extremely flexible and are quick and easy to install. The cables are constructed from 4 to 24 colour coded 900µm secondary-coated fibres. Colour coding is to TIA 598 standard. E-Glass strength members provide very high tensile strength.
In this EPD, the LCA results of 4 core – OS4 Multimode cable with 0.04 kg/m and for 14-16 core – OS2 Singlemode & OS4 multimode optic cable with 0.07 kg/m has been modelled and enclosed.

Product name:	Item Code / Colour	Weight (kg/m)
Excel Enbeam OM4 Multimode Fibre Optic Cable Tight Buffered 4 Core 50/125 LSOH Cca	204-104 – Black	0.04
Excel Enbeam OS2 Singlemode Fibre Optic Cable Tight Buffered 4 Core 9/125 LSZH Cca	205-320 – Black	
Excel Enbeam OM4 Multimode Fibre Optic Cable Tight Buffered 6 Core 50/125 LSOH Cca	204-106 – Black	0.04
Excel Enbeam OS2 Singlemode Fibre Optic Cable Tight Buffered 6 Core 9/125 LSZH Cca	205-230 – Black	
Excel Enbeam OM4 Multimode Fibre Optic Cable Tight Buffered 8 Core 50/125 LSOH Cca	204-108 – Black	0.05
Excel Enbeam OS2 Singlemode Fibre Optic Cable Tight Buffered 8 Core 9/125 Cca	205-322 – Black	
Excel Enbeam OM4 Multimode Fibre Optic Cable Tight Buffered 12 Core 50/125 LSOH Cca	204-112 – Black	0.05

Product name:	Item Code / Colour	Weight (kg/m)
Excel Enbeam OS2 Singlemode Fibre Optic Cable Tight Buffered 12 Core 9/125 Cca	205-324 – Black	
Excel Enbeam OM4 Multimode Fibre Optic Cable Tight Buffered 16 Core 50/125 LSOH Cca	204-116 – Black	0.07
Excel Enbeam OM4 Multimode Fibre Optic Cable Tight Buffered 24 Core 50/125 LSOH Cca	204–124 – Black	
Excel Enbeam OS2 Singlemode Fibre Optic Cable Tight Buffered 24 Core 9/125 Cca	205-328 - Black	

Technical Information

Property	OS2	OM4
Number of cores	4-24	4-24
Fibre Coating	Secondary 900um	Secondary 900um
Fibre Type	OS2 9/125µm	OM4 50/125
Strength Members	Glass Yarn	Glass Yarn
Rodent Resistant	Yes	Yes
Outer Sheath Material	Copolymer, Thermoplastic (LS0H)	Copolymer, Thermoplastic (LS0H)
Outer Sheath Colour	Black	Black
Reaction-to-fire class according to EN 13501-6	Cca s1a d0 a1	Cca s1a d0 a1
Halogen free (acc. EN 60754-1/2)	Yes	Yes
Flame retardant	In accordance with EN 50399	In accordance with EN 50399
Outer diameter approx 4-24f	6.5mm – 8.5mm	6.5mm – 8.5mm
Tensile Strength (Installation)	800N (4C) - 1100N (24C)	800N (4C) - 1100N (24C)
Tensile Strength (Installed)	400N (4C) – 550N (24C)	400N (4C) – 550N (24C)
Crush Resistance	300N/m	300N/m
Torsion +/- 180 degrees	Attenuation less than 0.10dB	Attenuation less than 0.30dB
Installation Temperature Range	-30 to +60 °C	-30 to +60 °C
Operating Temperature Range	-30 to 60 °C	-30 to 60 °C
Storage Temperature Range	-40 to 60 °C	-40 to 60 °C
Sheath Thickness	1.1mm Typical	1.1mm Typical
Cable Weight	34 – 63 kg/km	34 – 63 kg/km
Minimum Bending Radius (Installation)	20x Diameter	20x Diameter
Minimum Bending Radius (Installed)	10x Diameter	10x Diameter
Attenuation 1	0.39dB/km @ 1310nm	3.5dB/km @ 850nm
Attenuation 2	0.25dB/km @ 1550nm	1.5dB/km @ 1300nm
Refractive Index 1	1.467 @ 1310nm	1.482 @ 850nm
Refractive Index 2	1.468 @ 1550nm	1.477 @ 1300nm

