ENVIRONMENTAL PRODUCT DECLARATION for roofBOARD (roofing substrate)

Of multiple products based on the average result of the product group. In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021

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An EPD should provide current information and may be updated if conditions change.
The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Program information

Program:	The International EPD® System & Regional Programme - EPD Australasia
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR) 2019:14 Construction products, Version 1.3.4 UN CPC Code: 375
PCR review was conducted by: *The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com for a list of members. The review panel may be contacted via info@environdec.com. Review chair: Claudia A. Peña, University of Concepción, Chile.*
Life Cycle Assessment (LCA)
LCA accountability: Pasindu Samarakkody and Emma Green *Edge Environment Pty Limited* *180 George Street, Sydney NSW 2000 Australia* *W: www.edgeimpact.global* *E: info@edgeimpact.global*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Jane Anderson *ConstructionLCA* *Market Rasen, Lincolnshire LN7 6NS, United Kingdom* *W: constructionlca.co.uk* *E: jane@constructionlca.co.uk* Approved by: EPD Australasia
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for this EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

saveBOARD is a company dedicated to transforming the built environment through the development of sustainable building materials. We are committed to reducing waste and promoting a circular economy by converting waste materials into high-performance building products. saveBOARD products are proudly made in Hamilton, New Zealand and in Warragamba, NSW, Australia.

saveBOARD manufactures healthy, affordable, low-carbon building materials that make a circular economy an everyday reality. Through collaboration with industry partners, stakeholders, and customers, we aim to lead the transition to a greener, more sustainable built environment.

Table 1 Company Information

	Company Data
Owner of the EPD	Upcycled Building Materials Ltd (t/a saveBOARD)
Headquarters	30 Sunshine Avenue, Te Rapa, Hamilton. New Zealand, 3200
Contact Person	Paul Charteris
Contact information	paul@saveboard.nz
EPD Produced by	Edge Environment Pty Ltd Pasindu Samarakkody and Emma Green Greenhouse, Level 3, 180 George Street, Sydney, NSW2000 t +61 (2) 9438 0100 e: info@edgeenvironment.com.au Web: edgeenvironment.com.au

About saveBOARD

saveBOARD manufactures sustainable construction products made from majority recycled materials. saveBOARD products are durable, versatile, and environmentally friendly. saveBOARD products can be used in various applications, including residential, commercial, and industrial construction.

The core of the product is made from shredded and compressed composite packaging, giving the user a sustainable and superior performing product. Finished with an external moisture resistant Fiberglass facing to create a product that is rated for extreme wind lift, fire resistant, superior compressive strength and is moisture and mould resistant.

PLANET:

At saveBOARD, sustainability is at the core of our operations. By diverting waste from landfills and repurposing it into valuable building materials, we contribute to significant reductions in greenhouse gas emissions and environmental degradation and eliminate future waste with our Product Stewardship Program. Our products are fully recyclable (by saveBOARD), ensuring a continuous lifecycle of use and reuse.

Circular Economy Solutions

Our core business is to provide Circular Economy Solutions for composite packaging (such as milk cartons, ingredients bags and soft plastics, including construction soft plastic waste) by turning them into low carbon products that are commonly used in the building industry.

We also create circular economy solutions for our clients by integrating their own packaging waste (construction soft plastics, composite packaging, fibre materials) that are then used on their own building projects.

Product Stewardship

saveBOARD provides a Product Stewardship Program (take back) for our own products rather than creating another waste problem. During construction saveBOARD off cuts can be separated at source into a bulk bag, as can be end-of-life product. Instead of going to landfill, the saveBOARD waste is returned to our facility to be shredded and reused to manufacture new boards. This provides a Zero Waste solution for our clients.

PEFORMANCE:

saveBOARD's approach not only benefits the built environment but also the communities we serve. Our products are designed to meet the highest industry standards, providing reliable and safe options for builders and developers.

saveBOARD roofBOARD is engineered to be durable, moisture, and mould resistant panel, which will not disintegrate or delaminate in the presence of water. Our roofBOARD has been used extensively in the USA for > 12 years in real-world installations in the harshest climates prove its unmatched resilience. The most iconic project to date is the roof underlay of the Tesla Gigafactory One in Sparks Nevada.

