Environmental Product Declaration
In accordance with ISO 14025:2006
and EN 15804:2012+A2:2019/AC:2021

BlueScope

XLERPLATE® steel EPD

ECO PLATFORM EPD VERIFIED
EPD INTERNATIONAL EPD SYSTEM
AUSTRALASIA EPD® INTERNATIONAL EPD SYSTEM

Programme: **The International EPD System | www.environdec.com**
Programme operator: **EPD International AB**
Licensee: **EPD Australasia | www.epd-australasia.com**
EPD registration number: **EPD-IES-0000558:003**
Version date: **2026-03-11** | Validity date: **2031-03-11**
Products covered in the EPD: **XLERPLATE® steel**
EPD provided by BlueScope Steel Limited.

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

Information about the EPD Owner

BlueScope Sustainability Snapshot

Sustainability and Climate Action

Our vision for BlueScope in Australia is to be a vibrant, modern manufacturer, embodying progress, innovation and sustainability.

Steel is central to a circular economy – one where resources and materials are kept in use for as long as possible and then repaired, returned or recycled. Steel can be infinitely recycled and is 100% recyclable without loss of quality, in some cases it can be reused without reprocessing.

We recognise that steelmaking is emissions-intensive and we are committed to climate action. We strive to reduce the embodied carbon of our products, which is supported by our climate strategy and plans.

Building a pathway to low emission-intensity iron- and steelmaking in Australia is a key priority for our business. BlueScope's goal is to pursue net zero Scope 1 and 2 greenhouse gas (GHG) emissions across our global business by 2050. We have also adopted 2030 emissions intensity reduction targets for steelmaking and non-steelmaking activities[1].

Credentials and certifications

A number of BlueScope's products, product disclosures, and operations are recognised by third-party programs and credentials. These credentials are recognised in rating tools in Australia including Green Star, IS Rating and the Living Building Challenge.

BlueScope's Port Kembla Steelworks site, where the steel for BlueScope's branded products is manufactured, is certified to the ResponsibleSteel™ Standard v2.1. The ResponsibleSteel™ certification can give organisations in the steel value chain confidence in the environmental, social and governance performance of our steelmaking facilities, and may help them to meet their climate objectives and manage supply chain risks.

In addition to Environmental Product Declarations, a range of BlueScope products are certified to the ecolabel Global GreenTag^CertTM GreenRate™ and have achieved the highest rating, 'Level A'.

For more information about BlueScope's credentials and certifications, including how they can contribute to a project's Green Star rating, visit steel.com.au/sustainability.

BlueScope actively works to increase the recycled content of our products and we regularly update recycled content figures to reflect this. For the most current information visit steel.com.au/sustainability

Declaration Owner

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Life Cycle Assessment (LCA) accountability

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1. Achieving the 2050 net zero goal is highly dependent on several enablers, including; the development and diffusion of ironmaking technologies to viable, commercial scale; access to internationally cost-competitive, firmed large-scale renewable energy; availability of competitively priced green hydrogen with natural gas enabling the transition to green hydrogen; access to appropriate quality and sufficient quantities of economic raw materials; and supportive and consistent policies across all these enablers to underpin decarbonisation.

General Information

Programme operator: EPD INTERNATIONAL EPD SYSTEM	**The International EPD System** support@environdec.com www.envirodec.com EPD International AB, BOX 210 60, SE-100 31 Stockholm, Sweden
Licensee: AUSTRALASIA EPD® INTERNATIONAL EPD SYSTEM	**EPD Australasia Ltd** info@epd-australasia.com www.epd-australasia.com 6 Cube Court, Richmond 7020, New Zealand
Accountabilities for PCR, LCA and independent third-party verification	
CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
Product Category Rules (PCR):	Product Category Rules (PCR): PCR 2019:14 Construction Products, Version 2.0.1, (published on 2025-06-05, valid until 2030-04-07)
PCR review conducted by:	The Technical Committee of the International EPD System See www.environdec.com for a list of members Rob Rouwette | start2see (chair), Noa Meron | thinkstep-anz (co-chair) The review panel may be contacted via the Secretariat www.environdec.com/contact
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:	☑ Individual EPD verification without a pre-verified LCA/EPD tool
Third-party verifier: START2SEE LIFE CYCLE ASSESSMENTS	**Rob Rouwette, start2see Pty Ltd** Rob.Rouwette@start2see.com.au
Verifier approved by:	**EPD Australasia and The International EPD System**
Geographical scope:	**Australia**
Procedure for follow-up during EPD validity involves third party verifier:	☐ Yes ☑ No
EPD version history:	1. 2015-06-19 Original version of EPD 2. 2020-11-27 Updated in line with 5-year validity, including updated hotspot data covering over 95% of all impacts 3. 2026-03-11 Updated in line with 5-year validity, including full update of LCI. Changes to align with current PCR include modelling of environmental burdens for pre-consumer scrap and use of default data for modelling modules C1-C4.

- 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 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.
- BlueScope Steel Limited has sole ownership, liability and responsibility for this EPD.

