Environmental Product Declaration

Wesbeam I-joist

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC: 2021 for: Wesbeam I-joist from Wesbeam

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Licensee:	EPD Australasia, www.epd-australasia.com
Type of EPD:	EPD of a single product from a manufacturer
EPD registration number:	EPD-IES-0026514:001
Version date:	2026-03-24
Validity date:	2031-03-23

EPD INTERNATIONAL EPD SYSTEM

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wesbeam
building better wood

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Information About EPD Owner

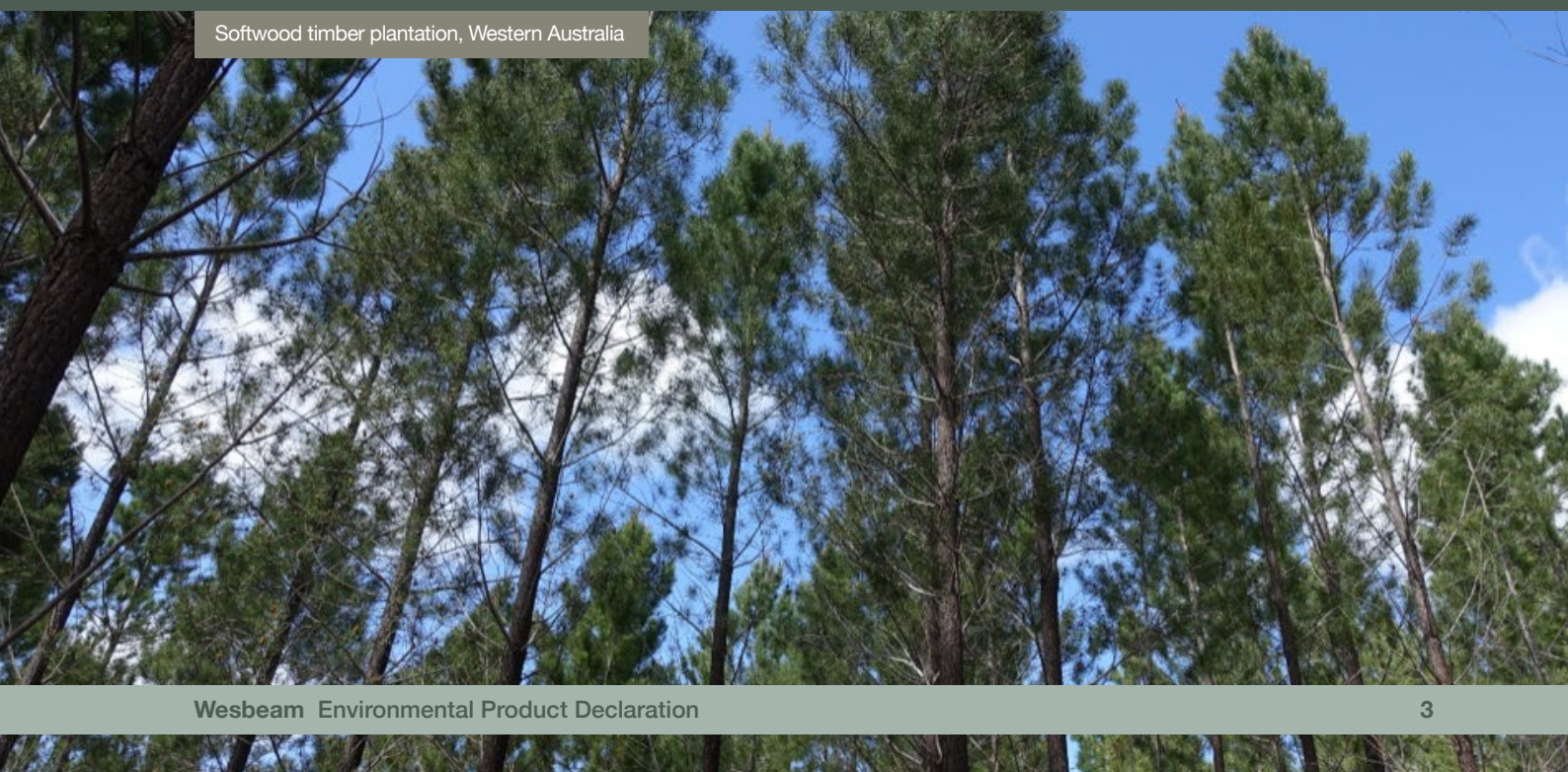
About Wesbeam

Wesbeam is Australia's sole manufacturer of both Laminated Veneer Lumber (LVL) and I-joists. Privately owned and founded in 2001, the company operates a state-of-the-art, world-scale manufacturing facility in Neerabup, Western Australia, built and commissioned in 2004. The plant runs 24/7 for up to 362 days each year, supplying high-performance engineered wood products to builders, timber merchants, frame and truss manufacturers, architects and engineers nationwide. A fully integrated supply chain, local expertise and a national distribution network across Perth, Adelaide, Melbourne, Sydney and Brisbane - ensure fast, reliable service. The business employs just under 300 FTEs.

Wesbeam's manufacturing is underpinned by a long-term timber supply agreement with the Western Australian Government, providing secure, sustainably sourced plantation timber to support consistent production. Products are engineered for structural integrity and long lengths and are supplied treated as standard, with optional H2 and H3 LOSP treatments for specific applications. Our Engineering Design Centre partners with customers from early planning through delivery, supporting thousands of projects each year with efficient, buildable solutions.

Wesbeam has been widely recognised for its operational excellence and strong industry relationships. Safety and people sit at the centre of our culture, and Wesbeam has been recognised as a Great Place to Work.

Looking ahead, ongoing investment in plant, automation and sustainability initiatives continue to lift productivity. As Australia looks to increase housing supply and improve sustainability outcomes, engineered timber will play a critical role, and Wesbeam is well positioned to support that transition.



Softwood timber plantation, Western Australia

Information About EPD Owner (cont.)