Product information

Table 2 Product Information

Product Characteristics				
Product	**Thickness (mm)**	**Width (mm)**	**Length (mm)**	**Product weight in use (kg/m²)**
Roof board 12mm	12.0	1200	2400 - 3000	11.5

Product description:

Product Name: roofBOARD

saveBOARD roofBOARD is an engineered roofing substrate / roof coverboard, made from majority recycled composite packaging waste with a fibreglass facing that is a sustainable alternative to traditional building materials. No water, glues, resin or additives are used in our process to create a product that is rated for extreme wind lift, fire resistant, superior compressive strength and is moisture and mould resistant.

saveBOARD roofBOARD is fit for purpose with unmatched performance and has been used on some of the world's most recognisable buildings.

UN CPC code:

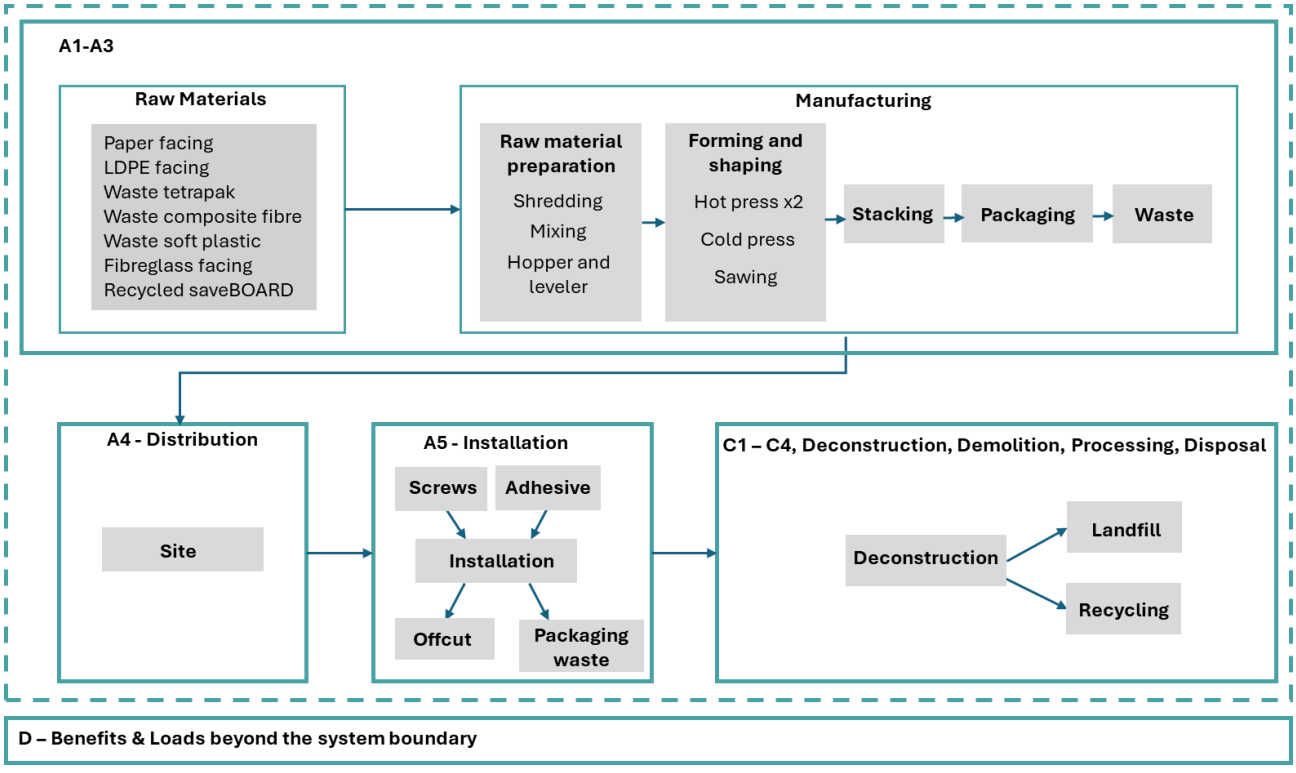
CPC 31439

LCA information

Table 3 Product Characteristics

	Product Characteristics
Declared Unit	1m^2 of panel
Modules Included	Cradle-to-gate with modules C1–C4, module D and optional modules A4 and A5.
Technical Life Span	50 years
Geographical Coverage	Australia & New Zealand
Time Period	1st January – 31st December 2023
Databases used	EcoInvent v3.9 (all background data is less than 10 years old)
Software	SimaPro (v9.5)

Figure 1 System Diagram



Modules declared, share of specific data (in GWP-GHG indicator) and data variation:

The life cycle of a building product is divided into three process modules according to the General Program Instructions (GPI) and four information modules according to ISO 21930 and EN 15804 and supplemented by an optional information module on potential loads and benefits beyond the building life cycle, as given in Table 4.

Table 4: The life cycle of a building product

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	AU/ NZ	AU/ NZ	AU/ NZ	AU/ NZ	AU/ NZ	-	-	-	-	-	-	-	AU/ NZ	AU/ NZ	AU/ NZ	AU/ NZ	AU/ NZ
Specific data used	< 10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	< 10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	< 10%					-	-	-	-	-	-	-	-	-	-	-	-

ND = not declared

Content information

The material content per declared unit for the most representative product based on production volume is shown below in Table 5.

Table 5 Material Content

Material Input	Weight, kg, for 1m² of product	Post-Consumer Recycled, %	Biogenic carbon content, kg C/m² of product
