

## Statement of Verification

BREG EN EPD No.: 000542

Issue 01

This is to verify that the  
**Environmental Product Declaration**  
provided by:  
**Lionweld Kennedy Group**



is in accordance with the requirements of:  
**EN 15804:2012+A2:2019**  
and  
**BRE Global Scheme Document SD207**

This declaration is for:  
**One metric tonne of Safegrid Open Grid Flooring**

### Company Address

Lionweld Kennedy,  
Marsh Road,  
Middlesbrough,  
Cleveland,  
United Kingdom,  
TS1 5JS



Emma Baker  
Operator

09 November 2023  
Date of this Issue

09 November 2023  
Date of First Issue

08 November 2028  
Expiry Date



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# Environmental Product Declaration

EPD Number: 000542

## General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.0
Commissioner of LCA study	LCA consultant/Tool
Lionweld Kennedy, Marsh Road, Middlesbrough, Cleveland, United Kingdom, TS1 5JS.	BRE LINA A2 Karl Wrightson, Lionweld Kennedy
Declared/Functional Unit	Applicability/Coverage
One metric tonne of Safegrid Open Grid Flooring	Other (please specify). Product Specific
EPD Type	Background database
Cradle to Gate with Module C and D	ecoinvent
Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR <sup>a</sup>	
Independent verification of the declaration and data according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
(Where appropriate <sup>b</sup> )Third party verifier: Francis Yu	
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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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)

Lionweld Kennedy,  
 Marsh Road,  
 Middlesbrough,  
 Cleveland,  
 United Kingdom,  
 TS1 5JS.

### Construction Product:

#### Product Description

Safegrid steel open grid flooring is a cost-effective, ISO-compliant solution for large areas of flooring within industrial and commercial buildings. It is versatile and quick to install, with the ability to be modified or removed. With an extremely high performance-to-weight ratio, it is low-carbon and infinitely recyclable. Safegrid open-grid flooring is available in a plain top or one that is serrated for enhanced slip resistance. The range of compliant steel grating should cover every possible application and has been specifically designed to meet the UK and EU standards for ball-proof not required, 35mm ball-proof, and 20mm ball-proof requirements, while minimising the steel content to achieve these requirements. Further, LK manufactures utility grating, which is used for applications below head height and where people cannot pass underneath.

Safegrid steel open grid flooring is available in three different options, namely ball-proof not required, 35mm ball-proof, and 20mm ball-proof, and they are all the same product family but separated only by the spacing of the load bearing bars in them and nothing more specifically in the composition. Therefore, in this LCA modelling, the total production of the Safegrid steel open data has been analysed, and the impacts are analysed for 1 tonne of Safegrid steel open. This is to enable the impacts of the range of Safegrid steel open grid flooring to be calculated for the available weights.

#### Technical Information

20mm ball proof grating (referred to as 20BP) is used on walkways above where others are working. 35mm ball proof grating is used for walkways that occasionally have people passing underneath and as such, do not require the same level of protection as those above permanent working areas. Utility grating can be used where there is no risk of people passing beneath.

Property	20 Ball Proof	35 Ball Proof	Utility Grating
Product Specification	20BP303BMP	35BP253AMP	UG255AMP
Bar Surface	Plain	Plain	Plain
Slip Classification	Slip Resistant	Slip Resistant	Slip Resistant
Load Bearing Bar Centres	21.5mm	36.6mm	47mm
Transverse Bar Centres	100mm	125mm	125mm
Standard Width	985mm	990mm	989mm
Weight	38.26kg/m <sup>2</sup>	19.70kg/m <sup>2</sup>	25.22kg/m <sup>2</sup>
Material Grade	S275JR	S275JR	S275JR
Finish	Self-Colour or Galvanised	Self-Colour or Galvanised	Self-Colour or Galvanised

Lionweld production processes for Safegrid flooring are third party accredited through Alcumus, certificate No. 0513-CPR-19827-004/01, demonstrating conformity to BS EN 1090-1:2009 +A1:2011 up to Execution Class 2.