Product Information

This EPD is valid for one kilogram (1 kg) of XLERPLATE® steel manufactured by BlueScope in Australia. This EPD provides results relevant to a number of products, based on a representative product.

Product description

XLERPLATE® steel hot rolled plate products are manufactured to relevant Australian standards to ensure quality and consistency. Categorised into structural, boiler and pressure vessels and analysis products XLERPLATE® steel is typically used in structural sections, tanks, roads and bridges, wind towers, harbours, stadiums and other heavy industrial applications.

Produced to the Australian Standards AS/NZS 3678:2016 (certified by the Australasian Certification Authority for Reinforcing and Structural Steels (ACRS)), and AS 1548-2008, the hot rolled plate range provides the flexibility to select from our standard range or customised grades, width, thickness and length to suit your specific design criteria.

A summary of the XLERPLATE® steel product range

Thickness	5mm - 150mm (depending on product)
Grade	A range of grades available for structural, pressure vessel and analysis application
Width	1 250mm - 3 200mm (depending on product)
Length	2.7m – 12m (depending on product)
Edge condition	– Mill edge/untrimmed edge is where the plate is supplied with an edge in the 'as rolled' condition – Trimmed edge is where the plate is supplied with a sheared or thermal cut edge
Product details	For more product details and data sheets visit: https://steel.com.au/products/xlerplate-steel

Manufacturing process

In Australia, BlueScope manufactures steel from raw and recycled materials using an 'integrated steelmaking' method. This involves the use of iron ore, coal, steel scrap, fluxes (limestone and dolomite) and alloying materials to produce steel slab via the major processes of sintering, coke making, Blast Furnace-Basic Oxygen Furnace (BF-BOF) steelmaking and continuous slab casting, prior to hot rolling into the final XLERPLATE® steel product.

Content Declaration

Product content

Table 1: Elemental composition of one kilogram (1 kg) of XLERPLATE® steel

Element	Iron (kg)	Manganese (kg)	Carbon (kg)	Other (kg)
XLERPLATE® Steel	>0.975	<0.015	<0.002	<0.008

Table 2: Content declaration[2] for one kilogram (1 kg) of XLERPLATE® steel

Product components	Mass (kg)	Post-consumer recycled material, mass-% of product[3]	Pre-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Steel	1.00	23	1.2	0	0
Total	1.00	23	1.2	0	0

Table 3: Content declaration of packaging for one kg of XLERPLATE® steel

Packaging materials	Mass (kg)	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Edge protectors (high density polyethylene)	2.2E-04	0.022%	0
Longitudinal straps (powder coated steel)	4.5E-05	0.0045%	0
Transverse straps (powder coated steel)	6.7E-05	0.0067%	0
Corner protectors (cardboard)	1.1E-05	0.0011%	5.0E-06
Timber dunnage	4.5E-03	0.45%	2.0E-03
Total	4.8E-03	0.48%	2.0E-03

XLERPLATE® steel is compliant with the European REACH regulation[4] (EC) 1907/2006 and does not release any hazardous substances when used as recommended. For safe use and maintenance, refer to the product Safety Data Sheet (SDS) available under Technical Documentation at http://www.steel.com.au/library.

What is an SDS?

A Safety Data Sheet (SDS) is a document that describes the chemical and physical properties of a product or material and provides safe handling and use information.