Waste tetrapak	3.25	3.25, 100%	9.87%, 1.14
Waste soft plastic	3.80	3.80, 100%	0%, 0
Waste composite fibres	4.13	4.13, 100%	17.0%, 1.96
Paper facing	0.201	0.201, 100%	0.867%, 0.1
LDPE facing	0.149	0.00, 0%	0%, 0
Fibreglass facing	0.295	0.00 0%	0%, 0
Packaging Material	**Weight, kg, for 1m² of product**	**Weight % vs product**	**Biogenic carbon content, kg C/m² of product**
Pallet	0.091	1.27%	0.17
Plastic film	0.01	< 1%	0

None of the products contain one or more substances that are listed in the "Candidate List of Substances of Very High Concern for authorisation". According to the PCR 2019:14, if one or more substances of the "Candidate List of Substances of Very High Concern (SVHC) for authorisation" are present in a product and their total content exceeds 0.1% of the weight of the product, they need to be reported.

Production Stage (Modules A1-A3)

The product stage covers the sourcing of raw materials, any movement of materials onsite and the production stage of saveBOARD roofBOARD (roofing substrate).

The raw materials consists of waste tetrapak, waste soft plastic, waste composite fibre, recycled saveBOARD, paper, LDPE and PET. The waste as raw material is transported to the saveBOARD site from various sources across Australia and New Zealand. The unprocessed materials are sorted into designated areas and then fed through a series of shredders and hot and cold presses before trimming and shaping.

Electricity and natural gas are used during the processing stage for various machinery and for the raw materials. Energy and resource inputs for product were allocated based on percentage production over a one year period. saveBOARD's New Zealand site sources electricity through ecotricity, which is 100% renewable using 19% wind, 6% solar and 75% hydro sources (1.33E-02 $kgCO_2e/kWh$) and certified by Toitu as climate positive. 100% Solar generated electricity (1.80E-02 $kgCO_2e/kWh$) is used for Australia through the purchasing of LGC certificates.

The waste raw materials consumed in the case of saveBOARD products are sourced from construction wastes and polluter's pay principle (PPP) was applied in the LCA. As post-consumer material, the environmental upstream impact for waste as raw material was set to zero according to PCR 1.3.4 for construction products. In addition, the transport of waste to saveBOARD sites as well as their sorting and shredding were excluded from the LCA.