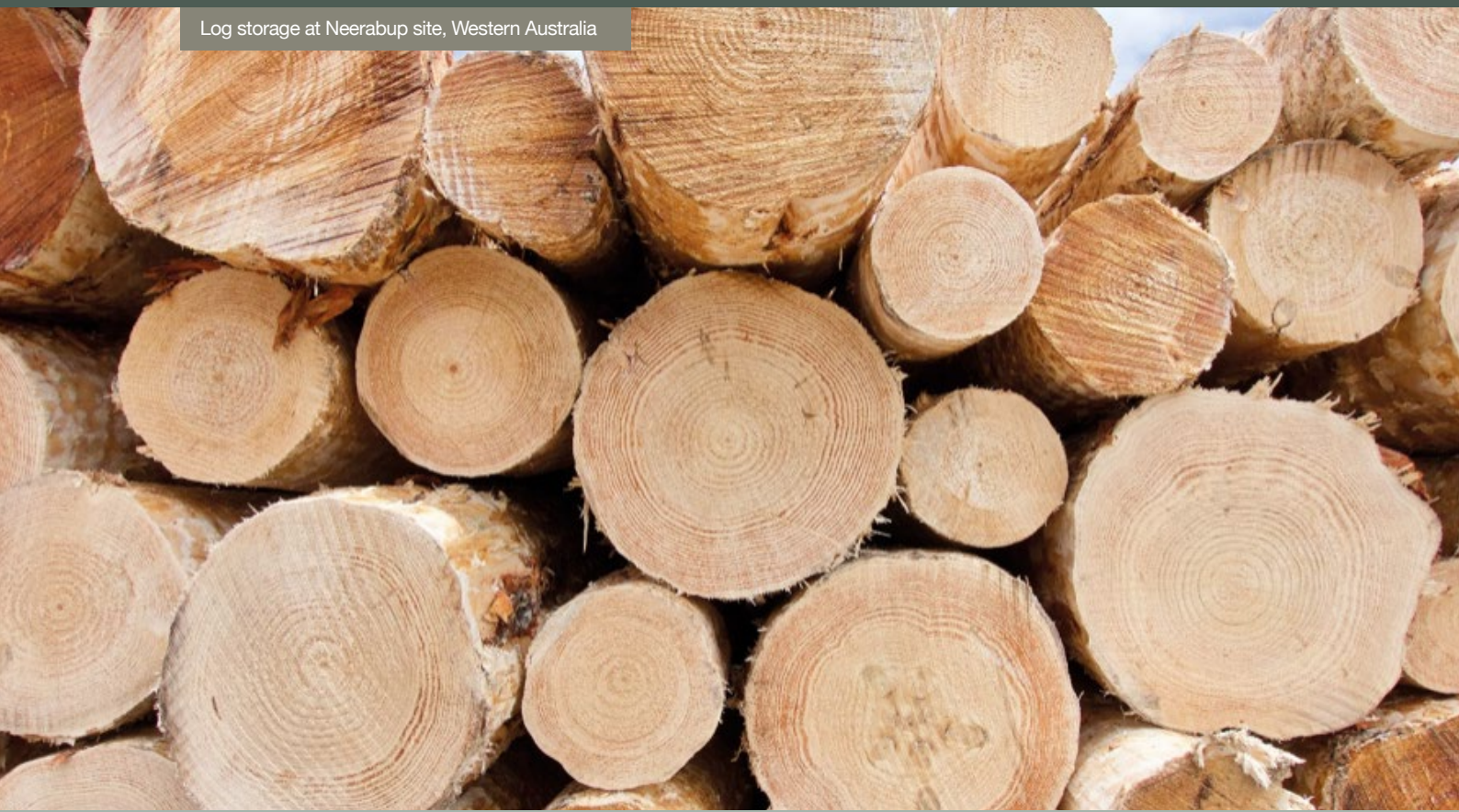
Third Party Certified

Wesbeam LVL and I-joist is manufactured in accordance with AS/NZS 4357 Structural Laminated Veneer Lumber at our Neerabup facility in Western Australia. The LVL manufacturing process is independently 3rd party audited and certified by the Engineered Wood Products Association of Australasia (EWPAA) to ensure its compliance to AS/NZS 4357.

The EWPAA is an accredited LVL, I-joist, plywood and veneer product certifier, by the peak certifying body in Australasia, the Joint Accreditation System – Australia and New Zealand (JAS-ANZ), accredited to ISO17065: Product Certification and ISO17021: Management Systems. JAS-ANZ certified products meet the acceptance criteria of the National Construction Code (NCC) of Australia; and State and Commonwealth purchasing authorities.

I-joist flange is made of LVL. All timber used in LVL production is sourced through a PEFC (Programme for the Endorsement of Forest Certification) Chain of Custody certified supply chain, ensuring it meets internationally recognised sustainability standards. This includes timber from well-managed Western Australian plantations and ecological thinning, all verified as responsibly sourced. Wesbeam PEFC Chain of Custody certification is audited and verified by the Engineered Wood Products Association of Australasia (EWPAA).

I-joist web is manufactured by EGGER in Germany. OSB is made of mixture of 70% softwood (spruce and pine) and 30% hardwood (EGGER, 2024). The timber origin in OSB web has been provided in EGGER OSB EPD (EGGER, 2024).



Log storage at Neerabup site, Western Australia

Information About EPD Owner (cont.)

Declaration owner:	**Wesbeam Pty Ltd** Web: https://wesbeam.com/ Email: tom.rickerby@wesbeam.com Post: 190 Pederick Road, Neerabup WA 6031
LCA accountability:	**thinkstep Pty Ltd** Barbara Nebel Kasia Pitman Web: www.thinkstep-anz.com Email: info@thinkstep-anz.com Post: 25 Jubilee Street, Perth, Western Australia 6151, Australia
Geographical Scope	Australia
Reference Year for Data	2023-01-01 to 2023-12-31
Version history	
1 2026-03-24	Original version of the EPD

Product Information

Wesbeam I-joist

Wesbeam I-joist is a timber product made using the flange and the web in its construction. The flanges are located at the top and the bottom of the I-joist. The flange is made of the high strength timber (Wesbeam LVL) and the web is made of a thinner timber product (Plywood or Oriented Strand Board (OSB)).

I-joist is manufactured in Wesbeam's facility in Neerabup, Western Australia.

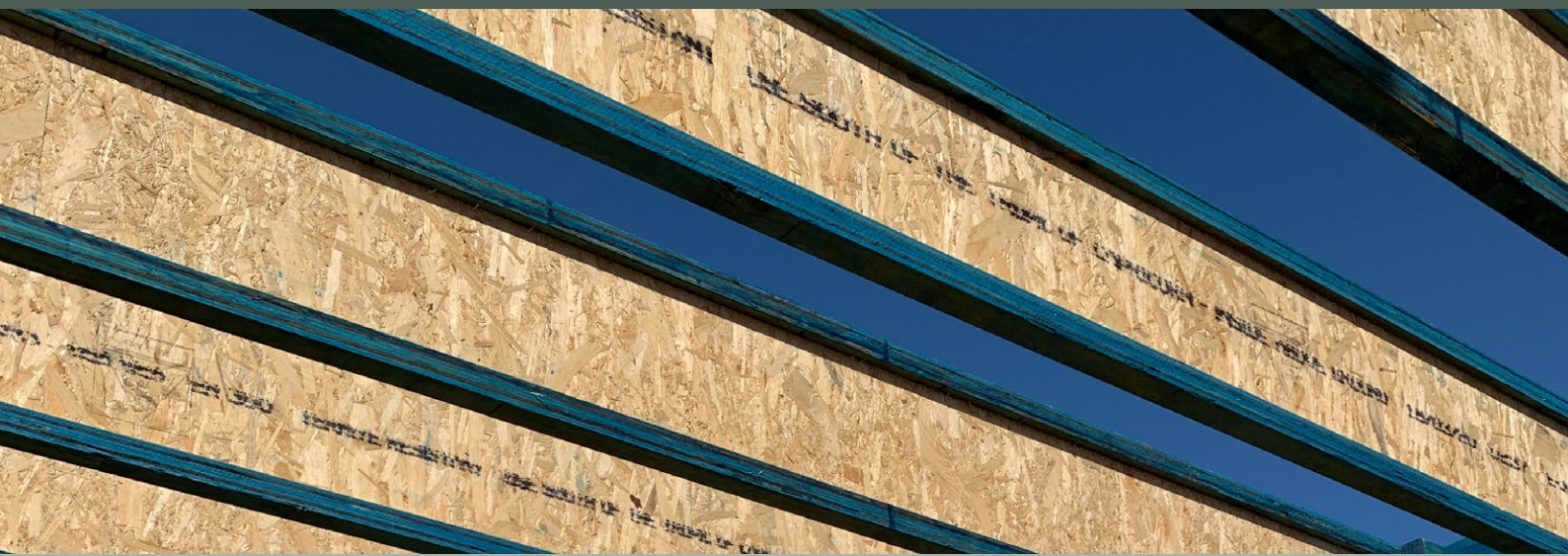
This EPD is product-specific.