Industry classification

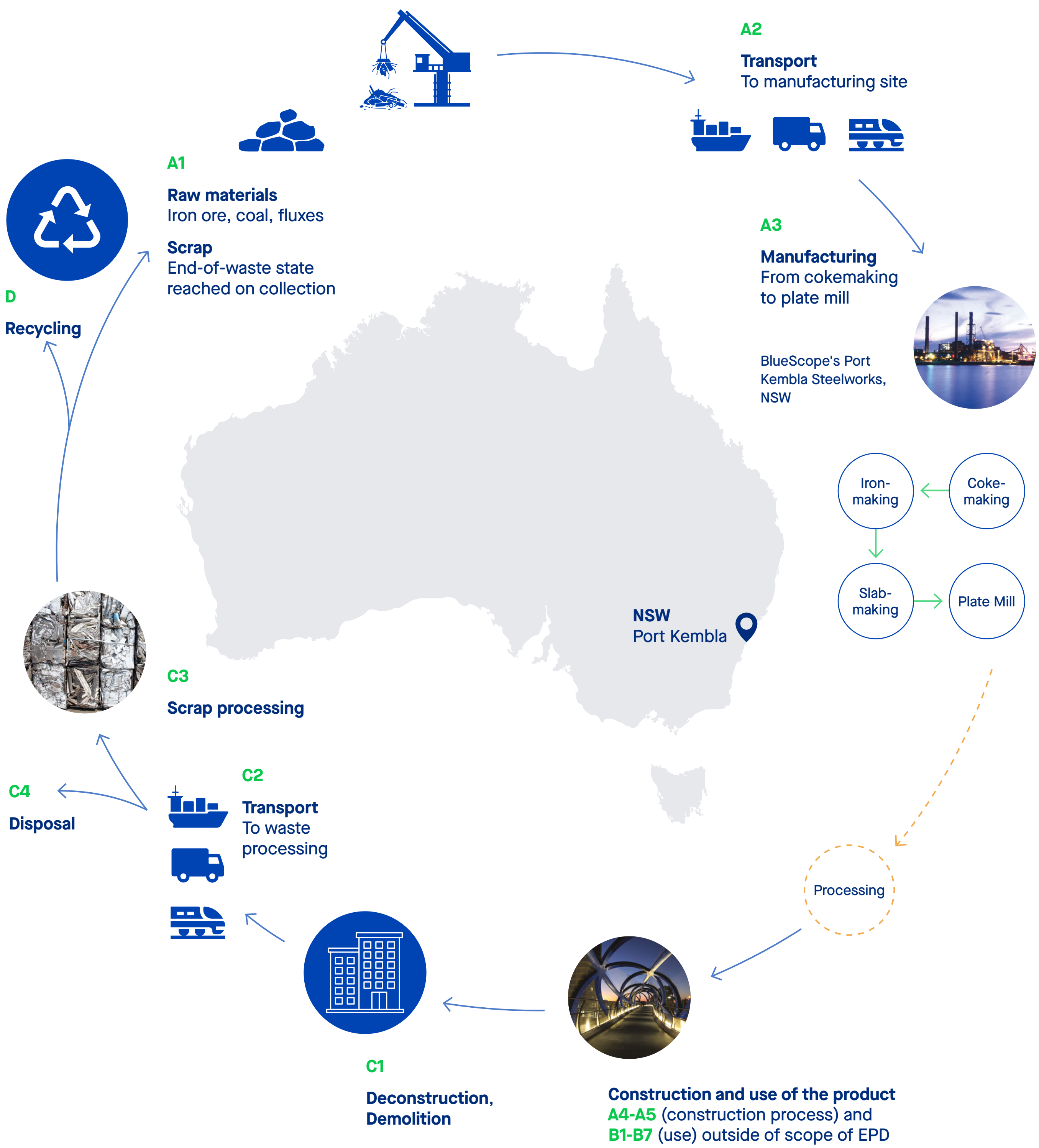
Table 4:

Product	XLERPLATE®	
Classification	UN CPC Ver.2	ANZSIC
Code	4121	2110
Category	Flat-rolled products of steel, not further worked than hot rolled	Iron Smelting and Steel Manufacturing

2. The product composition provided is an average and variability among individual products is expected. Please note that we are constantly working to improve our products and changes to their composition may occur over time. If clarification on a particular product is needed please contact BlueScope Steel Direct on 1800 800 789.
3. Scrap and iron-bearing materials reclaimed within BlueScope's steelmaking process, including the BF-BOS process up to slab casting, represent an additional 2.4% recovered content. The figures provided are based on FY24 data. BlueScope actively works to increase the recycled content of our products and we regularly update recycled content figures to reflect this. For the most current information visit steel.com.au/resources/articles/recycled-content
4. Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals.

Life Cycle Assessment (LCA) Information

XLERPLATE® steel Manufacturing and Processing in Australia



Declared unit

The declared unit for the EPD is 1kg of XLERPLATE® steel plus its packaging.

System boundaries

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 dependent on particular scenarios and best modelled at the building level.

The system boundary applied in this study extends from mining of raw materials such as iron ore and coal; transport to and within the manufacturing site; coke, sinter, iron and steel manufacture; ancillary service operations; hot rolling of steel products and preparation for dispatch to customers at the exit gate of the manufacturing site.

The system boundary also includes manufacture of other required input materials, the production of external services such as electricity, natural gas and water, and the production of co-product materials within the steelmaking process, which have been removed by the use of allocation techniques. Wastes and emissions to air, land and water are also included, as are modules C1-C4 (end-of-life stage), and module D (reuse, recovery and/or recycling potential).

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	De-construction, demolition	Transport to waste processing	Waste processing	Disposal	Reuse / recovery / recycling potential
Modules	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 GLO	AU GLO	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). GLO = Global.

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 CUP2025.1 (Sphera, 2025), 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

Market-based modelling has been used for grid supplied electricity consumed in processes at Port Kembla, NSW. Location-based grid mix emission factors (using the published grid mix) are used for other electricity consumption including modules C and D. Location-based electricity modelling is used in upstream secondary datasets for modelling of module A1 (e.g. for production of raw materials) because the aggregated datasets cannot be modified for electricity supply.

The composition of the residual electricity grid of New South Wales mix is modelled in LCA FE based on published data of the generation per fuel type, and the national electricity mix trade between states for the financial year 01-07-2022 to 30-06-2023 (Australian Government, 2024). The New South Wales residual electricity mix is made up of black coal 65.6%, solar 11.1%, wind 5.03%, hydro 4.74%, natural gas 2.01%, biomass 0.633%, biogas 0.379%, oil products 0.114%, and coal seam methane 0.00228%. The remaining electricity is imported: 5.29% is imported from Victoria, and 5.16% is imported from Queensland.

Onsite consumption (4.15%) is calculated based on the same source as the grid mix (Australian Government, 2024). The medium voltage (1kV-60kV) grid's transmission and distribution losses (1.83%/5.33%) are calculated based on data from the Australian Energy Market Operator (AEMO, 2022).