Property	OS2	OM4
Core Diameter	NA	50 +/- 2.5um
Mode Field Diameter @1310nm	9.0 +/- 0.5um	NA
Mode Field Diameter @ 1550nm	10.4 +/- 0.5um	NA
Cladding Diameter	125 +/- 0.7um	125 +/-1.0um
Primary Coating Diameter (coloured)	250 +/- 15um	250 +/- 15um
Secondary Coating Diameter	900um +/-50um	900um +/-50um
Fibre Colour Coating Standard	TIA 598	TIA 598

Note: Technical Properties of all products assessed within this EPD

Applicable Standard	Subject
IEC 60794-2-20:2013	Optical fibre cables - Part 2-20: Indoor cables - Family specification for multi-fibre optical cables
IEC 60332-1-2:2004	Tests on electric and optical fibre cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable. Procedure for 1 kW pre-mixed flame
IEC 60754-2:2011	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity
IEC 61034-2:2005+A1:2013	Measurement of smoke density of cables burning under defined conditions – Part 2: Test procedure and requirements
IEC 60793-1-1:2017	Optical fibres - Part 1-1: Measurement methods and test procedures - General and guidance
IEC 60793-2-10:2017	Sectional specification for A1 multimode fibres
IEC 60793-1-20:2014	Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry
IEC 60793-1-21:2001	Optical fibres - Part 1-21: Measurement methods and test procedures - Coating geometry
IEC 60793-1-22:2001	Optical fibres - Part 1-22: Measurement methods and test procedures - Length measurement
IEC 60793-1-30:2010	Optical fibres - Part 1-30: Measurement methods and test procedures - Fibre proof test
IEC 60793-1-41:2010	Optical fibres - Part 1-41: Measurement methods and test procedures – Bandwidth
ITU G.651.1	Characteristics of a 50/125 µm multimode graded index optical fibre cable for the optical access network
EN 50173-1:2018	Information technology. Generic cabling systems - General requirements
EN 50575: 2014 + A1: 2016	Power, control and communication cables — Cables for general applications in construction works subject to reaction to fire requirements
EN 50399:2011+A1:2016	Common test methods for cables under fire conditions. Heat release and smoke production measurement on cables during flame spread test. Test apparatus, procedures, results
ISO/IEC 11801-1:2017	Information technology - Generic cabling for customer premises: Part 1 General Requirements
ANSI/TIA 568-3.D	Optical Fiber Cabling and Components Standard
ANSI/TIA/EIA 598-D	Optical Fibre Cable Colour Coding
RoHS	Restriction of Hazardous Substances - Compliant
WFD	Compliant to Waste Framework Directive
SCIP	Compliant - Does Not Contain Substances of Concern in Products

Main Product Contents

Material/Chemical Input	%
Co-polymer	80 - 85
Glass yarn	15 – 20
Optical fibre	0.5 - 1

Note: Main product contents of all products assessed within this EPD

Manufacturing Process

The manufacturing process for fibre optic tight buffered cables involves several stages of extrusion starting with the drawing of the glass fibre itself. This is achieved by continuously heating (partially melting) and drawing a large glass pre-form in a vertical drawing tower. This is a highly accurate process. The fibre diameter is continuously monitored at the base of the tower and is controlled to within just a few microns. This process produces the bare fibre to a diameter of 125 microns.