Transport (Module A4)

saveBOARD ships their products throughout Australia and New Zealand, shipping distances were calculated based on primary data of total product shipped to each customer location. Products manufactured in New Zealand and Australia are shipped to customers in each respective country.

Installation (Module A5)

The installation stage considers both the screws and adhesive required in addition to consideration of 5% of offcut.

Product end-of-life (Module C1-C4, D)

saveBOARD panels are predominantly removed manually, it is at the discretion of the user whether they choose to use battery powered tools. Based on this, no impacts have been assigned to deconstruction.

There was no primary data available for transport to end-of-life, therefore this is assumed as 50km for landfill.

The product is made almost completely from recycled material, and whilst the board is fully recyclable, a conservative scenario of landfill disposal has been assumed due to limited primary data and no benefit is claimed.

The scenarios included are currently in use and are representative for one of the most probable alternatives.

Polluter Pays Principle

According to PCR 1.3.4, products originating from waste materials need to meet four criteria in order to apply the polluter-pays principle. saveBOARD products are found to match all criteria, as below:

Criterion 1: the recovered material or product (including, e.g., energyware such as fuel, electricity and heat) is commonly used for specific purposes.

All saveBOARD products, included in this LCA, have use in the construction industry as internal of external building linings.

Criterion 2: a market or demand, identified for example by a positive economic value, exists for such a recovered material or product.

There is a high demand of saveBOARD products. The saveBOARD websites shares a wide selection of customer case studies, including use in homes, hospitals, supermarkets and fast food outlets.

Criterion 3: the recovered material or product fulfils the technical requirements for the specific purposes for which it is used and meets the existing legislation and standards applicable to its use.

saveBOARD products meet the technical specifications set by New South Wales Government.

Criterion 4: the use of the recovered material or product will not lead to overall adverse environmental or human health impacts, which shall be understood as the content of hazardous substances is below the limit values in applicable legislation

saveBOARD products are tested for specification. National Construction Code compliance reports are publicly available for all saveBOARD products through their website. These products replace their virgin counterparts and are not expected to lead to overall adverse environmental or human health impacts.

Cut-off rules

It is common practice in LCA/LCI protocols to propose exclusion limits for inputs and outputs that fall below a threshold % of the total, but with the exception that where the input/output has a "significant" impact it should be included. According to the PCR 2019:14, the Life Cycle Inventory data for a minimum of 95% of total inflows (mass and energy) per module to the upstream and core module shall be included, accounted as global warming potential (GWP) or energy consumption. Inflows not included in the LCA shall be documented in the EPD. Data gaps in

included stages in the down stream module shall be reported in the EPD, including an evaluation of their significance.

In accordance with the PCR 2019:14, the following system boundaries on manufacturing equipment and employees are excluded:

- Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process are not accounted for in the LCI. Capital equipment and buildings typically account for less than a few percent of nearly all LCIs and this is usually smaller than the error in the inventory data itself. For this project, it is assumed that capital equipment makes a negligible contribution to the impacts as per Frischknecht et al with no further investigation.
- Personnel-related impacts, such as transportation to and from work, are also not accounted for in the LCI. The impacts of employees are also excluded from inventory impacts on the basis that if they were not employed for this production or service function, they would be employed for another. It is very hard to decide what proportion of the impacts from their whole lives should count towards their employment. For this project, the impacts of employees are excluded.

Allocation

According to EN 15804+A2, in a process step where more than one type of product is generated, it is necessary to allocate the environmental stressors (inputs and outputs) from the process to the different products (functional outputs) in order to get product-based inventory data instead of process-based data. An allocation problem also occurs for multi-input processes.

In an allocation procedure, the sum of the allocated inputs and outputs to the products shall be equal to the unallocated inputs and outputs of the unit process.

The following stepwise allocation principles shall be applied for multi-input/output allocations:

- The initial allocation step includes dividing up the system sub-processes and collecting the input and output data related to these sub-processes.
- The first (preferable) allocation procedure step for each sub-process is to partition the inputs and outputs of the system into their different products in a way that reflects the underlying physical relationships between them.
- The second allocation procedure step is needed when physical relationship alone cannot be established or used as the basis for allocation. In this case, the remaining environmental inputs and outputs from a sub-process must be allocated between the products in a way that reflects other relationships between them, such as the economic value of the products.