The emission factor for the New South Wales mix residual grid mix for the GWP-GHG indicator is 1.09 kg CO_2-eq /kWh (based on EF3.1).

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 are 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 follows the requirements of PCR 2019:14 v2.0.1 section 4.5 (EPD International, 2025b). 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 co-products

Co-product allocation was applied to manufacturing processes:

Mass allocation:

- Coregas air separation (oxygen, nitrogen and others)
- Coke oven (coke and oven gases)
- Slab caster (different slab grades), Hot strip mill (different coil grades), Plate mill (different plate grades)

Economic allocation:

- Gas processing (mostly oven gases and tar with small quantities of other gases)
- Sinter plant (sinter and mineral co-products)
- Blast furnace (iron, mineral and energetic co-products)
- Basic oxygen steelmaking (steel and mineral co-products)

As per PCR 2019:14 v2.0.1, if the difference in revenue per mass from the product and co-products is greater than 25%, economic allocation of A1-A3 impacts is applied. Sensitivity analysis of economic allocation shows a small effect of the price in the overall core impact indicator results (up to 0.11%).

Allocation of materials for recycling

The steelmaking process uses steel as an input. The scrap comes from several sources, with quantity from each source captured in data collection. Each source has a specific modelling approach as required by the PCR. BlueScope's own produced scrap is not sold externally.

Post-consumer scrap (24.6% of input feed per tonne of slab, 95% of externally sourced scrap): externally sourced scrap generated from the end-of-life of products, which has reached end-of-waste state and is burden-free at the point of generation. GWP-GHG impact of post-consumer scrap is 0.012 kg CO_2-eq. per kg of scrap.

Post-industrial scrap (1.30% of input feed per tonne of slab, also known as pre-consumer scrap; 5% of externally sourced scrap): externally sourced scrap generated by downstream manufacturers or other producers and purchased directly by BlueScope. Post-industrial scrap has a burden based on economic allocation between product and scrap. Since post-industrial scrap can be generated from many different product systems, this has been calculated using the price difference between welded products and the scrap generated from this process, using the purchase price of scrap. The economic value ratio for product to scrap is 96.35:3.65. Further impact is added for transport. GWP-GHG impact of post-industrial scrap is 0.575 kg CO_2-eq. per kg of scrap.

Internal scrap: scrap generated by BlueScope processes and used within the same product system. This is closed-loop recycling and the scrap has no impacts allocated to it.

Other allocation in production

Packaging is only used for final products. It is allocated by mass/volume across the total throughput of packaged product.

Data quality assessment

A data quality assessment was undertaken in compliance with EN 15941 (CEN, 2024), using the data quality level system and criteria set out in the UN Environment Global Guidance on LCA database development (UNEP, 2011); the results are summarised here. This EPD covers product from BlueScope's Port Kembla Steelworks in NSW, Australia, based on manufacturing data for FY2024 (01-07-2023 to 30-06-2024). The manufacturing process includes production of iron in a blast furnace, which is turned into steel through a basic oxygen steelmaking process and cast into slabs. The slab is processed through a plate mill to produce steel. The EPD represents production and end-of-life in Australia. Background data was sourced from the Managed LCA Content (MLC) database CUP2025.1 (Sphera, 2025).

The share of primary data is calculated based on GWP-GHG results and is shown in Table 6. 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.

The data used for modelling the production stage generally has good geographical, technological and temporal representativeness. Some datasets with fair or poor data are used due to being the best available data:

The dataset "AU: Iron ore mining and processing (domestic production) for domestic use and export to CN/IN/JP" representing iron ore fines, lump ore, iron sand, blended iron ore is fair for technological representativeness. It accounts for 41% of EP-freshwater.

The dataset "RER: Aluminium ingot mix - consumption mix" representing aluminium produced in Australia is fair for geographical and technical representativeness. It accounts for 59% of GWP-luluc.

The dataset "GLO: Molybdenum trioxide (technical-grade MoO_3)" is fair for technological representativeness. It accounts for 78% of ADP-mineral&metals.

The following datasets all have poor technological representativeness for one or more inputs they are intended to represent. They each contribute less than 1% to GWP-GHG and most contribute less than 0.1%: AU: Crude oil mix; AU: Hard coal mix; DE: Metallurgical coke; RER: Calcium silicate; DE: Silica sand (flour); DE: Limestone ($CaCO_3$; washed); AU: Iron ore mining and processing (domestic production) for domestic use and export to CN/IN/JP; RER: Testliner 2021; cut-off EoL; DE: Limestone ($CaCO_3$; washed); AU: Softwood timber, kiln-dried, rough-sawn, untreated (EN15804 A1-A3), Pallet, Timber dunnage, 2015, FWPA; GLO: Diesel combustion in construction machine (18-36 kW; Stage IIIA).