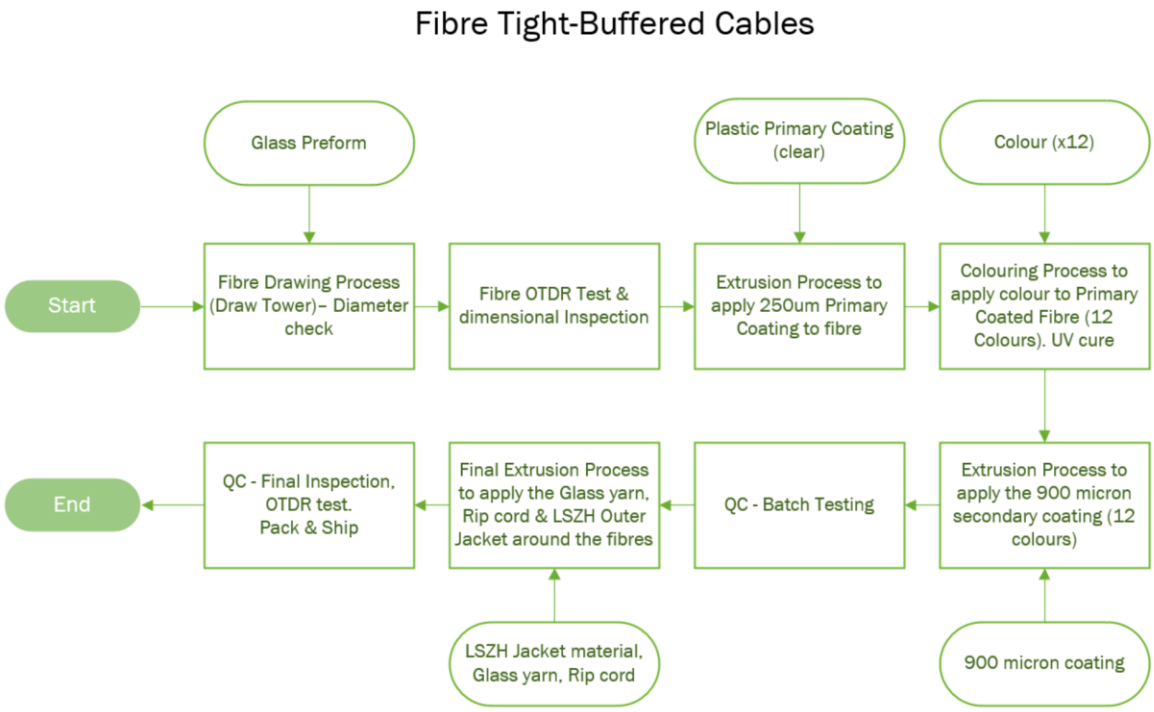
The fibre is then drawn through a second extrusion process which applies a clear plastic coating onto the fibre. This is referred to as the Primary Coating and provides a diameter of around 240 microns. This coating is vital to protect the bare glass fibre from any damage and moisture.

The secondary-coated fibre can we used as is, but in most cases, where multiple fibres are used within a fibre optic cable, these are colour coded to allow for easy identification. The next process is therefore to colour code the fibres. This involves drawing the fibres through a coloured UV die, which is immediately cured by Ultra-Violet light. There are generally 12 colours used according to TIA 598 – Blue, Orange, Green, Brown, Grey, White, Red, Black, Yellow, Purple, Pink and Aqua. All 12 colours will be used in the cables. This process brings the diameter up to a nominal 250 microns.

The next process is to apply the secondary coating to the primary-coated fibres. This involves drawing the primary coated fibres through an extrusion die whilst injecting molten plastic through the die to over-mould the fibres with a 900-micron layer (secondary coating). The secondary-coated fibres are cooled in a water bath as they exit the die and are stored on a small cable reel. The fibres are tested when on the reel to ensure all remain within specification.