Wesbeam I-joist is available in the following dimensions:

The following is the range of joist width/depths covered by Wesbeam I-joist manufacturing (using 37mm thick top and bottom LVL flanges).

D x W	Joist Depth (mm)						
Joist Width (mm)	200	240	255	265	300	360	400
45	X	X			X		
63	X	X	X	X	X	X	X
90	X	X	X	X	X	X	X

Wesbeam I-joist is designed to be used as a floor joist or roof rafters in residential and commercial construction.



Product Information (cont.)

Table 1: Industry classification

Product	Classification	Code	Category
I-joist	UN CPC Ver.3	31219	Wood, continuously shaped along any of its edges or faces (including strips and friezes for parquet flooring, not assembled, and beadings and mouldings) of coniferous wood, maritime pine, radiata pine and karri
	ANZSIC 2006	1493	Veneer and Plywood Manufacturing: Laminated veneer lumber (LVL) manufacturing

Table 2: Technical specification

Product	Relevant Standards
I-joist	**Flange**
	AS/NZS 4357.0:2022 Structural laminated veneer lumber, Part 0: Specification (AS/NZS, 2022)
	AS 2754.1:2016 Adhesives for timber and timber products; Adhesives for manufacture of plywood and laminated veneer lumber (LVL) (AS, 2016)
	AS/NZS 2098.2:2012 Methods of tests for veneer and plywood; Bond quality of plywood (chisel test) (AS/NZS, 2012)
	AS/NZS 1604:2021 Series, Preservative-treated wood-based product (AS/NZS, 2021)
	Web (OSB)
	EN 300:2006 Oriented strand boards (OSB). Definitions, classification and specifications (CEN, 2006)
	AS 2754.1:2016 Adhesives for timber and timber products; Adhesives for manufacture of plywood and laminated veneer lumber (LVL) (AS, 2016)
	AS/NZS 2098.2:2012 Methods of tests for veneer and plywood; Bond quality of plywood (chisel test) (AS/NZS, 2012)

Wesbeam I-joist is labelled and packaged using timber gluts, PP plastic wrap and PP plastic strapping.

Content Declaration

Table 3: Content declaration for one m3 of product

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/ declared unit
LVL with e2S treatment	402	0	60.9	182
OSB web	232	0	32.2	97
PRF* resin system	3.77	0	0	0
Total	638	0	93.1	279

**PRF- Phenol Resorcinol Formaldehyde*

Table 4: Content declaration of Packaging for one m3 of product

Distribution and/or consumer packaging	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/ declared unit
Timber gluts	6.14	0.962	0.841
Plastic wrap (PP*)	0.555	0.087	0
Paper labels	0.00078	1.22E-04	3.52E-04
Plastic strapping (PP*)	0.279	0.0437	0
Ink	0.00271	4.25E-04	0
Total	6.98	1.09	0.841

**PP - Polypropylene*

Dangerous substances from the candidate list of SVHC for Authorisation

Hazardous properties for Hazardous Substances and New Organisms (HSNO classifications) and Globally Harmonized System (GHS) classifications are reproduced from vendor SDS or OECD's global portal to information on chemical substances available at: https://www.echemportal.org/echemportal/

The product declared within this EPD

- Does not release dangerous substances to soil and water
- Does not contain hazardous substances requiring labelling
- Does not contain materials identified in the European Chemicals Agency's Candidate List of Substances of Very High Concern in the products at a concentration greater than 0.1% (ECHA, 2025)

LCA Information

Declared Unit

The declared unit for the EPD is 1 m^3 softwood and hardwood mixed Laminated Veneer Lumber (LVL) treated flange and softwood and hardwood mixed treated OSB web, 6% moisture content (dry basis), with an average density of 638 kg/m^3, plus its packaging at the factory gate.

Product packaging includes timber gluts, plastic wrap (PP), plastic strapping (PP) and labels.

Conversion factor to mass is 638 kg per 1 m^3 of product.

All products included in this EPD have the same mass and material content per declared unit.

LCA Information (cont.)

As shown in the table below, this EPD is of the type cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). Other life cycle stages (Modules A4-A5, B1-B7) are not included as they are dependent on particular scenarios and best modelled at the building level.

Table 5: Modules included in the scope of the EPD

	Product stage			Construction process stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport of raw materials	Manufacturing	Transport to customer	Construction/Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport to waste processing	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	AU, DE, NZ	AU, DE, NZ	AU	–	–	–	–	–	–	–	–	–	AU	AU	AU	AU	AU

X = included in the EPD; ND = Module not declared (such a declaration shall not be regarded as an indicator result of zero)

LCA Information (cont.)

Raw material supply (Module A1)

- Extraction and processing of raw materials: Production of LVL timber with e2S treatment.
- Softwood and hardwood timber and bonding resin (PMDI – Polymeric diphenylmethane diisocyanate, MUF – Melamine-Urea-Formaldehyde) processing and production of OSB web at supplier site in Germany.
- Extraction and processing of raw materials used in of PRF resin system.
- Generation of electricity, fuels, steam and heat from primary energy resources, also including their extraction, refining and transport. This includes energy needed for raw material supply and energy for manufacturing in core process.

Transportation (Module A2)

Inbound transport of the raw materials to Neerabup manufacturing site in Western Australia.