The following datasets all have poor geographical representativeness for one or more inputs they are intended to represent. They each contribute less than 1% to GWP-GHG and most contribute less than 0.1%: ZA: Ferro chrome (high carbon ~ 6%); ZA: Ferro-manganese, high-carbon (HC FeMn), 74 to 82 wt. % Mn, up to 7.5 wt % carbon; ZA: Ferro-manganese, refined (Ref. FeMn), 80 to 85 wt. % Mn, less than 1.5 wt % carbon; Ferro manganese low carbon.

Table 6: Data sources and share of primary data

Process category	Source type	Source	Reference year	Data category[5]	XLERPLATE®
Process emissions from manufacturing	Data collection, Database	EPD owner, MLC v2025.1	2021-2024	Primary data, rep. secondary data	72.4%
Electricity used in the manufacturing process	Data collection, Database	EPD owner, MLC v2025.1	2024	Primary data	9.20%
Natural gas used in the manufacturing process	Data collection, Database	EPD owner, MLC v2025.1	2021	Primary data	1.35%
Other fuels used in the manufacturing process	Data collection, Database	EPD owner, MLC v2025.1	2021	Primary data	5.13%
Transport of raw materials to site	Data collection, Database	EPD owner, MLC v2025.1	2023	Primary data	1.93%
Raw materials used in the manufacturing process	Data collection, Database	EPD owner, MLC v2025.1	2021	Proxy data	0.00%
Packaging	Data collection, Database	EPD owner, MLC v2025.1	2021	Proxy data	0.00%
Other processes	Data collection, Database	MLC v2025.1	2017-2024	Rep. secondary data, proxy data	0.00%
Total share of primary data, of GWP-GHG results for A1-A3					90.0%

5. Process category with 'Primary data, rep. secondary data' indicates that the process consists of both primary and representative secondary data share. The percentage is based solely on primary data share.

Modelling of downstream stages

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 stage (modules C1-C4) is modelled using a scenario reflecting end-of-life recycling/landfilling rates for steel products in the Australian construction sectors. The recycling rate of steel scrap in Australia is 90% according to a national waste recycling report for Australia (DCCEEW, 2025).

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

Table 7: End-of-life scenarios for products

Process	Unit (expressed per 1 kg of product)		
	End-of-life Main Scenario	100% Recycling Scenario	100% Landfilling Scenario
Collection process specified by type	1 kg collected with mixed construction waste		
Recovery system specified by type	0.9 kg for recycling[6]	1 kg for recycling	0 kg for recycling
Disposal specified by type	0.1 kg modelled as inert material in landfill	0 kg modelled as inert material in landfill	1 kg modelled as inert material in landfill
Assumptions for scenario development, e.g. transportation	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: • Loading and unloading at sorting facility – diesel use of 1.8 kWh/tonne • Mechanical sorting – electricity use of 2.2 kWh/tonne • Fragging of steel – diesel use of 7.4 kWh/tonne C4: Compacting of inert construction waste for landfills (including backfilling) – diesel use of 1.6 kWh/tonne		

6. The European Union Guidance on PEF identifies an R2 value of 95% for steel (building – sheet) (European Commission, 2020). It is more accurate to use the Australian value of 89.8% recycling of metals at the end-of-life (DCCEW, 2025).

Recovery and recycling potential (Module D)

Module D assigns a credit for secondary material outputs if the output of secondary material from module C3 is higher than the input of secondary material needed for the production of steel; alternatively, a burden is assigned if the ratio is the other way around. Therefore, only net scrap is sent to module D (i.e. the scrap remaining after any recycled content needed for modules A1-A3 is subtracted).

The input of secondary material needed for the production of steel is calculated based on post-industrial scrap and post-consumer scrap inputs, which is 0.246 kg post-consumer and 0.013 kg post-industrial per kg of product. The scrap from module C3 is 0.9 kg per kg of product. Therefore, the net scrap is 0.641 kg per kg of product. Module D presents a credit for recycling.

Cut-off criteria

The cut-off criteria applied are: 1% of renewable and non-renewable primary energy usage, 1% of the total mass input of a process and 1% of environmental impacts. The following flows have been cut off in line with the above rules:

- Transport for minor raw materials representing less than 1% of total material input individually and less than 5% in total.
- Packaging of consumables, as this information was not tracked. Raw materials arrive in bulk at BlueScope gate, but packaging of consumables (e.g. oils and grease), used in a small amount considering the total input of materials, were not accounted for.

Key assumptions

Post-industrial scrap has a burden based on economic allocation between product and scrap. Since post-industrial scrap can be generated from many different product systems, this has been calculated using the price difference between BlueScope's welded products and the scrap generated from this process, using the purchase price of scrap. The actual price variation between scrap and product from fabricators could vary significantly. However, post-industrial scrap represents a very small proportion of the inputs for BlueScope and sensitivity analysis shows that the price of scrap has a very small influence on all life cycle indicators.

The life cycle inventory (LCI) gathered, and hence the results in this EPD, are for an annual production-weighted average of a number of similar specific grades of steel, and is representative for those grades. Any differences in composition of steel grades within these grade groups is generally considered insignificant compared to the overall results.