The last extrusion process produces the final cable. This requires the secondary (coloured) fibres being drawn through another extrusion machine. This time, the glass yarn is also drawn through the machine, together with the rip-cord - around the fibres - and the molten outer jacket LSZH co-polymer material is injected around it to form the cable jacket. Again, as it exits the die, the cable is cooled in a water bath. The finished cable diameter is continuously checked. The cable is stored on large wooden drums – typically holding 2 – 4km.
The cable is finally inspected and optically tested using an OTDR to ensure full compliance to specifications.

Process flow diagram



Construction Installation

Installation of fibre cables is generally carried out by manual labour, with teams of operatives pulling and dressing cables. No powered equipment or consumable items are used in this process, so no waste is generated during the installation.

End of Life

Fibre optic tight buffered cables are not economically recyclable therefore they will be taken to landfill via a WEEE registered commercial waste disposal company.

Life Cycle Assessment Calculation Rules

Declared unit description.

1 metre of Excel Enbeam OS2 Singlemode & OM4 Multimode Fibre Optic Tight-Buffered Cables - LSOH Cca with black sheaths.

System boundary

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 and A4 and A5 (transportation and installation) and end of life stages C1-C4, and D in accordance with EN 15804:2012+A2:2019 and BRE 2021 Product Category Rules (PN 514 Rev 3.0).

Data sources, quality and allocation

The quantity used in the data collection for this EPD is the total quantity of Fibre Optic Tight-Buffered Cables manufactured as a proportion of the total manufactured during the data collection period (01/01/21-31/12/21). Mayflex receives the data cables from their PRC manufacturing partners, therefore the transportation used to transfer the products from PRC to the UK is included in the LCA analysis. Other cables and products are manufactured in addition to the Fibre Optic Tight-Buffered Cables; therefore, the allocation of electricity and

water consumption and discharge are required, and this has been done according to the provisions of the BRE PCR PN514 and EN 15804. During the cable extrusion process no waste have been recorded.

Fibre Optic Tight-Buffered Cables are OS2 Singlemode & OM4 Multimode Fibre Optic Cable Tight Buffered, and these are available in 4 - 16 Core - LSOH Dca with black sheaths. The weight per metre varies according to the core of the cable, however the composition is similar so, the LCA analysis has been performed for 4 core – OS4 Multimode/ Singlemode cable with the weight of 0.04 kg/m and for 14-16 core – OS2/4 Singlemode & multimode optic cable with weight of 0.07 kg/m and both the results are enclosed.

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.

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).	n/a
Very Good	n/a	n/a	There is approximately 1-2 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. Manufacturer uses the national grid electricity for production, so therefore the national grid electricity dataset has been used for the LCA modelling (Ecoinvent 3.8). The 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

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. No ancillary materials have been used for the production and there is no non-production waste recorded during the data collection period.

LCA Results- OM2/4 Singlemode/Multimode Fibre Optic Cable Tight Buffered 4 Core with 0.04 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	6.67E-02	6.61E-02	6.08E-04	5.08E-05	7.48E-09	4.42E-04	2.50E-05
	Transport	A2	1.85E-02	1.85E-02	8.41E-06	9.83E-06	4.04E-09	2.91E-04	9.53E-07
	Manufacturing	A3	-2.50E-02	2.33E-02	-4.84E-02	5.19E-05	1.52E-09	1.33E-04	6.68E-06
	Total (Consumption grid)	A1-3	6.03E-02	1.08E-01	-4.78E-02	1.13E-04	1.30E-08	8.66E-04	3.26E-05
Construction process stage	Transport	A4	1.14E-03	1.14E-03	9.75E-07	4.49E-07	2.65E-10	4.64E-06	7.37E-08
	Construction	A5	4.48E-02	3.87E-03	4.10E-02	2.30E-06	3.77E-10	2.01E-05	1.65E-06
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
100% - Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.32E-05	8.31E-05	7.08E-08	3.26E-08	1.92E-11	3.37E-07	5.35E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	9.70E-02	9.69E-02	1.19E-04	2.22E-05	1.15E-08	1.45E-04	2.74E-05
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	0.00E+00

