



Statement of Verification

BREG EN EPD No: 000799

Issue: 01

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

Hochiki Europe (UK) Ltd

are in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

1 unit of ACC-EN(SCI) sensor (0.095kg per unit)

Company Address

Hochiki Europe (UK) Ltd
Grosvenor Road
Gillingham Business Park
Gillingham
Kent
ME8 0SA



Hayley Thomson
Signed for BRE Global Limited

Hayley Thomson
Operator

01 June 2026
Date of this Issue

01 June 2026
Date of First Issue

31 May 2031
Expiry Date



This Statement of Verification is issued subject to terms and conditions (for details visit www.greenbooklive.com/terms.)

To check the validity of this statement of verification please, visit www.greenbooklive.com/check or contact us.

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Environmental Product Declaration

EPD Number: 000799

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
Hochiki Europe (UK) Ltd Grosvenor Road Gillingham Business Park Gillingham Kent ME8 0SA	LCA consultant: Robert Head (Hochiki Europe) LCA Tool: BRE LINA A2
Declared/Functional Unit	Applicability/Coverage
1 unit of ACC-EN(SCI) sensor (0.095kg per unit)	Other (please specify). 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
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Hochiki Europe (UK) Ltd
Grosvenor Road
Gillingham Business Park
Gillingham
Kent
ME8 0SA

Construction Product:

Product Description

Analogue addressable multi-sensor for the detection of fire by using an optical smoke chamber and thermal heat element. This product is used in many applications where the early detection of fire is required for the protection of both life and property.

This EPD is for 1 unit of ACC-EN(SCI) sensor (0.095kg per unit), however this EPD can also be used for the White and Black colour variants, which are denoted by the following suffixes:

White = WHT
Black = BLK

Ordering Code: ACC-EN(SCI) - Ivory / ACC-EN(SCI)WHT - White / ACC-EN(SCI)BLK - Black

Technical Information

Property	Value, Unit
Operating Voltage	17 to 41 VDC
Low Power Mode	120 μ A (typ.)
Quiescent Mode Current	460 μ A (typical) at 24 VDC
Maximum Current Consumption	45.5 mA
Alarm Current (controlled by CIE):	9.1 mA (excluding remote indicator)



Property	Value, Unit
Transmission Method	Digital Communications using ESP
Operating Temperature Range	-10 °C to + 50 °C
Operating Humidity	95 %RH - Non-Condensing (at 40 °C)
Storage Temperature Range	-30 °C to +60 °C
Storage Humidity	<80% RH at 60 °C
Colour / Case Material	Ivory, Black or White / Polycarbonate
Weight (g)	95
Diameter (mm) / Height (mm)	100 / 45
Compatible Bases	YBN-R/3(WHT), YBO-BS(WHT), YBO-BSB2(WHT), YBV-R/4(WHT) (for use the SCI sensor)
Base Fixing Centres (mm)	48 ~ 74
Approvals	<ul style="list-style-type: none"> • EN54-17, EN54-7, EN54-5 and EN54-29-2 • LPCB & VdS approved to classes A1 & C
Wind Exposure (Ref EN54-7)	1 ± 0,2 m s-1
IP Rating	IP42
RSL	10 Years