The results show that depletion of abiotic resources – minerals and metals, and to a lesser extent acidification, is sensitive to alloy content. While the results are representative for most common alloyed grades, they may not be fully representative for grades with extremely high alloy content. The customer is advised to seek advice from BlueScope if clarification on a particular product is needed by contacting BlueScope Steel Direct on 1800 024 402.

All background data were sourced from the Managed LCA Content (MLC) 2025.1 database. Proxy datasets were only applied when no geographically or technologically specific alternative was available. Their contribution to overall results is minimal in most cases and well below materiality thresholds from PCR 2019:14 v2.0.1. However, ADP-minerals&metals should be interpreted with care because of proxy data for some alloying materials.

The “value-of-scrap” approach under Worldsteel guidelines provides an avoided-burden credit in Module D. This assumption is conservative given current technology but might not hold in the future when the steel is recycled decades from now. The results of Module D should be treated with caution. The Worldsteel “value-of-scrap” is the most reliable proxy for Module D credits known to the authors.

Assessment indicators

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[7]	ADP-minerals&metals	kg Sb-eq.
Depletion of abiotic resources – fossil fuels[7]	ADP-fossil	MJ
Water use[7]	WDP	m^3 world equiv.

Table 9: EN15804+A2 additional environmental impact indicators

Impact category	Indicator	Unit
Climate change[8]	GWP-GHG	kg CO_2-eq.
Climate change[9]	GWP-GHG (IPCC AR5)	kg CO_2-eq.
Particulate matter emissions	PM	Disease incidences
Ionising radiation – human health[10]	IRP	kBq U235 eq.
Eco-toxicity (freshwater)[7]	ETP-fw	CTUe
Human toxicity, cancer[7]	HTP-c	CTUh
Human toxicity, non-cancer[7]	HTP-nc	CTUh
Land use related impacts / soil quality[7]	SQP	Dimensionless (Pt)

7. 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.
8. 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.
9. 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.
10. 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 ionising radiation from the soil, from radon and some construction materials, is also not measured by this indicator.

Table 10: Life cycle inventory indicators on use of resources

Impact category	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 flows

Impact category	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	EET	MJ

Table 12: Biogenic carbon content indicators

Impact category	Indicator	Unit
Biogenic carbon content - product	BCC-prod	kg C
Biogenic carbon content - packaging	BCC-pack	kg C

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

Environmental Performance

In accordance with EN 15804:2012+A2:2019

The following tables show the results for 1kg of XLERPLATE® steel. 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.

Results for primary scenario

Table 14: Core environmental impact indicator results

Indicator	Unit	A1-A3	C1	C2	C3	C4	D	A-C variation
GWP-total	kg CO_2-eq.	2.54E+00	3.57E-04	9.17E-03	4.21E-03	5.19E-05	-1.07E+00	<10%
GWP-fossil	kg CO_2-eq.	2.54E+00	3.34E-04	8.58E-03	4.03E-03	4.85E-05	-1.08E+00	<10%
GWP-biogenic	kg CO_2-eq.	2.05E-03	2.31E-05	5.87E-04	1.76E-04	3.37E-06	6.75E-03	-14%/+0.0%
GWP-luluc	kg CO_2-eq.	2.57E-04	8.48E-09	2.18E-07	1.21E-06	1.23E-09	-1.47E-04	-7.3%/+10%
ODP	kg CFC11-eq.	7.71E-13	5.11E-17	1.32E-15	2.09E-14	7.43E-18	1.57E-12	-16%/+0.0%
AP	Mole of H+ eq.	9.11E-03	2.08E-06	3.85E-05	2.37E-05	3.03E-07	-1.72E-03	-14%/+0.0%
EP-freshwater	kg P eq.	3.02E-07	5.41E-11	1.39E-09	9.22E-10	7.88E-12	-2.51E-07	<10%
EP-marine	kg N eq.	1.82E-03	1.04E-06	1.88E-05	9.60E-06	1.52E-07	-6.95E-05	<10%
EP-terrestrial	Mole of N eq.	2.12E-02	1.14E-05	2.08E-04	1.05E-04	1.66E-06	1.28E-04	<10%
POCP	kg NMVOC eq.	6.46E-03	2.81E-06	3.98E-05	2.60E-05	4.09E-07	-7.70E-04	<10%
ADP-minerals & metals[11]	kg Sb-eq.	7.17E-06	3.50E-12	9.00E-11	1.45E-10	5.08E-13	-4.97E-06	-196%/+0.0%
ADP-fossil[11]	MJ	2.40E+01	4.72E-03	1.22E-01	5.29E-02	6.86E-04	-1.06E+01	<10%
WDP[11]	m^3 world equiv.	8.79E-02	1.30E-06	3.35E-05	6.44E-04	1.89E-07	-7.53E-02	-22%/+0.0%