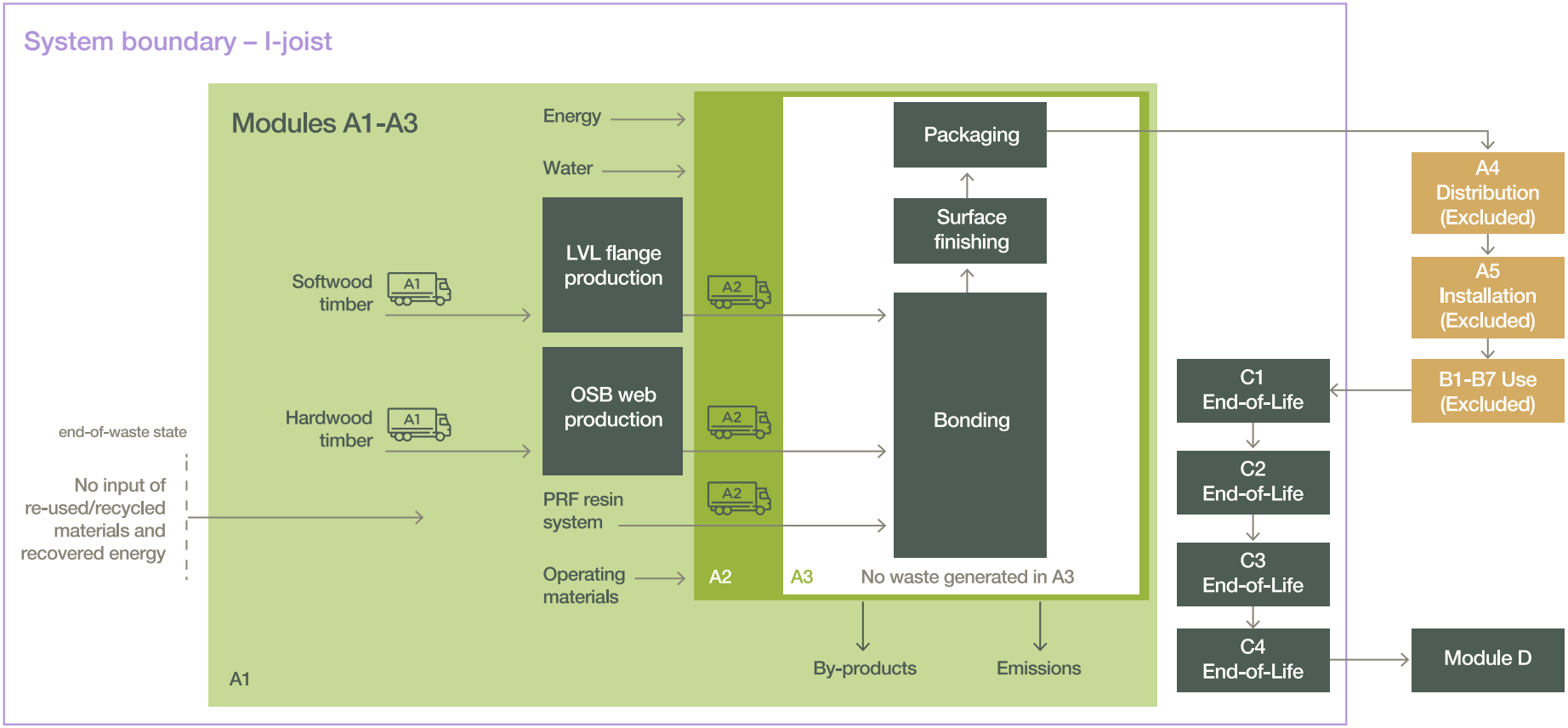
Manufacturing (Module A3)

I-joist manufacturing process includes the following process steps:

- LVL and OSB bonding using PRF resin system.
- Finishing (cutting) I-joist to the correct dimensions.
- Packaging (including production of packaging materials).

LCA Information (cont.)

Wesbeam manufactures its I-joist by combining Wesbeam LVL flanges with an Oriented Strand Board (OSB) web. The LVL flanges provide high bending strength and stiffness, while the OSB web offers excellent shear capacity and dimensional stability. These components are bonded together using structural adhesives to form a lightweight yet strong engineered joist ideal for residential floor and roof systems.



LCA Software and Database

The LCA model was created using the Life Cycle for Experts (LCA FE) (formerly known as GaBi) Software for life cycle engineering, developed by Sphera Solutions, Inc. The Managed LCA Content (MLC) database CUP2024.2 (Sphera, 2024), formerly known as GaBi LCI database, provides the life cycle inventory data for several of the raw and process materials obtained from the background system.

Electricity

The composition of the residual electricity grid mix of Western Australia is modelled in LCA FE based on published data for the financial year 1st July 2022 – 30st June 2023 (Australian Government, 2024). The Western Australian residual electricity mix is made up of natural gas (43.6%), hard coal (29.8%), solar (13.2%), wind (13.0%), biogas (0.29%), biomass (0.04%), and heavy fuel oil (0.02%). The emission factor for the Western Australian residual grid mix for the GWP-GHG indicator is 0.616 kg CO_2-eq /kWh (based on EF3.1). Location-based grid mix EFs (using the published grid mix) is used for other electricity consumption including modules C and D.

Modelling of Infrastructure/ Capital Goods

In general, the production and end-of-life processes of infrastructure and capital goods used in the product system are not included within the system boundary. An exception is for capital goods for electricity generation, where the capital goods are very important for modelling of changes towards more renewable generation. Capital goods related to electricity generation is included in all electricity datasets used in this study. This is not regarded as limiting the scope of the inventory or as an incomplete inventory (i.e. a cut-off).

Allocation

Allocation generally follows the requirements of PCR 2019:14 v2.0.1 (EPD International, 2025b). When allocation becomes necessary during the data collection phase, the allocation rule most suitable for the respective process step is applied.

Irrespective of any allocation between product systems, the inherent properties of the product and the packaging, such as calorific content or biogenic or fossil carbon content are not allocated away and always follow the physical downstream flow and the product system that finally uses it.

Allocation of site data

Process inputs, energy, water, waste in product manufacture and product packaging were allocated on a mass basis.

Consistent allocation procedures are uniformly applied to similar inputs and outputs of the product system under consideration. The sum of inputs and outputs allocated to these products is equal to the total inputs and outputs of the allocated unit process at the site level.

Allocation of by-products

By-product of I-joist production are LVL off cuts and OSB off cuts. As difference in economic value of the co-product is high (>25% as per EN15804, Section 6.4.3.2 (CEN, 2019/2021), allocation by economic value has been applied.

Allocation of waste

There are no wastes generated in I-joist production process.

Recycling and Recycled Inputs

There are no inputs of recycled material into the I-joist production process.

There are no output of material for recycling from I-joist production process.