*Technical properties of all products assessed within this average EPD.*



### Main Product Contents

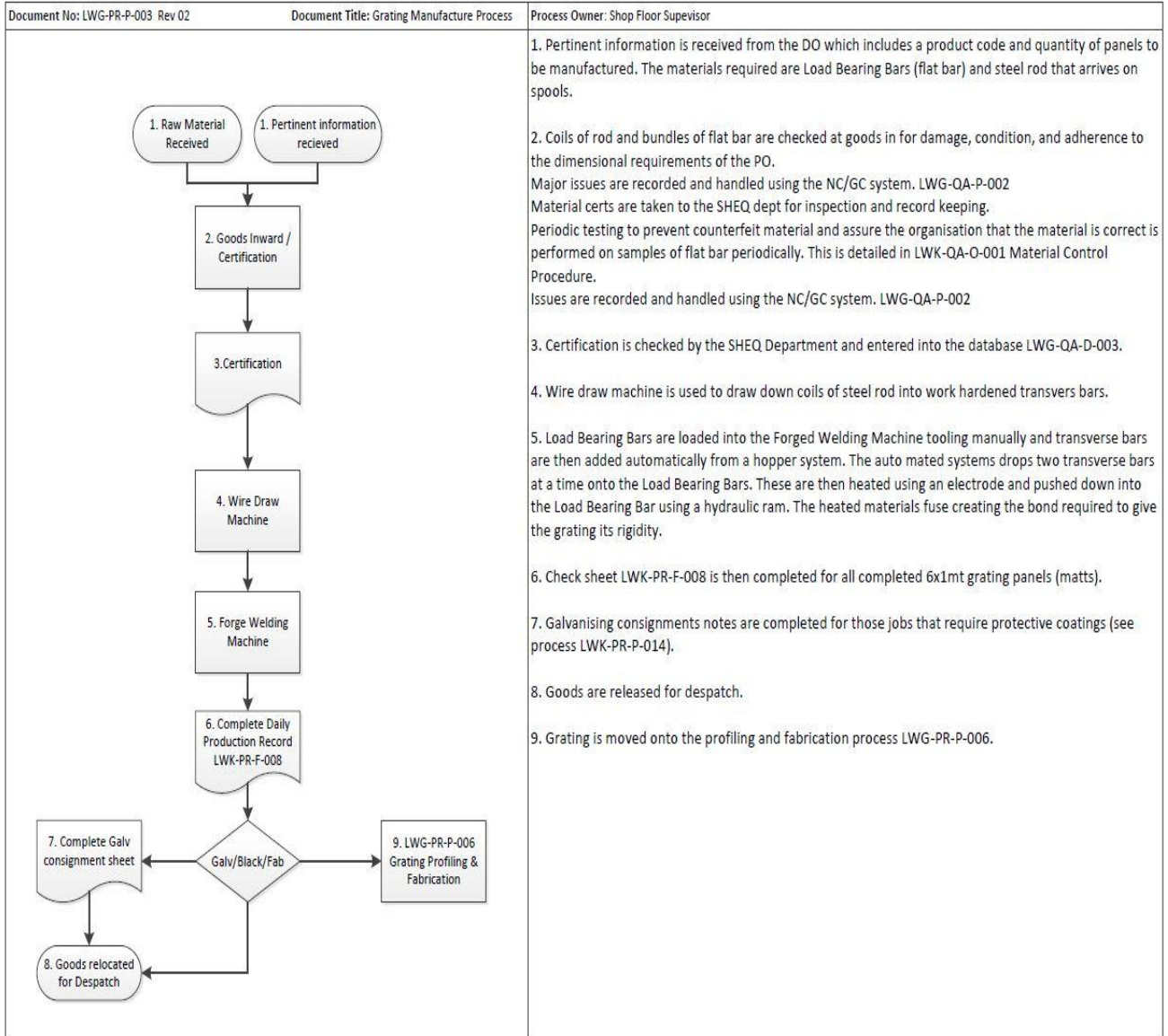
Material/Chemical Input	%
Steel	100

*Material composition of all products assessed within this average EPD.*

### Manufacturing Process

Safegrid flooring is produced from steel load bearing bars supported by twisted steel cross wires. These cross wires are welded to the load bearing bars through a resistance welding process.

## Process flow diagram



## Construction Installation

Installation by mechanical fixing methods including positive fix (bolted through support steel / concrete), or frictional clamp type fixings to support steelwork.

## Use Information

For use in various industrial flooring applications, with minimal maintenance requirements.

## End of Life

**C1 Deconstruction:** At the end of its life, Safegrid Open Grid Flooring will be removed manually from the buildings without using any power tools. As the product is made up of 100% steel, which has a valuable recycling percentage, it will therefore be sent to the processing unit for further processing.



**C2 Transportation:** 50km by road has been modelled for module C2 as a typical distance from the demolition site to the recycling plant. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required.