Table 15: Additional environmental impact indicator results

Indicator	Unit	A1-A3	C1	C2	C3	C4	D	A-C variation
GWP-GHG[12]	kg CO_2-eq.	2.54E+00	3.34E-04	8.58E-03	4.03E-03	4.86E-05	-1.08E+00	<10%
GWP-GHG (IPCC AR5)[13]	kg CO_2-eq.	2.54E+00	3.34E-04	8.58E-03	4.03E-03	4.86E-05	-1.08E+00	<10%
PM	Disease incidences	1.12E-07	4.22E-11	3.18E-10	3.97E-10	6.14E-12	-1.91E-09	<10%
IRP[14]	kBq U-235-eq.	2.45E-03	1.13E-07	2.92E-06	1.40E-06	1.65E-08	2.56E-02	-59%/+0.0%
ETP-fw[11]	CTUe	3.27E+00	1.84E-03	4.73E-02	1.79E-02	2.67E-04	-1.49E-01	-26%/+0.0%
HTP-c[11]	CTUh	1.71E-10	2.87E-14	7.41E-13	3.97E-13	4.18E-15	4.71E-10	<10%
HTP-nc[11]	CTUh	1.73E-08	4.79E-13	1.23E-11	7.68E-12	6.96E-14	2.33E-09	<10%
SQP[11]	Pt	2.54E+00	8.33E-06	2.15E-04	1.99E-03	1.21E-06	-1.41E-01	-154%/+0.0%

Table 16: Resource use indicator results

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	4.19E-01	2.09E-05	5.38E-04	7.56E-03	3.04E-06	4.64E-01
PERM	MJ	0	0	0	0	0	0
PERT	MJ	4.19E-01	2.09E-05	5.38E-04	7.56E-03	3.04E-06	4.64E-01
PENRE	MJ	2.40E+01	4.72E-03	1.22E-01	5.29E-02	6.86E-04	-1.06E+01
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	2.40E+01	4.72E-03	1.22E-01	5.29E-02	6.86E-04	-1.06E+01
SM	kg	2.47E-01	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	1.76E-03	2.64E-08	6.79E-07	9.14E-06	3.84E-09	-1.15E-01

Table 17: Waste material indicator results

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	4.80E-06	6.21E-14	1.60E-12	1.00E-11	9.04E-15	-8.44E-08
NHWD	kg	9.63E-03	9.81E-08	2.53E-06	6.55E-06	1.00E-01	1.37E-01
RWD	kg	2.77E-05	9.12E-10	2.35E-08	1.08E-08	1.33E-10	1.91E-06

Table 18: Output flow indicator results

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
CRU	kg	0	0	0	0	0	0
MFR	kg	2.98E-01	0	0	9.00E-01	0	0
MER	kg	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 19: Biogenic carbon content

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	0	0	0	0	0	0
BCC-pack	kg	2.01E-03	0	0	0	0	0

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

Table 20: EN15804+A1 environmental impact indicator results

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.

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP (EN15804+A1)	kg CO_2-eq.	2.53E+00	3.53E-04	9.08E-03	4.17E-03	5.14E-05	-1.06E+00
ODP (EN15804+A1)	kg CFC11-eq.	9.18E-13	6.10E-17	1.57E-15	2.46E-14	8.87E-18	1.85E-12
AP (EN15804+A1)	kg SO_2-eq.	7.39E-03	1.43E-06	2.64E-05	1.73E-05	2.08E-07	-1.58E-03
EP (EN15804+A1)	kg PO_4^{3-}-eq.	6.49E-04	3.50E-07	6.37E-06	3.23E-06	5.09E-08	-2.55E-05
POCP (EN15804+A1)	kg Ethene-eq.	1.20E-03	1.57E-07	-7.76E-06	1.54E-06	2.29E-08	-4.89E-04
ADP-elements (EN15804+A1)	kg Sb-eq.	7.16E-06	3.50E-12	9.02E-11	1.46E-10	5.09E-13	-4.96E-06
ADP-fossil fuels (EN15804+A1)	MJ	2.39E+01	4.69E-03	1.21E-01	5.27E-02	6.83E-04	-1.12E+01

Variation in results

The results show minor variation across the product group for modules A-C as shown in the results tables above. The variation in GWP-GHG at production stage is less than 10%. Variation is driven by differences in the quantities of alloys and fluxes used in production of different steel grades.

11. 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.
12. 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. Market-based results (using the RSM) are reported as the main results.
13. 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 (EPD International, 2025b).
14. 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 12 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.

Results for additional scenarios

This section provides results for alternate end-of-life scenarios.