Data Quality and Validation

The primary data used for the study (core module) is based on direct utility bills or feedstock quantities from saveBOARD's procurement records. Edge used contribution analysis to focus on the key pieces of data contributing to the environmental impact categories. The data was benchmarked against relevant benchmark data in Ecoinvent. Edge considers the data to be of high quality for the core module.

Compliance with Standards

The methodology and report format has been modified to comply with:

- ISO 14040:2006 and ISO14044:2006+A1:2018 which describe the principles, framework, requirements and provides guidelines for life cycle assessment (LCA) (ISO, ISO 14040:2006/Amd1:2020. Environmental management – Life cycle assessment – Principles and framework., 2006) (ISO, ISO 14044:2006/And1:2017/Amd2:2020. Environmental management – Life cycle assessment – Requirements and guidelines, 2006)
- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures, which establishes the principles and specifies the procedures for developing Type III environmental declaration programmes and Type III environmental declarations (ISO, ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures, 2006)
- EN 15804+A2:2019: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products (here after referred to as EN15804+A2). (The British Standards Institution, 2021)
- Product Category Rules (PCR) 2019:14, v1.3.4 – Construction products – Hereafter referred to as PCR 2019:14. (EPD International, 2024)
- General Programme Instructions (GPI) for the International EPD System V4.0 – containing instructions regarding methodology and the content that must be included in EPDs registered under the International EPD System.
- Instructions of EPD Australasia V4.2 – a regional annex to the general programme instructions of the International EPD System.

This Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804+A2 and PCR 2019:14, v1.3.4.

Key Assumptions and Considerations

Table 6 Assumptions, Choices, and Limitations

Assumption or limitation	Impact on LCA results	Discussion
Exclusion of employees, capital good and infrastructure	Minor	Personnel-related impacts, such as transportation to and from work, are also not accounted for in the LCI. The impacts of employees are also excluded from inventory impacts on the basis that if they were not employed for this production or service function, they would be employed for another. It is very hard to decide what proportion of the impacts from their whole lives should count towards their employment. For this project, the impacts of employees are excluded.
Site conditions	Minor	Both sites are assumed to operate under the same conditions, including process efficiency.
Transport distance for end of life processing	Minor	50 km was used as the transport distance to end of life processing. It is expected that that any installation site will be 50 km or less from a waste processing plant. This module has very low environmental impact overall.
The density of the board varies based on the composition of waste feedstock received	Moderate	An assumption on the average weight of each board type was made with saveBOARD based on the weight of raw material, dust produced and waste.
Deconstruction	Minor	Removal of the boards is done manually or by the use of battery powered tools, the use of battery powered tools was excluded from this study since the impacts are expected to be negligible.

Environmental Performance

The potential environmental impacts, use of resources and waste categories included in this EPD were calculated using the SimaPro v9.1.1.1 tool and are listed in Table 5. The EN15804 reference package based on EF 3.1 was used. All tables from this point will contain the abbreviation only. The LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds and safety margins or risks.

Table 7: Life Cycle Impact, Resource and Waste Assessment Categories, Measurements and Methods