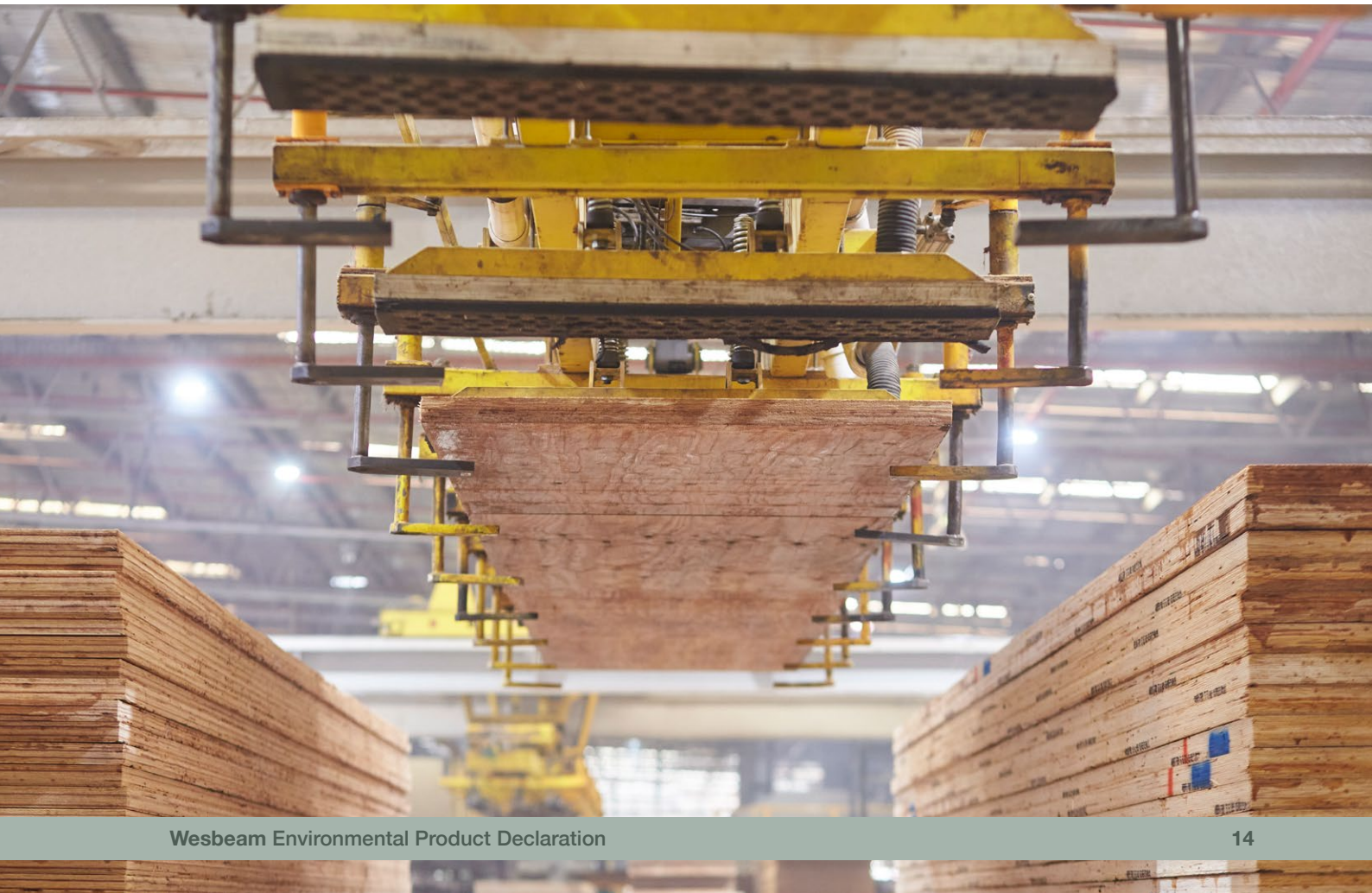
Data Quality Assessment

A data quality assessment that complies with EN 15941 (CEN, 2024) was done as part of the LCA study.

This EPD covers the product from a single Wesbeam facility in Australia. Manufacturing data for 2023 (2023-01-01 to 2023-12- 31) is collected.

Total share of primary data, of GWP-GHG results for A1-A3 is 81.65%. The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Proxy data was used in e2S treatment, harder in PRF resin system and minor process materials (lubricants) production modelling, which can affect their impacts. However, no other data was available.



LCA Information (cont.)

Table 6: Data sources and share of primary data

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Production of LVL timber	Collected data/ Database	FWPA 2022/ LCA FE v2024.2	2023	Primary data	76.48%
Production of OSB	EPD	EPD-EGG-20240403-IBD2-EN	2024	Secondary data*	0.00%
Transport of OSB to manufacturing site	Collected data and database	MLC v2024.2	2023	Primary data	0.90%
Production of PRF resin system	Collected data and database	MLC v2024.2	2023	Secondary/ Proxy data	0.00%
Transport of PRF resin system to manufacturing site	Collected data and database	MLC v2024.2	2023	Primary data	0.11%
Generation of electricity used in manufacturing of product	Collected data and database	MLC v2024.2	2023	Primary data	4.17%
Production of packaging	Collected data and database	MLC v2024.2	2023	Proxy data	0.00%
Total share of primary data, of GWP-GHG results for A1-A3					81.65%

*EGGER EPD does not provide information about amount of primary data used. The conservative assumption was made that only secondary data was used in modelling.

The reported share of primary data is associated with uncertainty, as an EPD for EGGER OSB web used as data source lack information on the share of primary data.

LCA Information (cont.)

The processes below are included in the product system to be studied. For modules beyond A3, the scenarios included are currently in use and are representative for one of the most probable alternatives.

End of Life (Modules C1-C4)

The end-of-life processes include deconstruction/ demolition of the product (C1), transport of the discarded product (C2), waste processing (C3), and landfilling (C4). The end-of-life stage (Modules C1-C4), for I-joist, is modelled using 100% landfill scenario. This reflects end-of-life landfilling rate for treated timber and engineered wood products in the construction sector (Table 7). This scenario is currently in use and is representative for one of the most likely scenario alternatives. Since this scenario is 100% landfill there are no alternative end-of-life scenarios modelled.

The type(s) and quantity of energy and transport used for modelling end-of-life processes, in modules C1 and C2, are the default values required by the PCR (EPD International, 2025b), since no more specific data is available.

The choice of modelling for the 100% landfill end-of-life scenario (module C4) is consistent with the recommendation in EN 16485:2014 (CEN, 2014) for EPDs for wood products.

The degradable organic carbon fraction (DOCf), for I-joist is 0.0811%. These values for LCL is based on mass composition of the mix of softwood and hardwood timber. The values for softwood and hardwood timber is based on bioreactor laboratory research by Wang et al. (2011) and Ximenes et al. (2013). These values can be considered as an upper limit for degradation of carbon in solid wood products placed in a landfill (and is applied to the EN 15804+A1 results also included in the EPD as information for comparison to earlier studies).

The landfill scenario assumed the following for carbon emissions:

- Decomposition rate of organic carbon to landfill gas is 0.0811% (DOCf) I-joist.
- 68% of the methane is captured based on landfill gas capture in Australian landfills (MfE, 2021, p, 377, Hyder Consulting, 2007).
- 25% of the methane captured (equivalent to 17% of the total methane emission) is flared, and 75% of the methane captured (equivalent to 51% of the total methane emission) is used for energy recovery (Carre, 2011).
- Of the 32% of methane that is not captured, 10% (equivalent to 3% of the total) is oxidised (released as carbon dioxide) (Australian Government, 2016a) and 90% of the methane that is not captured (equivalent to 29% of the total) is released into the atmosphere as methane.
- In summary, for every kilogram of carbon converted to landfill gas, 85.6% is released as carbon dioxide and 14.4% is released as methane.

In accordance with EN 15804+A2, any remaining biogenic carbon not degraded (99.9% of the carbon in the wood) is modelled as an emission of biogenic CO_2 to the air.

The emission of biogenic CO_2 in landfill is calculated, following EN15804, which does not allow consideration of permanent storage. The biogenic carbon balances in A1-A3 and C4, but due to methane emissions during production and landfill the GWP-biogenic values do not balance.

LCA Information (cont.)

Table 7: End of life scenarios for products

Process	1m^3
	EOL Main Scenario
Collection process specified by type	0 kg collected separately
	638 (1 m^3) kg collected with mixed construction waste. Equivalent of 1 m^3 of product
Recovery system specified by type	0 kg for re-use
	0 kg for recycling
	0 kg for energy recovery
Disposal specified by type	638 kg modelled as biogenic material in landfill according to EN 16485:2014 (CEN, 2014)
	0 kg for incineration
Assumptions for scenario development	> C1: Demolition/deconstruction - diesel use of 1.1 kWh/tonne > C2: 80 km of transport by 16-32 tonne lorry (EURO 5), 50% load factor > C3: no impacts > C4: biogenic material in landfill according to EN 16485:2014 (CEN,2014)

Recovery and Recycling potential (Module D)

Module D starts at the 'end-of-life' when the I-joist is no longer a product in its first life cycle and start to be a potential input for its second life cycle.