**C3 Waste processing:** In this scenario, a 95% recycling rate for the steel product is assumed. The remaining 5% is assumed to remain uncollected or to go to disposal, e.g., landfill.

The energy used for the processing of the recovered steel is not included in Module C3. It is assumed to be very small and effectively negligible.

**C4 Disposal:** 5% is assumed as unrecoverable so they will be sent to landfill

## Life Cycle Assessment Calculation Rules

### Declared / Functional unit description.

One metric tonne of Safegrid Open Grid Flooring

### System boundary

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 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

Safegrid steel open is available in three different options, namely ball-proof not required, 35mm ball-proof, and 20mm ball-proof, and they are all the same product family, but separated only by the spacing of the load bearing bars in them and nothing more specifically in the composition. Therefore, in this LCA/EPD modelling, the quantity used in the data collection for this EPD is the total quantity of Safegrid open grid manufactured during the data collection period (01/01/22-31/12/22) have been used.

Allocation by mass has been used to calculate the amount of input energy flow - natural gas, water, and waste flows per selected products according to the provisions of the BRE PCR PN514 and EN 15804. Electricity for this specific product process is on a dedicated meter, so readings are exact for the process requirement. 5% of water consumption and discharge is allocated to the production where only 8 operators out of 150 total people on site are located. Waste has been calculated at an average of 2.6kg per panel produced, based on an average 15mm of each load bar being trimmed for waste. Transportation distance has been calculated from the steel mill based on number of deliveries made throughout the period.

ISO14044 guidance. <b>Quality Level</b>	<b>Geographical representativeness</b>	<b>Technical representativeness</b>	<b>Time representativeness</b>
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.

The original data collection form has been used while doing an LCA analysis, there was a no uplift in the given data. 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 GWP carbon footprint for using 1 kWh of electricity, GB kwh is 0.3122 in kgCO<sub>2</sub>e/kWh. Further, the manufacturer uses Natural gas for office heating, so therefore Natural gas, at industrial furnace (kWh) has been used and the GWP carbon footprint for using 1kWh of natural gas is 0.2564 kgCO<sub>2</sub>e/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

All inputs or outputs have been included and all raw materials, packaging and transport, energy, water use and wastes, are included, except for direct emissions to air, water and soil, which are not measured. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA.

## LCA Results

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

Parameters describing environmental impacts			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq
Product stage	Raw material supply	A1	2.25E+03	2.24E+03	5.57E+00	1.81E+00	1.16E-04	9.94E+00	1.06E+00
	Transport	A2	1.26E+02	1.26E+02	7.90E-02	5.93E-02	2.82E-05	1.34E+00	7.19E-03
	Manufacturing	A3	1.31E+01	5.09E+01	-3.79E+01	8.37E-02	1.28E-05	2.15E-01	8.78E-03
	Total (Consumption grid)	A1-3	2.39E+03	2.42E+03	-3.23E+01	1.95E+00	1.57E-04	1.15E+01	1.07E+00
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
<b>95% Recycled &amp; 5% Landfill</b>									
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+00	8.31E+00	7.08E-03	3.26E-03	1.92E-06	3.37E-02	5.35E-04
	Waste processing	C3	5.47E+01	5.47E+01	1.93E-02	5.46E-03	1.17E-05	5.68E-01	1.69E-03
	Disposal	C4	2.64E-01	2.63E-01	2.61E-04	2.49E-04	1.07E-07	2.48E-03	2.41E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.74E+03	-1.75E+03	3.98E+00	-1.10E+00	-7.95E-05	-6.71E+00	-7.71E-01

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

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



## LCA Results (continued)

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

			Parameters describing environmental impacts						
			EP-marine	EP-terrestrial	POCP	ADP-mineral & metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	2.36E+00	2.25E+01	1.01E+01	2.63E-02	2.43E+04	1.05E+03	1.87E-04
	Transport	A2	3.52E-01	3.89E+00	1.07E+00	3.77E-04	1.84E+03	7.47E+00	9.27E-06
	Manufacturing	A3	5.09E-02	5.58E-01	1.74E-01	1.60E-04	1.61E+03	1.29E+01	2.21E-06
	Total (Consumption grid)	A1-3	2.77E+00	2.70E+01	1.14E+01	2.69E-02	2.77E+04	1.07E+03	1.98E-04
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
<b>95% Recycled &amp; 5% Landfill</b>									
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-02	1.11E-01	3.40E-02	2.89E-05	1.26E+02	5.65E-01	7.17E-07
	Waste processing	C3	2.52E-01	2.76E+00	7.58E-01	2.81E-05	7.50E+02	1.73E+00	1.52E-05
	Disposal	C4	8.61E-04	9.42E-03	2.74E-03	6.01E-07	7.35E+00	3.37E-01	4.99E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.61E+00	-1.69E+01	-8.29E+00	-2.38E-03	-1.70E+04	-4.18E+02	-1.33E-04