Impact Category	Indicator/Abbreviation	Measurement Unit	Assessment Method and Implementation
Potential Environmental Impacts			
Climate change - fossil	Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2021
Climate change – biogenic	Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2021
Climate change – land use and land use change	Global Warming Potential land use and land use change (GWP-luluc)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2021
Climate change – total	Global Warming Potential total (GWP-total)	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2021
Ozone depletion	Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 equivalents	Steady-state ODPs, WMO 2014
Acidification	Acidification potential, Accumulated Exceedance (AP)	mol H+ eq.	Accumulated Exceedance, Seppälä et al. 2006, Posch et al., 2008
Eutrophication – aquatic freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP – freshwater)	kg P equivalent	EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe[1]
Eutrophication – aquatic marine	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP – marine)	kg N equivalent	EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe
Eutrophication – terrestrial	Eutrophication potential, Accumulated Exceedance (EP – terrestrial)	mol N equivalent	Accumulated Exceedance, Seppälä et al. 2006, Posch et al.
Photochemical ozone formation	Formation potential of tropospheric ozone (POCP)	kg NMVOC equivalents	LOTOS-EUROS, Van Zelm et al., 2008, as applied in ReCiPe
Depletion of abiotic resources – minerals and metals*	Abiotic depletion potential for non-fossil resources (ADP- minerals&metals)	kg Sb equivalents	CML (v4.1)
Depletion of abiotic resources – fossil fuels*	Abiotic depletion potential for fossil resources (ADP-fossil)	MJ net calorific value	CML (v4.1)
Water Depletion Potential*	WDP	m^3 equivalent deprived	Available Water Remaining (AWARE) Boulay et al., 2016
Resource use			

[1] EN 15804:2012+A2:2019 specifies that the unit for the indicator for Eutrophication aquatic freshwater shall be kg PO_4^{3-} eq, although the reference given ("EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe") uses the unit kg P eq. This is likely a typographical error in EN 15804+A2, which is expected to be corrected in a future revision. Until this has been corrected, results for Eutrophication aquatic freshwater shall be given in both kg PO_4 eq and kg P eq. in the EPD.

Impact Category	Indicator/Abbreviation	Measurement Unit	Assessment Method and Implementation
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ, net calorific value	Manual for direct inputs
Use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value	Manual for direct inputs[2]
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ, net calorific value	ecoinvent version 3.8 and expanded by PRé Consultants[3]
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ, net calorific value	Manual for direct inputs
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ, net calorific value	Manual for direct inputs[4]
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ, net calorific value	ecoinvent version 3.8 and expanded by PRé Consultants [5]
Use of secondary material	SM	kg	Manual for direct inputs
Use of renewable secondary fuels	RSF	MJ, net calorific value	Manual for direct inputs
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value	Manual for direct inputs
Use of net fresh water	FW	m^3	ReCiPe 2016
Waste categories			
Hazardous waste disposed	HWD	kg	EDIP 2003 (v1.05)
Non-hazardous waste disposed	NHWD	kg	EDIP 2003 (v1.05) [6]
Radioactive waste disposed/stored	RWD	kg	EDIP 2003 (v1.05)
Additional environmental impact indicators			

[2] Calculated based on the lower heating value of renewable raw materials.

[3] Calculated as sum of renewables, biomass; renewable, wind, solar and geothermal, and renewable, water.

[4] Calculated based on the lower heating value of non-renewable raw materials.

[5] Calculated as sum of non-renewables, fossil and non-renewable, nuclear.

[6] Calculated as sum of *Bulk waste* and *Slags/ash*.

Impact Category	Indicator/Abbreviation	Measurement Unit	Assessment Method and Implementation
Global warming potential, excluding biogenic uptake, emissions and storage	GWP-GHG	kg CO_2 equivalents (GWP100)	Baseline model of 100 years of the IPCC based on IPCC 2021[7]
Particulate matter emissions	Potential incidence of disease due to PM emissions (PM)	Disease incidence	SETAC-UNEP, Fantke et al. 2016
Ionising radiation – human health**	Potential Human exposure efficiency relative to U235 (IRP)	kBq U-235 eq	Human Health Effect model
Eco-toxicity (freshwater)*	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe	USEtox
Human toxicity – cancer effects*	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh	USEtox
Human toxicity – non cancer effects*	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh	USEtox
Land use related impacts / soil quality*	Potential soil quality index (SQP)	dimensionless	Soil quality index (LANCA®
Environmental information describing output flows			
Components for re-use		Kg	
Materials for recycling		Kg	
Materials for energy recovery		Kg	
Exported energy		Mj per energy carrier	

**Disclaimer – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.*

***Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground*

[7] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Environmental information

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

The results generated by module A1-A3 should not be used in isolation. It is strongly advised that the outcomes produced by modules A1-A3 are considered alongside the results derived from module C to ensure comprehensiveness and accurate analysis.