Main Product Contents

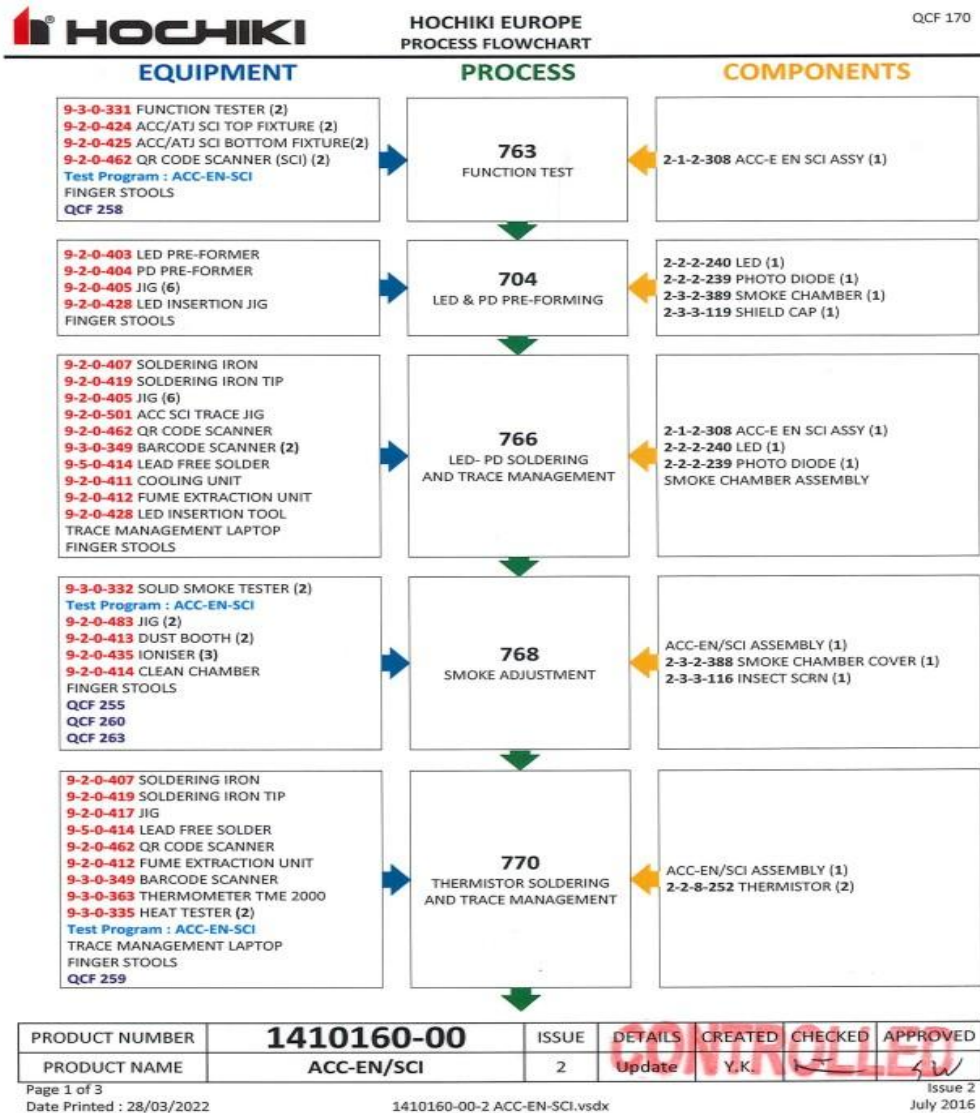
Material Input	%
Plastic/polymers	70-75%
Electronics	10-15%
Metals	10-15%

Manufacturing Process

Using an automated Surface Mount Machine all the small components are correctly placed on the PCBs, which are checked and then moved to the product assembly stage. All the larger components, such as LED's, photo diodes, thermistor etc. are manually fitted and then a conformal coating is applied, which seals the PCBs and protects the components. Next, the larger materials are fitted (e.g. shield case, smoke chamber, outer cover etc.) and then the product is fully tested, labelled, and packaged.



Process flow diagram



Construction Installation

This product is installed by a qualified fire alarm engineer using a 2-step process. The first step is to install a dedicated mounting base using appropriate screws and a screwdriver. The second step is to mount this product onto the base by twisting the device in a clockwise direction. There are locking tabs on the underside of the product to secure it in place.

Use Information

The product is designed to operate for a period of 10 years and should be serviced once per year.

End of Life

At the end-of-life stage this product should be sent to a local WEEE registered recycling facility so it can be correctly and safely dismantled. (Electrical and electronic components are assumed to be treated in accordance with UK WEEE regulations)



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 unit of ACC-EN(SCI) sensor (0.095kg per unit)

System boundary

The system boundary considered in the LCA study is cradle to grave which covers all production stages (A1-A3), transportation to site (A4), installation (A5), use stages (B1-B7), and end- of-life stages (C1-C4) and D in accordance with EN 15804:2012+A2:2019 and BRE 2025 Product Category Rules (PN 514 Rev 3.2). Additionally, this EPD complies with EN 50693:2019 PCR for the evaluation of electronic and electrical products and systems. The study period of this LCA is 10 years which is same as the reference service life of the product for the entire system boundary from A1-C4 and D.

Data sources, quality and allocation

Specific primary data derived from Hochiki Europe (UK) Ltd has been modelled using LINA A2 software for the period 1st January 2024 to 31st December 2024. In accordance with the requirements of EN15804, the most current available data has been used. Secondary data has been obtained for all remaining upstream and downstream processes that are beyond the control of the manufacturer 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. The ACC-EN(SCI) is not the only product manufactured at the Hochiki Europe (UK) Ltd. An allocation by mass of the site process data has therefore been carried out to determine the correct quantities of energy, water, waste, and packaging attributable to the ACC-EN(SCI) production, this represents 4.9% of the site's total production. For this LCA, 1 unit of ACC-EN(SCI) product has been selected, and the results are representative for this specific product. The mass balance for the ACC-EN(SCI) was within tolerance, and no uplift of the input materials was required to cover production output and waste.