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	8.38E-05	8.24E-04	2.64E-04	6.45E-07	1.27E+00	3.63E-02	4.80E-09
	Transport	A2	7.40E-05	8.20E-04	2.19E-04	4.84E-08	2.62E-01	9.73E-04	1.18E-09
	Manufacturing	A3	3.88E-05	3.53E-04	1.09E-04	9.86E-08	2.98E-01	-2.48E-03	1.91E-09
	Total (Consumption grid)	A1-3	1.97E-04	2.00E-03	5.93E-04	7.92E-07	1.83E+00	3.48E-02	7.89E-09
Construction process stage	Transport	A4	1.40E-06	1.53E-05	4.68E-06	3.98E-09	1.73E-02	7.78E-05	9.87E-11
	Construction	A5	3.24E-06	3.66E-05	6.86E-06	1.27E-08	4.19E-02	9.39E-04	-1.87E-10
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
100% - Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.02E-07	1.11E-06	3.40E-07	2.89E-10	1.26E-03	5.65E-06	7.17E-12
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.16E-05	3.11E-04	8.52E-05	1.93E-07	4.56E-01	1.42E-02	1.37E-09
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	0.00E+00

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	7.07E-03	3.11E+00	1.24E-10	3.15E-09	1.76E-01
	Transport	A2	1.29E-03	1.89E-01	8.75E-12	1.74E-10	1.27E-01
	Manufacturing	A3	1.80E-03	7.32E-01	6.88E-11	3.94E-10	4.39E+00
	Total (Consumption grid)	A1-3	1.02E-02	4.03E+00	2.02E-10	3.72E-09	4.69E+00
Construction process stage	Transport	A4	8.89E-05	1.35E-02	4.37E-13	1.41E-11	1.19E-02
	Construction	A5	2.30E-04	2.46E-02	5.25E-12	1.55E-10	1.34E-01
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
100% - Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.46E-06	9.81E-04	3.18E-14	1.03E-12	8.63E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.98E-03	1.88E+00	6.05E-11	7.03E-10	9.73E-02
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

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)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	5.90E-02	0.00E+00	5.90E-02	1.04E+00	5.53E-01	1.59E+00
	Transport	A2	2.98E-03	0.00E+00	2.98E-03	2.58E-01	0.00E+00	2.58E-01
	Manufacturing	A3	3.55E-01	5.21E-01	8.76E-01	7.02E-01	3.17E-02	7.34E-01
	Total (Consumption grid)	A1-3	4.17E-01	5.21E-01	9.38E-01	2.00E+00	5.85E-01	2.58E+00
Construction process stage	Transport	A4	2.44E-04	0.00E+00	2.44E-04	1.70E-02	0.00E+00	1.70E-02
	Construction	A5	-6.20E-01	6.49E-01	2.87E-02	5.30E-02	3.79E-02	9.10E-02
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
100% - Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.77E-05	0.00E+00	1.77E-05	1.23E-03	0.00E+00	1.23E-03
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.91E-02	0.00E+00	1.91E-02	-2.30E-01	6.80E-01	4.50E-01
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

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

LCA Results (continued)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	9.24E-05	0.00E+00	0.00E+00	8.70E-04
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.41E-05
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	-4.14E-05
	Total (Consumption grid)	A1-3	9.24E-05	0.00E+00	0.00E+00	8.53E-04
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.93E-06
	Construction	A5	2.77E-06	0.00E+00	0.00E+00	2.30E-05
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
100% - Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.40E-07
	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	3.41E-04
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

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

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.79E-02	1.55E-01	4.66E-06
	Transport	A2	3.12E-04	4.29E-03	1.79E-06
	Manufacturing	A3	8.68E-03	7.10E-02	1.16E-06
	Total (Consumption grid)	A1-3	4.69E-02	2.31E-01	7.61E-06
Construction process stage	Transport	A4	1.91E-05	3.38E-04	1.17E-07
	Construction	A5	3.12E-03	7.82E-03	3.22E-07
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
100% - Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.38E-06	2.46E-05	8.50E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	5.68E-02	2.77E-02	2.68E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