Environmental Impacts	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	4.07E+00	3.37E-01	4.57E-01	2.40E-02	1.14E-01	0.00E+00	4.42E-02	0.00E+00
GWP-biogenic	kg CO2 eq.	-1.16E+01	1.24E-04	8.11E-03	0.00E+00	4.17E-05	1.16E+01	2.96E-05	0.00E+00
GWP-luluc	kg CO2 eq.	6.29E-02	1.71E-04	3.53E-03	0.00E+00	5.75E-05	0.00E+00	1.82E-08	0.00E+00
GWP-total	kg CO2 eq.	-7.42E+00	3.37E-01	4.69E-01	2.40E-02	1.14E-01	1.16E+01	4.42E-02	0.00E+00
ODP	kg CFC 11 eq.	1.81E-07	4.92E-09	1.26E-08	0.00E+00	1.66E-09	0.00E+00	6.03E-09	0.00E+00
AP	mol H+ eq.	1.71E-02	1.16E-03	2.01E-03	0.00E+00	3.92E-04	0.00E+00	1.16E-04	0.00E+00
EP-freshwater	kg P eq.	3.65E-04	2.67E-05	8.05E-05	0.00E+00	9.01E-06	0.00E+00	5.06E-08	0.00E+00
EP-marine	kg N eq.	5.15E-03	3.83E-04	5.28E-04	0.00E+00	1.29E-04	0.00E+00	2.07E-05	0.00E+00
EP-terrestrial	mol N eq.	3.50E-02	4.06E-03	4.44E-03	0.00E+00	1.37E-03	0.00E+00	2.25E-04	0.00E+00
POCP	kg NMVOC eq.	1.12E-02	1.57E-03	1.54E-03	0.00E+00	5.28E-04	0.00E+00	6.00E-05	0.00E+00
ADP-minerals&metals*	kg Sb eq.	3.74E-06	1.05E-06	3.66E-06	0.00E+00	3.54E-07	0.00E+00	4.45E-11	0.00E+00
ADP-fossil*	MJ	6.27E+01	4.63E+00	6.09E+00	0.00E+00	1.56E+00	0.00E+00	6.05E-01	0.00E+00
WDP*	m3	5.02E+00	2.08E-02	3.09E-01	0.00E+00	7.02E-03	0.00E+00	4.14E-03	0.00E+00
Resource Use	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	7.36E+00	5.90E-02	2.80E+00	0.00E+00	1.99E-02	0.00E+00	4.25E+00	0.00E+00
PERM	MJ	5.93E+00	0.00E+00	-1.69E+00	0.00E+00	0.00E+00	0.00E+00	-4.24E+00	0.00E+00
PERT	MJ	1.33E+01	5.90E-02	1.11E+00	0.00E+00	1.99E-02	0.00E+00	8.00E-03	0.00E+00
PENRE	MJ	5.78E+01	4.63E+00	6.42E+00	0.00E+00	1.56E+00	0.00E+00	6.05E-01	0.00E+00
PENRM	MJ.	6.26E+00	0.00E+00	-2.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