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 less than 3 years between the Ecoinvent v3.8 (2021) LCI reference year, and the time-period for which the LCA was undertaken.

The quality level of geography, time and technological representativeness is Very Good as specific UK datasets have been selected from the ecoinvent LCI, and the background LCI datasets are from ecoinvent v3.8 which was compiled in 2021. Therefore, the most appropriate LCA data have been used. Location-based approach has been used for electricity in both modelling and results. The GWP of the electricity dataset used for this EPD is: 1 kWh UK electricity = 2.39E-01 kgCO₂eq (Electricity GB (kWh) market for electricity, medium voltage). The GWP of the natural gas dataset used for this EPD is: 1 kWh UK natural gas = 2.32E-01 kgCO₂eq (Natural gas, at industrial furnace kWh, GB). Data quality has been assessed in accordance with Table E.2 of EN 15804+A2, Annex E. The Life Cycle Assessment (LCA) has been carried out in accordance with EN 15804+A2, applying the cut-off approach as defined within the standard. Characterisation factors have been applied in line with Annex C (Table C.1) of EN 15804+A2.

Cut-off criteria

All processes associated with the manufacturing process have been included. All inputs or outputs have been included and all raw materials, packaging, energy and fuels, water consumption and wastes, except ancillary materials and emissions to air, water and soil which are not measured.



LCA Results - 1 unit of ACC-EN(SCI) sensor (0.095kg per unit)

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

Parameters describing environmental impacts			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO 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	1.76E+00	1.75E+00	7.80E-03	2.15E-03	9.25E-08	1.50E-02	1.69E-03
	Transport	A2	6.94E-01	6.93E-01	2.18E-04	4.07E-05	1.58E-07	3.58E-03	9.05E-06
	Manufacturing	A3	1.77E-01	2.23E-01	-4.78E-02	9.67E-04	1.73E-08	7.56E-04	5.27E-05
	Total (Consumption grid)	A1-3	2.63E+00	2.67E+00	-3.97E-02	3.16E-03	2.68E-07	1.93E-02	1.75E-03
Construction process stage	Transport	A4	1.58E-03	1.58E-03	1.35E-06	6.20E-07	3.65E-10	6.41E-06	1.02E-07
	Construction	A5	7.87E-04	7.86E-04	2.26E-07	8.63E-08	1.71E-10	4.97E-06	1.41E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.31E-01	2.29E-01	2.08E-03	2.41E-04	1.75E-08	5.09E-04	3.13E-05
	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	1.58E-03	1.58E-03	1.35E-06	6.20E-07	3.65E-10	6.41E-06	1.02E-07
	Waste processing	C3	2.62E-03	2.61E-03	-6.73E-09	4.79E-06	9.30E-11	1.46E-05	1.30E-06
	Disposal	C4	4.54E-04	4.50E-04	3.46E-06	4.56E-07	1.37E-10	3.80E-06	1.31E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.67E+00	-1.67E+00	1.20E-03	-2.89E-03	-1.42E-07	-1.37E-02	-2.22E-03

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

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



LCA Results (continued)

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

			Parameters describing environmental impacts						
			EP-marine	EP-terrestrial	POCP	ADP-mineral&metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m ³ world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.01E-03	2.21E-02	6.72E-03	4.40E-04	2.24E+01	8.12E-01	1.17E-07
	Transport	A2	1.31E-03	1.43E-02	3.72E-03	1.85E-07	9.72E+00	1.15E-02	6.96E-09
	Manufacturing	A3	2.43E-04	2.11E-03	5.98E-04	1.12E-06	4.57E+00	1.03E-01	1.17E-08
	Total (Consumption grid)	A1-3	3.57E-03	3.85E-02	1.10E-02	4.42E-04	3.66E+01	9.27E-01	1.35E-07
Construction process stage	Transport	A4	1.93E-06	2.11E-05	6.46E-06	5.49E-09	2.39E-02	1.07E-04	1.36E-10
	Construction	A5	2.00E-06	2.19E-05	7.72E-06	6.85E-10	1.07E-02	1.62E-05	1.11E-10
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.52E-04	1.70E-03	4.15E-04	1.43E-06	6.08E+00	1.40E-02	3.53E-09
	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	1.93E-06	2.11E-05	6.46E-06	5.49E-09	2.39E-02	1.07E-04	1.36E-10
	Waste processing	C3	2.58E-06	2.77E-05	7.14E-06	4.04E-08	3.36E-02	7.35E-04	1.18E-10
	Disposal	C4	1.31E-06	1.42E-05	4.12E-06	1.47E-09	1.06E-02	4.76E-04	7.61E-11
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.33E-03	-2.57E-02	-7.15E-03	-6.17E-04	2.20E+01	-6.84E-01	-9.85E-08