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

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

## LCA Results (continued)

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

Parameters describing environmental impacts			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	1.27E+02	6.95E+04	1.75E-05	7.31E-05	7.95E+03
	Transport	A2	9.21E+00	1.37E+03	5.46E-08	1.35E-06	1.06E+03
	Manufacturing	A3	3.31E+01	8.95E+02	6.89E-08	4.93E-07	3.77E+03
	Total (Consumption grid)	A1-3	1.69E+02	7.17E+04	1.76E-05	7.50E-05	1.28E+04
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
<b>95% Recycled &amp; 5% Landfill</b>							
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-01	9.81E+01	3.18E-09	1.03E-07	8.63E+01
	Waste processing	C3	3.38E+00	4.39E+02	1.70E-08	3.18E-07	9.55E+01
	Disposal	C4	3.27E-02	4.64E+00	1.18E-10	3.05E-09	1.54E+01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.30E+01	-4.88E+04	-1.02E-05	-3.63E-05	-4.69E+03

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

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

## LCA Results (continued)

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

Parameters describing resource use, primary energy			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	2.19E+03	0.00E+00	2.19E+03	2.40E+04	0.00E+00	2.40E+04
	Transport	A2	2.31E+01	0.00E+00	2.31E+01	1.80E+03	0.00E+00	1.80E+03
	Manufacturing	A3	4.00E+02	3.86E+02	7.86E+02	1.06E+03	5.31E+02	1.59E+03
	Total (Consumption grid)	A1-3	2.61E+03	3.86E+02	3.00E+03	2.68E+04	5.31E+02	2.74E+04
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
<b>95% Recycled &amp; 5% Landfill</b>								
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+00	0.00E+00	1.77E+00	1.23E+02	0.00E+00	1.23E+02
	Waste processing	C3	4.20E+00	0.00E+00	4.20E+00	7.36E+02	0.00E+00	7.36E+02
	Disposal	C4	6.27E-02	0.00E+00	6.27E-02	7.22E+00	0.00E+00	7.22E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.37E+02	0.00E+00	-5.37E+02	-1.67E+04	0.00E+00	-1.67E+04

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

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

## LCA Results (continued)

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

Parameters describing resource use, secondary materials and fuels, use of water			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m <sup>3</sup>
Product stage	Raw material supply	A1	3.83E+02	0.00E+00	0.00E+00	2.60E+01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.85E-01
	Manufacturing	A3	4.22E+00	0.00E+00	0.00E+00	3.17E-01
	Total (Consumption grid)	A1-3	3.88E+02	0.00E+00	0.00E+00	2.65E+01
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
<b>95% Recycled &amp; 5% Landfill</b>						
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-02
	Waste processing	C3	2.88E-01	0.00E+00	0.00E+00	4.28E-02
	Disposal	C4	1.52E-03	0.00E+00	0.00E+00	7.88E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.00E+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	8.68E+02	4.00E+03	5.58E-02
	Transport	A2	2.11E+00	3.27E+01	1.25E-02
	Manufacturing	A3	2.83E+00	3.91E+01	1.17E-02
	Total (Consumption grid)	A1-3	8.73E+02	4.07E+03	8.00E-02
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
<b>95% Recycled &amp; 5% Landfill</b>					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.38E-01	2.46E+00	8.50E-04
	Waste processing	C3	9.88E-01	6.92E+00	5.18E-03
	Disposal	C4	7.65E-03	1.08E-01	4.82E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.25E+02	-2.77E+03	-2.73E-02