PENRT	MJ	6.40E+01	4.63E+00	6.16E+00	0.00E+00	1.56E+00	0.00E+00	6.05E-01	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	1.08E-01	6.45E-04	6.99E-03	0.00E+00	2.18E-04	0.00E+00	9.16E-05	0.00E+00
Waste Production	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	6.85E-05	2.98E-05	1.33E-05	0.00E+00	1.00E-05	0.00E+00	1.26E-07	0.00E+00
NHWD	kg	3.97E-01	2.24E-01	2.07E-01	0.00E+00	7.56E-02	0.00E+00	2.24E-04	0.00E+00
RWD	kg	1.80E-05	9.37E-07	3.81E-06	0.00E+00	3.16E-07	0.00E+00	3.34E-11	0.00E+00
Output Flows	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Additional Environmental Impact Indicators	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq.	4.22E+00	3.37E-01	4.73E-01	0.00E+00	1.14E-01	0.00E+00	4.42E-02	0.00E+00
Particulate matter	disease incidence	2.24E-07	2.61E-08	3.13E-08	0.00E+00	8.81E-09	0.00E+00	7.00E-10	0.00E+00
Ionising radiation - human health**	kBq U-235 eq	7.39E-02	3.94E-03	1.54E-02	0.00E+00	1.33E-03	0.00E+00	9.26E-07	0.00E+00
Eco-toxicity (freshwater)*	CTUe	7.52E+00	2.26E+00	1.37E+00	0.00E+00	7.63E-01	0.00E+00	1.54E-01	0.00E+00
Human toxicity potential - cancer effects*	CTUh	5.61E-10	7.80E-11	2.31E-10	0.00E+00	2.63E-11	0.00E+00	1.86E-12	0.00E+00
Human toxicity potential - non cancer effects*	CTUh	6.82E-09	1.47E-09	1.96E-09	0.00E+00	4.94E-10	0.00E+00	1.49E-10	0.00E+00
Soil quality*	dimensionless	3.38E+01	2.76E+00	2.57E+00	0.00E+00	9.29E-01	0.00E+00	2.20E-02	0.00E+00

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

***Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground*

Additional information

saveBOARD is committed to a sustainable future. We hold many of the common industry environmental certifications & labels. Ultimately, we can provide transparency to our clients and customers on how we make our saveBOARD products. We have provided relevant additional information below:

Designing Out Waste

We are focused on several initiatives that design out waste in the built environment, these include:

💲 **Free Return Service:** Send back off-cuts and end-of-life products to be remanufactured into new materials. It costs less than landfill and better for the planet.

🛠️ **Cut-to-Length Service:** Only pay for what you need, saving money and reducing on-site labour for cutting sheets.

🟧 **Recycling Manufacturing Waste:** Our side trimmings and reject boards are continuously recycled into new saveBOARD products, its just something we do.

🌎 **Soft Plastics Recycling:** We offer free soft plastics recycling to all our clients, providing a comprehensive site-wide solution not just saveBOARD focused.

Declare Label

Declare is a database of non-toxic, sustainably sourced building products that meet the stringent requirements of the International Living Future Institute's Living Building Challenge.

Declare label is available for all saveBOARD products. Declare is like a nutritional label for building products, offering specifiers, contractors and building users insight into the ingredients used in the manufacture of building products. All saveBOARD products have all achieved Red List Free status.

Environmental Labels

Eco Choice Aotearoa

Eco Choice Aotearoa is New Zealand's official ecolabel. More than listing sustainable products for green homes or businesses, Eco Choice's Type I ecolabel offers strong, independent proof of environmental best practice for those products and services that bear the mark.

GECA Ecolabel

Good Environmental Choice Australia provides a credible and independent standard to guide people who want to purchase and use products that are proven to be better for the environment.

References

(ALCAS), A. L. (2023). Australian Life Cycle Inventory (AusLCI) – v1.42.

Brussels: European Committee for Standardisation (2019). EN 15804:2012+A2:2019; Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products.

EPD International. (2021). General Programme Instructions of the International EPD System, version 4.0.

EPD International. (2024). PCR 2019:14 version 1.3.4 Construction Products. www.environdec.com

Frischknecht, R. (2007). The Environmental Relevance of Capital Goods in Life Cycle Assessments of Products and Services. Int. J LCA.

Instructions of the Australasian EPD Programme – a Regional Annex to the General Programme Instructions. (2023) Version 4.2 Published 12-04-2024.

ISO. (2006). ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Geneva: International Organization for Standardization (ISO).

ISO. (2006). ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.

ISO. (2006). ISO 14040:2006/Amd1:2020. Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.ISO. (2006). ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

ISO. (2006). ISO 14044:2006/And1:2017/Amd2:2020. Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

PRé Sustainability. (2023) SimaPro. v9.5

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., & & Weidema, B. (2023). The ecoinvent database version 3.9

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