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

LCA Results (continued)

Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EE	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	3.20E-06	3.63E-08	9.57E-04	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.75E-04
	Total (Consumption grid)	A1-3	0.00E+00	3.20E-06	3.63E-08	9.57E-04	0.00E+00	7.75E-04
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	9.61E-08	1.09E-09	2.87E-05	0.00E+00	2.33E-05
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
100% - Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results - OS2/4 Singlemode/Multimode Fibre Optic Cable Tight Buffered (16-24 core) – 0.07 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	1.06E-03	8.79E-05	1.32E-08	7.69E-04	4.38E-05
	Transport	A2	2.98E-02	2.97E-02	1.23E-05	1.62E-05	6.44E-09	5.02E-04	1.49E-06
	Manufacturing	A3	1.19E-02	1.44E-02	-2.49E-03	5.54E-06	2.03E-10	7.71E-05	3.30E-06
	Total (Consumption grid)	A1-3	1.59E-01	1.60E-01	-1.42E-03	1.10E-04	1.99E-08	1.35E-03	4.86E-05
Construction process stage	Transport	A4	1.95E-02	1.95E-02	3.59E-06	1.22E-05	4.07E-09	4.61E-04	8.32E-07
	Construction	A5	2.60E-02	9.99E-03	1.60E-02	4.47E-06	1.20E-09	4.95E-05	2.96E-06
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
100% - Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.47E-04	1.47E-04	1.25E-07	5.78E-08	3.40E-11	5.97E-07	9.47E-09
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	8.00E-03	7.99E-03	9.82E-06	1.50E-07	2.17E-10	5.33E-06	4.84E-08
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	0.00E+00

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	1.46E-04	1.42E-03	4.61E-04	1.10E-06	2.24E+00	6.43E-02	8.45E-09
	Transport	A2	1.27E-04	1.41E-03	3.76E-04	7.52E-08	4.19E-01	1.51E-03	1.83E-09
	Manufacturing	A3	2.44E-05	1.81E-04	4.67E-05	2.11E-08	1.36E-01	-1.32E-02	1.08E-09
	Total (Consumption grid)	A1-3	2.97E-04	3.02E-03	8.83E-04	1.19E-06	2.79E+00	5.26E-02	1.14E-08
Construction process stage	Transport	A4	1.15E-04	1.27E-03	3.34E-04	3.96E-08	2.64E-01	8.19E-04	9.44E-10
	Construction	A5	1.14E-05	1.15E-04	3.28E-05	4.60E-08	1.08E-01	2.22E-03	4.20E-10
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
100% - Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.80E-07	1.96E-06	6.02E-07	5.11E-10	2.22E-03	1.00E-05	1.27E-11
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.49E-04	2.14E-05	7.81E-06	2.11E-09	1.58E-02	8.49E-04	1.13E-10
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	0.00E+00

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	1.20E-02	5.61E+00	2.21E-10	5.44E-09	3.09E-01
	Transport	A2	2.04E-03	2.98E-01	1.43E-11	2.70E-10	1.93E-01
	Manufacturing	A3	4.68E-04	5.27E-01	7.80E-12	1.90E-10	2.70E-01
	Total (Consumption grid)	A1-3	1.45E-02	6.43E+00	2.43E-10	5.90E-09	7.71E-01
Construction process stage	Transport	A4	1.25E-03	1.77E-01	1.04E-11	1.43E-10	8.64E-02
	Construction	A5	5.91E-04	2.91E-01	1.09E-11	2.36E-10	2.85E-02
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
100% - Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.14E-05	1.74E-03	5.62E-14	1.82E-12	1.53E-03
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.03E-04	3.36E-02	4.97E-13	1.25E-11	4.08E-02
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