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
 EP-terrestrial = Eutrophication potential, accumulated exceedance;
 POCP = Formation potential of tropospheric ozone;
 ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;

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



LCA Results (continued)

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

			Parameters describing environmental impacts				
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U ²³⁵ eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.49E-01	1.35E+02	1.98E-09	1.18E-07	6.30E+00
	Transport	A2	4.35E-02	5.19E+00	6.38E-11	8.53E-09	1.24E+00
	Manufacturing	A3	9.52E-02	3.93E+00	1.05E-10	2.31E-09	5.76E+00
	Total (Consumption grid)	A1-3	2.88E-01	1.44E+02	2.15E-09	1.29E-07	1.33E+01
Construction process stage	Transport	A4	1.23E-04	1.86E-02	6.03E-13	1.95E-11	1.64E-02
	Construction	A5	4.79E-05	6.00E-03	1.08E-13	4.06E-12	1.87E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.01E-01	2.64E+00	7.45E-11	1.76E-09	2.27E+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	1.23E-04	1.86E-02	6.03E-13	1.95E-11	1.64E-02
	Waste processing	C3	3.69E-04	7.27E-02	1.75E-12	9.51E-11	1.05E-02
	Disposal	C4	4.98E-05	7.54E-03	3.24E-13	5.05E-12	2.53E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.99E-01	-1.59E+02	-2.50E-09	-9.40E-08	-1.08E+01

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;

HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.



LCA Results (continued)

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

			Parameters describing resource use, primary energy					
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.83E+00	1.38E-04	1.83E+00	1.99E+01	2.37E+00	2.23E+01
	Transport	A2	3.08E+01	0.00E+00	3.08E+01	9.49E+03	0.00E+00	9.49E+03
	Manufacturing	A3	1.13E+00	7.34E-01	1.86E+00	5.13E+00	3.13E-01	5.45E+00
	Total (Consumption grid)	A1-3	3.38E+01	7.34E-01	3.45E+01	9.52E+03	2.68E+00	9.52E+03
Construction process stage	Transport	A4	3.36E-04	0.00E+00	3.36E-04	2.34E-02	0.00E+00	2.34E-02
	Construction	A5	-3.28E-01	3.29E-01	5.41E-04	1.44E-02	0.00E+00	1.44E-02
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.46E+00	0.00E+00	1.46E+00	8.03E+00	0.00E+00	8.03E+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	3.36E-04	0.00E+00	3.36E-04	2.34E-02	0.00E+00	2.34E-02
	Waste processing	C3	-4.28E-03	0.00E+00	-4.28E-03	-3.36E-02	0.00E+00	-3.36E-02
	Disposal	C4	1.80E-04	0.00E+00	1.80E-04	1.04E-02	0.00E+00	1.04E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.54E+00	0.00E+00	-2.54E+00	-2.19E+01	0.00E+00	-2.19E+01

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

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



LCA Results (continued)

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

			Parameters describing resource use, secondary materials and fuels, use of water			
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m ³
Product stage	Raw material supply	A1	7.06E-03	0.00E+00	0.00E+00	1.99E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.85E-04
	Manufacturing	A3	2.44E-02	2.33E-06	0.00E+00	2.89E-03
	Total (Consumption grid)	A1-3	3.15E-02	2.33E-06	0.00E+00	2.31E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.66E-06
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.98E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	6.84E-04	5.30E-06	0.00E+00	1.33E-03
	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	2.66E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.94E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.12E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.72E-02

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;

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



LCA Results (continued)