For I-joist the end-of-life is reached when product is landfilled. Landfill gas is combusted in an engine with an efficiency of 36% (module C) to generate electricity to be supplied to the Australian national grid mix (Australian Government, 2016b). Therefore, in module D, the resulting electricity receives a credit for offsetting average electricity from the Australian grid (module D). in line with EN 16485:14 (CEN, 2014).

Cut off criteria

The cut-off criteria applied are: 1% of the total mass input of the process and 1% of environmental impact. Packaging for minor raw material that are insignificant to the overall impacts have been cut-off. All other reported data were incorporated and modelled using the best available life cycle inventory data.

Infrastructure used in electricity generation is included as standard in the LCAFE datasets, as this is important for renewable generation.

Key assumptions

The following assumptions were made that can affect the results of the EPD:

- Forestry data assumptions are stated in the FWPA LCI report (FWPA, 2022; FWPA, 2019).
- The biogenic carbon and the calorific value are calculated from wood properties.
- All water use on site was allocated to production. This is a conversative approach as there is no sub-metering on site to allocate water use between production and non-production use.
- Proxy data was used in e2S treatment, hardener in PRF resin system and minor process materials (lubricants) production modelling, which can affect their impacts. However, no other data was available.

LCA Information (cont.)

The results tables describe the different environmental indicators for each product per declared unit, for each declared module. The EN 15804 reference package based on EF 3.1, February 2023 is used.

Table 8 contains the core environmental impact indicators in accordance with EN 15804:2012+A2:2019, describing the potential environmental impacts of the product.

Table 9 provides additional environmental impact indicators in accordance with EN 15804:2012+A2:2019.

Table 10 shows the life cycle inventory indicators for resource use.

Table 11 displays the life cycle inventory indicators for waste and other outputs.

Table 12 displays biogenic carbon content indicators.

Table 13 contains results for environmental impact indicators in accordance with EN 15804:2012+A1:2013 to aid backward comparability.

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.

Table 8: EN15804+A2 Core Environmental Impact Indicators

Impact category	Indicator	Unit
Climate change - total	GWP-total	kg CO_2-eq.
Climate change - fossil	GWP-fossil	kg CO_2-eq.
Climate change - biogenic	GWP-biogenic	kg CO_2-eq.
Climate change - land use and land use change	GWP-luluc	kg CO_2-eq.
Ozone depletion	ODP	kg CFC11-eq.
Acidification	AP	Mole of H^+ eq.
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.
Eutrophication aquatic marine	EP-marine	kg N eq.
Eutrophication terrestrial	EP-terrestrial	Mole of N eq.
Photochemical ozone formation	POCP	kg NMVOC eq.
Depletion of abiotic resources - minerals and metals[1]	ADP-minerals & metals	kg sb-eq.
Depletion of abiotic resources - fossil fuels[1]	ADP-fossil	MJ
Water use[1]	WDP	m^3 world equiv.

LCA Information (cont.)

Table 9: EN15804+A2 Additional mandatory and voluntary environmental impact indicators

Impact category	Indicator	Unit
Climate change[2]	GWP-GHG	kg CO_2-eq.
Climate change[3]	GWP-GHG (IPCC AR5)	kg CO_2-eq.
Particulate Matter emissions	PM	Disease incidences
Ionising Radiation - human health[4]	IRP	kBq U235 eq.
Eco-toxicity (freshwater)	ETP-fw	CTUe
Human Toxicity, cancer[1]	HTP-c	CTuh
Human Toxicity, non-cancer[1]	HTP-nc	CTuh
Land use related impacts / soil quality[1]	SQP	Dimensionless (Pt)

Table 10: Life cycle inventory indicators on use of resources

Parameter	Indicator	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ
Use of renewable primary energy resources used as raw materials	PERM	MJ
Total use of renewable primary energy resources	PERT	MJ
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ
Total use of non-renewable primary energy resources	PENRT	MJ
Use of secondary material	SM	kg
Use of renewable secondary fuels	RSF	MJ
Use of non-renewable secondary fuels	NRSF	MJ
Net use of fresh water	FW	m^3

Table 11: Life cycle inventory indicators on waste categories and output

Parameter	Indicator	Unit
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Components for reuse	CRU	kg
Materials for energy recovery	MER	kg
Materials for recycling	MFR	kg
Exported electrical energy	EEE	MJ
Exported thermal energy	EEE	MJ

LCA Information (cont.)

Table 12: Biogenic carbon content indicators

Parameter	Indicator	Unit
Biogenic carbon content - product	BCC-prod	kg
Biogenic carbon content - packaging	BCC-pack	kg

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

Table 13: EN15804+A1 Environmental Impact Indicators

Impact Category	Indicator	Unit
Global warming potential	GWP (EN15804+A1)	kg CO_2-eq.
Ozone depletion potential	ODP (EN15804+A1)	kg CFC11-eq.
Acidification potential	AP (EN15804+A1)	kg SO_2-eq.
Eutrophication potential	EP (EN15804+A1)	kg PO_4^{3-}-eq.
Photochemical ozone creation potential	POCP (EN15804+A1)	kg Ethene-eq.
Abiotic depletion potential for non-fossil resources	ADPE (EN15804+A1)	kg Sb-eq.
Abiotic depletion potential for fossil resources	ADPF (EN15804+A1)	MJ

Disclaimers

[1]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.

[2]This indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero. It has been included in the EPD following the PCR.

[3]GWP-GHG (IPCC AR5) is an additional GWP100 indicator that is aligned with the Intergovernmental Panel on Climate Change (IPCC) 2013 Fifth Assessment Report (AR5) (IPCC 2013), national greenhouse gas reporting frameworks in Australia and New Zealand and previous versions of the Construction Products PCR (PCR2019:14v1.11). It excludes biogenic carbon and indirect radiative forcing.

[4]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 facilities. Potential ionizing radiation from the soil, from radon and some construction materials, is also not measured by this indicator.

Environmental Performance

The following tables show the results for one m^3 of I-joist.

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 of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Biogenic carbon and/or recovered energy leaving the product system in module A5 has been balanced out already in modules A1-A3.

The use of primary energy is separated into energy used as raw material and energy used as energy carrier as per option C in Annex 3 in the PCR (EPD International, 2025b).

Energy indicators (MJ) are always given as net calorific value.

OSB web used in I-joist product is supplied by EGGER. Module A1-A3 impacts for OSB web were sourced from EGGER OSB EPD (EGGER, 2024). The values for EN15804+A2 additional environmental impact indicators were not published by EGGER due to high uncertainty of the results. Wesbeam approached EGGER directly and the values for most of the EN15804+A2 additional environmental impact indicators were provided to use in this study. For indicators where values were not provided, (GWP-GHG (IPCC AR5) and EN15804+A1 additional environmental impact indicators), the results for I-joist product were not declared (marked as ND).