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

## LCA Results (continued)

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

Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-01
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-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
<b>95% Recycled &amp; 5% Landfill</b>								
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
C1 to C4 End of life,	At end-of-life, Safegrid Open Grid Flooring will be removed manually from the buildings without using any power tools. As the product is made up of 100% of steel which has a valuable recycling percentage so therefore, they will be sent to the processing unit for further processing.		
C2 – Transportation	50km by road has been modelled for module C2 as a typical distance from the demolition site to the recycling plant. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required.	Road transport	16–32-ton lorry
	Distance: Deconstruction unit to pre-processing unit	km	50
C3 – Preprocessing	In this scenario, it is assumed as 95 % recycling rate for the steel product is assumed. The remaining 5 % is assumed to remain uncollected or to go to disposal e.g., landfill.  The energy used for the processing the recovered steel is not included in module C3, it is assumed to be very small and are effectively negligible.		
	Recovered Safegrid open grid flooring to recycling	%	95
C4 – Disposal	5% is assumed as unrecoverable so they will be sent to landfill		
	Unrecovered Safegrid open grid flooring to landfill	%	5
Module D	Benefits of recycling 95% of steel - 950 kg		

### Individual product calculations:

The LCA results listed in the tables above are for the processing of 1 tonne of Safegrid open grid flooring which includes ball-proof not required, 35mm ball-proof, and 20mm ball-proof. The end-user of this EPD can therefore use these results to calculate impact profiles for each Safegrid open grid flooring with different dimensions by using the weight per m<sup>2</sup>.

In the below calculation table, the GWP impacts have been calculated for each Safegrid flooring product for weight per m<sup>2</sup> for the depth and thickness.

#### Grating specification: 20 Ball-Proof

Grating	Depth	Thickness	Panel weight (galvanised) per m <sup>2</sup>
20 BP	25	3	32.93
20 BP	40	3	47.09
20 BP	50	3	58.16
20 BP	25	5	45.01
20 BP	60	5	104.09

	Modules	1 tonne	1kg	32.93	47.09	58.16	45.01	104.09
Raw material supply	A1	2.25E+03	2.25E+00	7.41E+01	1.06E+02	1.31E+02	1.01E+02	2.34E+02
Transport	A2	1.26E+02	1.26E-01	4.15E+00	5.93E+00	7.33E+00	5.67E+00	1.31E+01
Manufacturing	A3	1.31E+01	1.31E-02	4.31E-01	6.17E-01	7.62E-01	5.90E-01	1.36E+00
<b>Total</b>	<b>A1-3</b>	<b>2.39E+03</b>	<b>2.39E+00</b>	<b>7.87E+01</b>	<b>1.13E+02</b>	<b>1.39E+02</b>	<b>1.08E+02</b>	<b>2.49E+02</b>

#### Grating specification: 35 Ball-Proof

Grating	Depth	Thickness	Panel weight (galvanised) per m <sup>2</sup>
35BP	25	3	20.23
35BP	40	3	30.92
35BP	50	3	38.04
35BP	25	5	31.04
35BP	60	5	71.10

	Modules	1 tonne	1kg	20.2	30.9	38.0	31.0	71.1
Raw material supply	A1	2.25E+03	2.25E+00	4.55E+01	6.95E+01	8.55E+01	6.98E+01	1.60E+02
Transport	A2	1.26E+02	1.26E-01	2.55E+00	3.89E+00	4.79E+00	3.91E+00	8.96E+00
Manufacturing	A3	1.31E+01	1.31E-02	2.65E-01	4.05E-01	4.98E-01	4.06E-01	9.31E-01
<b>Total</b>	<b>A1-3</b>	<b>2.39E+03</b>	<b>2.39E+00</b>	<b>4.83E+01</b>	<b>7.39E+01</b>	<b>9.08E+01</b>	<b>7.41E+01</b>	<b>1.70E+02</b>

**Grating specification: Ball-proof not required.**

Grating	Depth	Thickness	Panel weight (galvanised) per m2
Utility	25	3	15.20
Utility	40	3	22.97
Utility	50	3	28.16
Utility	25	5	23.84
Utility	60	5	54.06

	Modules	1 tonne	1kg	15.2	22.97	28.16	23.84	54.06
Raw material supply	A1	2.25E+03	2.25E+00	3.42E+01	5.17E+01	6.34E+01	5.36E+01	1.22E+02
Transport	A2	1.26E+02	1.26E-01	1.92E+00	2.89E+00	3.55E+00	3.00E+00	6.81E+00
Manufacturing	A3	1.31E+01	1.31E-02	1.99E-01	3.01E-01	3.69E-01	3.12E-01	7.08E-01
Total	A1-3	2.39E+03	2.39E+00	3.63E+01	5.49E+01	6.73E+01	5.70E+01	1.29E+02

**Interpretation of results**

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

## References

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