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

Other environmental information describing waste categories			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	1.48E-01	2.91E+00	4.57E-05
	Transport	A2	2.91E-03	4.12E-02	6.89E-05
	Manufacturing	A3	9.65E-03	2.19E-01	2.68E-05
	Total (Consumption grid)	A1-3	1.61E-01	3.17E+00	1.41E-04
Construction process stage	Transport	A4	2.63E-05	4.67E-04	1.61E-07
	Construction	A5	6.34E-05	1.30E-03	9.41E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	8.19E-03	1.41E-01	5.20E-05
	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	2.63E-05	4.67E-04	1.61E-07
	Waste processing	C3	-2.32E-04	-6.06E-03	-1.04E-07
	Disposal	C4	2.05E-05	4.32E-02	6.33E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.84E-01	-4.32E+00	-6.27E-05

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



LCA Results (continued)

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

			Other environmental information describing output flows – at end of life					
			CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	2.79E-07	9.05E-10	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	2.43E-02	1.86E-08	1.88E-03	0.00E+00	2.42E-02
	Total (Consumption grid)	A1-3	0.00E+00	2.43E-02	1.95E-08	1.88E-03	0.00E+00	2.42E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	4.55E-02	7.76E-10	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	9.19E-05	3.92E-08	4.23E-03	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	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

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	In this LCA analysis, 100km by road has been modelled for module A4 as a typical distance from the Hochiki 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.		
	Distance	km	100
	Transportation	Road transport	Lorry, 16 – 32 metric ton
A5 – Installation in the building	The fire alarm engineer will follow the installation instructions supplied with the product and install the unit by hand. No tools or power required. All the packaging's materials used to pack the product at the manufacturing site are disposed at the installation site and the quantities has been included in this analysis		
	Cardboard waste (inner cardboard box) to recycling	kg	0.015
	Cardboard waste (Packing box SLR) to Recycling	kg	0.0074
	Paper waste (Installation instruction) to Recycling	kg	0.009
	Polystyrene waste (Yellow dust cover) to internal recycling	kg	0.0042
B1 – Use	Using the built-in smoke and heat sensing elements the product continuously monitors the environment for fire. When fire is detected, the product will enter an alarm condition and send a signal to the fire alarm control panel, which in turn activates the fire alarm sounders, beacons etc. During its use, the product does not release any emissions to the environment.		
B2 – Maintenance	The device is serviced once every 12 months as defined in BS5839-1 and is the responsibility of a 3rd party fire alarm engineering company. During maintenance no energy or consumables are used. Therefore, no impacts from this module.		
B3 – Repair	Throughout the service life of the product no repairs are required. therefore, no impacts from this module.		
B4– Replacement	This product is designed to operate for its maximum service life without the need for replacements, therefore no impacts from this module.		
B5– Refurbishment	Refurbishments are not required for this product, therefore no impacts from this module.		
B6 – Operational energy use	The multi-sensor is installed on the ceiling and is powered continuously from a dedicated fire alarm control panel. Industry standards recommend that this product should remain in full operation for a maximum of 10 years. This is considered to be the lifespan of the product and should be replaced with a new product after this 10-year period has expired (or sooner if the device becomes damaged).		
	Power for continued operation	kWh	0.97
B7 – Operational water Use	No water is used during the operational life of this product, therefore no impacts from this module.		