The three significant figures are used for all values in the EPD, including results. The three significant figures are used to maintain consistency across published EPDs.

Results for primary scenario

Table 14: EN15804+A2 Core environmental impact indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO_2-eq.	-5.88E+02	6.91E-01	5.16E+00	0	1.20E+03	-2.39E+01
GWP-fossil	kg CO_2-eq.	3.96E+02	6.91E-01	5.16E+00	0	5.30E+01	-2.39E+01
GWP-biogenic	kg CO_2-eq.	-9.84E+02	1.02E-04	6.90E-04	0	1.15E+03	-7.98E-03
GWP-luluc	kg CO_2-eq.	1.56E-01	1.81E-05	1.35E-04	0	7.26E-02	-8.86E-04
ODP	kg CFC11-eq.	2.41E-09	6.92E-14	5.16E-13	0	9.57E-11	-7.93E-10
AP	Mole of H^+ eq.	1.94E+00	4.02E-03	1.98E-02	0	2.49E-01	-1.35E-01
EP-freshwater	kg P eq.	6.26E-04	1.06E-07	7.92E-07	0	4.68E-05	-4.91E-06
EP-marine	kg N eq.	9.10E-01	2.02E-03	9.60E-03	0	8.18E-02	-3.14E-02
EP-terrestrial	Mole of N eq.	8.54E+00	2.21E-02	1.06E-01	0	9.00E-01	-3.43E-01
POCP	kg NMVOC eq.	3.34E+00	5.44E-03	2.07E-02	0	2.74E-01	-8.66E-02
ADP-minerals & metals[1]	kg Sb-eq.	7.98E-05	9.09E-09	6.78E-08	0	2.34E-06	-2.57E-06
ADP-fossil[1]	MJ	7.88E+03	9.13E+00	6.81E+01	0	7.81E+02	-3.06E+02
WDP[1]	m^3 world equiv.	4.89E+01	2.60E-03	1.94E-02	0	3.52E+01	-4.56E+00

Environmental Performance (cont.)

Table 15: EN15804+A2 Additional mandatory and voluntary environmental impact indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2-eq.	4.96E+02	6.91E-01	5.16E+00	0	1.91E+02	-2.39E+01
GWP-GHG (IPCC AR5)[3]	kg CO_2-eq.	ND	ND	ND	ND	ND	ND
PM	Disease incidences	2.01E-05	8.17E-08	1.75E-07	0	1.81E-06	-1.14E-06
IRP[4]	kBq U235 eq.	1.41E+00	1.91E-04	1.42E-03	0	4.45E-01	-1.08E-02
ETP-fw	CTUe	2.75E+03	4.07E+00	3.04E+01	0	3.65E+02	-5.84E+01
HTP-c[1]	CTUh	9.50E-08	6.69E-11	5.00E-10	0	8.38E-09	-3.07E-09
HTP-nc[1]	CTUh	4.87E-06	1.47E-09	1.10E-08	0	4.39E-07	-2.59E-08
SQP[1]	Pt	6.26E+03	1.86E-02	1.39E-01	0	6.16E+01	-6.93E+00

Table 16: Inventory indicators - Resource use

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1.40E+04	3.95E-02	2.94E-01	0	9.15E+02	-2.36E+02
PERM	MJ	9.89E+03	0	0	0	-8.03E+02	0
PERT	MJ	2.39E+04	3.95E-02	2.94E-01	0	1.13E+02	-2.36E+02
PENRE	MJ	6.88E+03	9.13E+00	6.81E+01	0	7.81E+02	-3.06E+02
PENRM	MJ	1.00E+03	0	0	0	0	0
PENRT	MJ	7.88E+03	9.13E+00	6.81E+01	0	7.81E+02	-3.06E+02
SM	kg	0	0	0	0	0	0
RSF	MJ	1.86E+01	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	1.93E+00	5.29E-05	3.94E-04	0	6.23E-01	-6.48E-02

Table 17: Inventory indicators - Waste material and output flow

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	1.98E-04	1.47E-10	1.10E-09	0	1.28E-07	-3.19E-07
NHWD	kg	2.10E+01	2.24E-04	1.67E-03	0	5.54E+02	-1.32E-01
RWD	kg	2.85E-02	1.78E-06	1.33E-05	0	4.19E-03	-9.13E-05
CRU	kg	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0
EEE	MJ	0	0	0	0	1.47E+02	0
EET	MJ	0	0	0	0	0	0

Environmental Performance (cont.)

Table 18: Inventory indicators - Biogenic carbon content

Indicator	Unit	A1-A3
BCC-prod	kg	2.79E+02
BCC-pack	kg	8.39E-01

Table 19: EN15804+A1 - Environmental Indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP (A1)	kg CO_2 eq.	ND	ND	ND	ND	ND	ND
ODP (A1)	kg CFC 11-eq.	ND	ND	ND	ND	ND	ND
AP (A1)	kg SO_2 eq.	ND	ND	ND	ND	ND	ND
EP (A1)	kg PO_4^{3-} - eq.	ND	ND	ND	ND	ND	ND
POCP (A1)	kg Ethene eq.	ND	ND	ND	ND	ND	ND
ADPE (A1)	kg Sb eq.	ND	ND	ND	ND	ND	ND
ADPF (A1)	MJ	ND	ND	ND	ND	ND	ND

Abbreviations

Abbreviations

ADP	Abiotic Depletion Potential
AP	Acidification Potential, Accumulated Exceedance
BCC-prod	Biogenic Carbon Content - product
BCC-pack	Biogenic Carbon Content - packaging
CEN	European Committee for Standardization
CML	Centre of Environmental Science at Leiden
CRU	Components for Re-Use
DOC_f	Degradable Organic Carbon Fraction
DQA	Data Quality Assessment
EEE	Exported Energy, Electrical
EET	Exported Energy, Thermal
EoL	End-of-Life
EP	Eutrophication Potential
ETP	Potential Comparative Toxic Unit for ecosystems
FW	Net use of Fresh Water
GaBi	Ganzheitliche Bilanzierung (German for holistic balancing)
GCV	Gross Calorific Value
GHG	Greenhouse Gas
GWP	Global Warming Potential (Climate Change)
HTP	Potential Comparative Toxic Unit for humans
HWD	Hazardous Waste Disposed
ILCD	International Cycle Data System
IPCC	Intergovernmental Panel on Climate Change
IRP	Potential Human exposure efficiency relative to U235
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
LCA FE-	Life Cycle Assessment for Experts (software)
luluc	Land use and land use change
MC	Moisture content
MLC	Managed LCA Content database
MER	Materials for Energy Recovery
MFR	Materials for Recycling
NCV	Net Calorific Value
NHWD	Non-Hazardous waste disposal
NMVOC	Non-Methane Volatile Organic Compound
NRSF	Use of Non-Renewable Secondary Fuels
ODP	Depletion potential of the stratospheric ozone layer
PCR	Product Category Rules
PENRE	Use of Primary Energy (Non-Renewable) as Energy
PENRM	Use of Primary Energy (Non-Renewable) as Material
PENRT	Use of Primary Energy (Non-Renewable) in Total
PERE	Use of Primary Energy (Renewable) as Energy
PERM	Use of Primary Energy (Renewable) as Material
PERT	Use of Primary Energy (Renewable) in Total
PF	Phenol Formaldehyde resin
PRF	Phenol Resorcinol Formaldehyde resin
PM	Potential incidence of disease due to PM emissions
POCP	Formation potential of tropospheric ozone
RSF	Use of Renewable Secondary Fuels
RWD	Radioactive Waste Disposed
SM	Use of Secondary Material
SQP	Land use related impacts / soil quality
VOC	Volatile Organic Compound
WA	Western Australia
WDP	Water (user) deprivation potential, deprivation-weighted water consumption

References

Andreasi Bassi, S., Biganzoli, F., Ferrara, N., Amadei, A., Valente, A., Sala, S., & Ardente, F. (2023).