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)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.01E-01	0.00E+00	1.01E-01	1.82E+00	1.01E+00	2.82E+00
	Transport	A2	4.63E-03	0.00E+00	4.63E-03	4.11E-01	0.00E+00	4.11E-01
	Manufacturing	A3	6.34E-02	4.26E-02	1.06E-01	5.56E-01	2.18E-03	5.58E-01
	Total (Consumption grid)	A1-3	1.69E-01	4.26E-02	2.12E-01	2.78E+00	1.01E+00	3.79E+00
Construction process stage	Transport	A4	2.46E-03	0.00E+00	2.46E-03	2.59E-01	0.00E+00	2.59E-01
	Construction	A5	-8.02E-03	1.54E-02	7.37E-03	7.15E-02	6.59E-02	1.37E-01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
100% - Landfill								
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	3.13E-05	0.00E+00	3.13E-05	2.18E-03	0.00E+00	2.18E-03
	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

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

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

LCA Results (continued)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	1.68E-04	0.00E+00	0.00E+00	1.54E-03
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.75E-05
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	-2.96E-04
	Total (Consumption grid)	A1-3	1.68E-04	0.00E+00	0.00E+00	1.28E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.03E-05
	Construction	A5	5.04E-06	0.00E+00	0.00E+00	5.39E-05
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
100% - Landfill						
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	2.48E-07
	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	2.03E-05
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

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

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	6.88E-02	2.75E-01	8.22E-06
	Transport	A2	5.02E-04	6.70E-03	2.86E-06
	Manufacturing	A3	7.95E-03	5.41E-02	4.47E-07
	Total (Consumption grid)	A1-3	7.72E-02	3.35E-01	1.15E-05
Construction process stage	Transport	A4	3.31E-04	3.67E-03	1.82E-06
	Construction	A5	5.30E-03	1.15E-02	4.87E-07
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
100% - Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.45E-06	4.35E-05	1.50E-08
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	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

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

LCA Results (continued)

Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EE	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	5.83E-06	6.61E-08	1.74E-03	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E-04
	Total (Consumption grid)	A1-3	0.00E+00	5.83E-06	6.61E-08	1.74E-03	0.00E+00	2.88E-04
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	1.75E-07	1.98E-09	5.23E-05	0.00E+00	8.64E-06
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
100% - Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information				
Scenario	Parameter		Units	Results
A4 – Transport to the building site	Mayflex receives the cable from PRC and without any further processing in the distribution sector they will be distributed to the customer site.			
	Fuel type / Vehicle type		Road transport	16–32-ton lorry
	Distance: Mayflex to customer site		Km	172
	Capacity utilisation (incl. empty returns)		%	49
	Bulk density of transported products		kg/m^3	342
A5 – Installation in the building	Installation of data cables is carried out by manual labour - teams of operatives pulling and dressing cables. No powered equipment or consumable items are used in this process, so no waste is generated during the installation. But there are some wastes at the end of the box, and it was assumed as 3% of the cables waste; this will be collected and sent to recycling			
	Installation cable waste and packaging waste	**Fibre Optic TB Cable 4 core (kg)**	**Fibre Optic TB 16-24 core (kg)**	**Results**
	Optical Fibre cable waste (kg/m)	0.0012	0.0021	Landfill
	Pallets	0.003	0.001	Incinerated
	Drums	0.027	0.01	Incinerated
	Paperboard	0.002	0.001	Recycling
End of life	The fibre optic cables are removed manually, and it is assumed that the product is not recycled so will be sent to landfill.			
C2- Transportation	Recovered cables are taken back by the registered broker to landfill.		km	12.5
C4 – Disposal	Recovered Optical Fibre TB cables sent to landfill.			
Module D	As the products are not recycled, there are no Module D recycling benefits considered in this study			

Interpretation of results:

The bulk of the environmental impacts are attributed to the manufacturing of Fibre Optic Tight-Buffered Cables covered by information modules A1-A3 of EN15804:2012+A2:2019.

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.