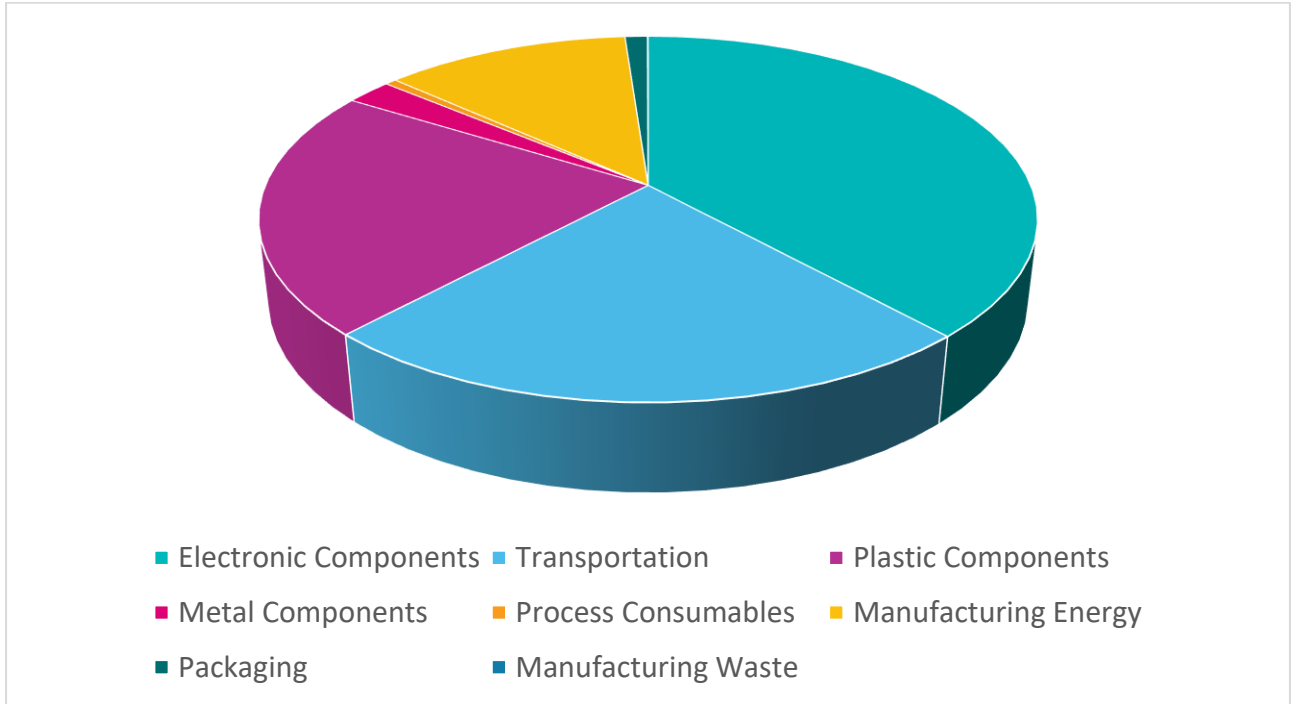
Scenarios and additional technical information			
Scenario	Parameter	Units	Results
C1 – Deconstruction	The fire alarm engineer will remove the unit from its mounting base by hand. No tools or power required. 100% of the product is recovered during the deconstruction.		
C2 – Transport	In this LCA analysis, 100km by road has been modelled for module C2 as a typical distance from the deconstruction site to the waste processing facility. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required		
	Distance	km	100
	Transportation	Road transport	Lorry, 16 – 32 metric ton
C3 – Waste Processing	The device is returned to the local WEEE approved facility so it can be disassembled and the recyclable components separated. For electronics, the end-of-life scenario stated in UKWEEE is applied, whereby 55% of the material is assumed to be recycled and 45% sent to landfill. Using the same recycling assumption, the quantity of electronics available for recycling is calculated as 0.05225 kg (0.095 kg × 55%).		
	Electronic waste to recycling	kg	0.05225
C4- Disposal	The device is returned to the local WEEE approved facility so it can be disassembled and the non-recyclable components separated and sent to landfill. The end-of-life scenario of electronic components defined by UK WEEE is applied, under which 45% of electronic waste is assumed to be sent to landfill. The total mass sent to landfill is calculated as 0.04275 kg (0.095 x 45%)		
	Electronic waste to landfill	kg	0.04275
Module D	For electronic components, Module D benefits are calculated based on end-of-life recycling rates in accordance with UK WEEE assumptions, without adjustment for pre-existing recycled content as they do not have a single SM. Hence, the recycling mass is considered as such in Module D when calculating benefits. Benefits due to recycling of waste electronics = 0.05225kg		
	Benefits due to recycling of waste electronics	kg	0.05225

Interpretation

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

When assessing these environmental impacts and considering the total mass input of materials, electronic components contribute the most (38%), followed by transportation (24%). The Pie Chart illustrates the relative contributions of various processes to overall greenhouse gas emissions, measured as global warming potential. Plastic components and energy use contribute moderately (22% and 12% respectively), while packaging and processes involving recycling exhibit comparatively lower impacts.

Overall, the chart underscores the importance of material choice and waste management in reducing carbon emissions across the lifecycle.





References

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BS EN 54-5:2017+A1:2018 - specifies the requirements, test methods and performance criteria for the point heat detectors intended for use in fire detection and fire alarm systems installed in and around buildings.

BS EN 54-7:2018 - TC Fire detection and fire alarm systems - Smoke detectors. Point smoke detectors that operate using scattered light, transmitted light or ionization.

BS EN 54-17:2005 - Fire detection and fire alarm systems - Short-circuit isolators. BS 5839: Fire detection & alarm systems for buildings.

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The Waster Electrical and Electronics Equipment Regulations 2013, Statutory Instrument 2013 No. 3113. <https://www.legislation.gov.uk/uksi/2013/3113/contents/made>