Updated characterisation and normalisation factors for the environmental footprint 3.1 method, Publications OHice of the European Union. https://data.europa.eu/doi/10.2760/798894

AS. (2016).

AS 2754.1:2016 Adhesives for timber and timber products; Adhesives for manufacture of plywood and laminated veneer lumber (LVL).

AS/NZS. (2012).

AS/NZS 2098.2:2012 Methods of tests for veneer and plywood; Bond quality of plywood (chisel test).

AS/NZS. (2021).

AS/NZS 1604:2021 Series, Preservative-treated wood-based product.

AS/NZS. (2022).

AS/NZS 4357.0:2022 Structural laminated veneer lumber, Part 0: Specification.

Australian Government. (2016a).

National Greenhouse Accounts Factors. Department of the Environment and Energy. Retrieved August 21, 2017, from http://www.environment.gov.au/system/files/resources/e30b1895-4870-4a1f-9b32-3a590de3dddf/files/national-greenhouse-accounts-factors-august-2016.pdf

Australian Government. (2024, June).

Australian Energy Update 2023. Canberra: Australian Government Department of Climate Change, Energy, the Environment and Water. Retrieved from https://www.energy.gov.au/publications/australian-energy-update-2023

Carre, A. (2011).

A Comparative Life Cycle Assessment of Alternative Constructions of a Typical Australian House Design. Melbourne: Forest & Wood Products Australia. Retrieved July 2017, 13, from http://www.fwpa.com.au/images/marketaccess/PNA147-0809_Research_Report_Compar

CEN. (2006).

EN 300:2006 Oriented strand boards (OSB). Definitions, classification and specifications.

CEN. (2013).

EN 15804:2012+A1:2013 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. Brussels: European Committee for Standardization.

CEN. (2014).

EN 16485:2014 Round and sawn timber. Environmental Product Declarations Product category rules for wood and wood-based products for use in construction. Brussels: European Committee for Standardization.

CEN. (2019/2021).

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. Brussels: European Committee for Standardization.

CEN (2024).

EN 15941:2024, Sustainability of construction works – Data quality for environmental assessment of products and construction work – Selection and use of data. Brussels: European Committee for Standardization.

DCCEEW. (2024).

Energy Recovery. Department of Climate Change, Energy, the Environment and Water. Retrieved from https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-resource-recovery-reporting/energy-recovery-2024

ECO Platform. (2024).

ECO Platform standards, versions published 2024-12-20. Available on https://www.eco-platform.org/our-documents.html.

EGGER. (2024, December 19).

Egger OSB boards Environmental Product Declaration. Retrieved from https://www.egger.com/get_download/0b9a6cee-8a7b-47c6-a1e8-a1eb855cce32/Environmental_product_declaration_OSB.pdf

EN 16449:2014. (2014).

Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide. Brussels: European Committee for Standardization.

ECHA. (2025).

Candidate List of substances of very high concern for Authorisation. Retrieved from European Chemical Agency: www.echa.europa.eu/candidate-list-table

EPD Australasia. (2024).

Instructions of the Australasian EPD Programme V4.2. Nelson: EPD Australasia Ltd.

EPD International. (2025a).

General Programme Instructions for the International EPD System. Version 5.0.1, published 2025-02-27. Stockholm: EPD International AB.

EPD International. (2025b).

PCR 2019:14 Construction Products version 2.0.1 of 2025-06-05 (valid until 2030-04-07). Stockholm: EPD International AB.

FWPA. (2019).

Life Cycle Inventory and Environmental Product Declarations for Australian Wood Products: Full Report. Retrieved from https://fwpa.com.au/wp-content/uploads/2018/12/Full_Report_LCI_update__EPDs__excl_Annex_PNA384-1516.pdf

FWPA. (2022).

Softwood Timber Environmental Product Declaration. 2022. Australia: Australasian EPD Programme.

Hyder Consulting. (2007).

Review of Methane Recovery and Flaring from Landfills. Australian Greenhouse OHice, Department of Environment and Water Resources.

IPCC. (2013).

Climate Change 2013: The Physical Science Basis. Geneva: IPCC.

ISO. (2006a).

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

ISO. (2006b).

ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

ISO. (2006c).

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

MfE. (2021).

New Zealand's Greenhouse Gas Inventory 1990-2019. Ministry for the Environment. Retrieved from https://environment.govt.nz/assets/Publications/New-Zealands-Greenhouse-Gas-Inventory-1990-2019-Volume-1-Chapters-1-15.pdf#page=401

Sphera. (2024).

2024 Dataset Documentation. Retrieved from https://lcadatabase.sphera.com/

Ximenes, F., Brooks, P., Wilson, C., & Giles, D. (2013).

Carbon Storage in Engineered Wood Products in Landfills. Forest and Wood Products Australia. Retrieved August 07, 2017, from http://www.fwpa.com.au/rd-and-e/processing/181-carbon-storage-in-engineered-wood-products-in-landfills.html

General information

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules). The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

The results for EN15804+A1 compliant EPDs are not comparable with EN15804+A2 compliant studies as the methodologies are different. To support backwards comparability and compatibility, environmental performance results have also been provided for the indicators required in EN15804+A1, although the study does not claim compliance with this standard.

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General information (cont.)

Product Category Rules (PCR)

CEN standard EN 15804 served as the core Product Category Rules (PCR)	
PCR:	PCR 2019.14 Construction Products, version 2.0.1 (published on 2025-06-05, valid until 2030-04-07) C-PCR-006 Wood and wood-based products for use in construction (EN16485:2014), (published on 2019-12-20)
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.
Review Chairs:	Rob Rouwette, Start2See Pty Ltd (chair), Noa Meron, thinkstep Ltd (co-chair). The review panel may be contacted via the Secretariat: www.environdec.com/contact

Verification
External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through:

- [x] Individual EPD verification without a pre-verified LCA/EPD tool
- [ ] Individual EPD verification with a pre-verified LCA/EPD tool
- [ ] EPD Process Certification* without a pre-verified LCA/EPD tool
- [ ] EPD Process Certification* with a pre-verified LCA/EPD tool
- [ ] Fully pre-verified EPD tool

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EPD Australasia and The International EPD System

- [ ] Yes
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Reference Year for Data: 2023-01-01 to 2023-12-31

Version History

1	2026-03-24	Original version of the EPD

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