In accordance with EN 15804:2012+A2:2019

Table 21: EN15804+A2 Core environmental impact indicators

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
GWP-total	kg CO_2-eq.	4.67E-03	0	-1.24E+00	0	5.19E-04	4.03E-01
GWP-fossil	kg CO_2-eq.	4.48E-03	0	-1.24E+00	0	4.85E-04	4.06E-01
GWP-biogenic	kg CO_2-eq.	1.96E-04	0	7.78E-03	0	3.37E-05	-2.54E-03
GWP-luluc	kg CO_2-eq.	1.34E-06	0	-1.70E-04	0	1.23E-08	5.53E-05
ODP	kg CFC11-eq.	2.32E-14	0	1.81E-12	0	7.43E-17	-5.91E-13
AP	Mole of H+ eq.	2.64E-05	0	-1.99E-03	0	3.03E-06	6.49E-04
EP-freshwater	kg P eq.	1.02E-09	0	-2.89E-07	0	7.88E-11	9.43E-08
EP-marine	kg N eq.	1.07E-05	0	-8.01E-05	0	1.52E-06	2.61E-05
EP-terrestrial	Mole of N eq.	1.17E-04	0	1.48E-04	0	1.66E-05	-4.83E-05
POCP	kg NMVOC eq.	2.89E-05	0	-8.88E-04	0	4.09E-06	2.90E-04
ADP-minerals & metals[11]	kg Sb-eq.	1.62E-10	0	-5.73E-06	0	5.08E-12	1.87E-06
ADP-fossil[11]	MJ	5.88E-02	0	-1.22E+01	0	6.86E-03	3.99E+00
WDP[11]	m^3 world equiv.	7.16E-04	0	-8.68E-02	0	1.89E-06	2.83E-02

Table 22: Additional environmental impact indicator results

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
GWP-GHG[12]	kg CO_2-eq.	4.48E-03	0	-1.24E+00	0	4.86E-04	4.06E-01
GWP-GHG (IPCC AR5)[13]	kg CO_2-eq.	4.48E-03	0	-1.24E+00	0	4.86E-04	4.06E-01
PM	Disease incidences	4.41E-10	0	-2.21E-09	0	6.14E-11	7.20E-10
IRP[14]	kBq U-235-eq.	1.55E-06	0	2.95E-02	0	1.65E-07	-9.63E-03
ETP-fw[11]	CTUe	1.99E-02	0	-1.72E-01	0	2.67E-03	5.61E-02
HTP-c[11]	CTUh	4.41E-13	0	5.43E-10	0	4.18E-14	-1.77E-10
HTP-nc[11]	CTUh	8.53E-12	0	2.69E-09	0	6.96E-13	-8.78E-10
SQP[11]	Pt	2.22E-03	0	-1.62E-01	0	1.21E-05	5.30E-02

Table 23: Resource use indicator results

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
PERE	MJ	8.40E-03	0	5.34E-01	0	3.04E-05	-1.74E-01
PERM	MJ	0	0	0	0	0	0
PERT	MJ	8.40E-03	0	5.34E-01	0	3.04E-05	-1.74E-01
PENRE	MJ	5.88E-02	0	-1.22E+01	0	6.86E-03	3.99E+00
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	5.88E-02	0	-1.22E+01	0	6.86E-03	3.99E+00
SM	kg	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3	1.02E-05	0	-1.32E-01	0	3.84E-08	4.32E-02

Table 24: Waste material indicator results

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
HWD	kg	1.11E-11	0	-9.74E-08	0	9.04E-14	3.18E-08
NHWD	kg	7.28E-06	0	1.58E-01	0	1.00E+00	-5.14E-02
RWD	kg	1.19E-08	0	2.21E-06	0	1.33E-09	-7.20E-07

Table 25: Output flow indicator results

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
CRU	kg	0	0	0	0	0	0
MFR	kg	1.00E+00	0	0	0	0	0
MER	kg	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 26: Biogenic carbon content indicator results

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
BCC-prod	kg	0	0	0	0	0	0
BCC-pack	kg	0	0	0	0	0	0

Table 27: EN15804+A1 Core environmental impact results

Indicator	Unit	100% Recycling			100% Landfilling		
		C3	C4	D	C3	C4	D
GWP (EN15804+A1)	kg CO_2-eq.	4.63E-03	0	-1.22E+00	0	5.14E-04	3.99E-01
ODP (EN15804+A1)	kg CFC11-eq.	2.73E-14	0	2.13E-12	0	8.87E-17	-6.96E-13
AP (EN15804+A1)	kg SO_2-eq.	1.92E-05	0	-1.83E-03	0	2.08E-06	5.96E-04
EP (EN15804+A1)	kg PO_4^{3-}-eq.	3.59E-06	0	-2.94E-05	0	5.09E-07	9.58E-06
POCP (EN15804+A1)	kg Ethene-eq.	1.71E-06	0	-5.63E-04	0	2.29E-07	1.84E-04
ADP-elements (EN15804+A1)	kg Sb-eq.	1.62E-10	0	-5.72E-06	0	5.09E-12	1.87E-06
ADP-fossil fuels (EN15804+A1)	MJ	5.86E-02	0	-1.29E+01	0	6.83E-03	4.20E+00

11. 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.
12. 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. Market-based results (using the RSM) are reported as the main results.
13. 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 (EPD International, 2025b).
14. 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 12 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.

Interpretation of Results

Differences to previous versions

The LCA results show that the global warming potential of BlueScope's XLERPLATE® steel products has decreased over the last 5 years, due to key initiatives such as increased use of steel scrap and process improvements.

The previous EPD for XLERPLATE® steel, published in 2020, included separate results for each steel grade group (low carbon steel, medium carbon steel, alloyed steel). Each grade group represented the production-weighted average of a number of similar specific grades of steel. While this provided specificity, the results showed low variation between products for most core indicators, and for ease of use it was decided to represent all grades of XLERPLATE® steel using the alloyed steel. Results for specific grades may be available on request.

Compared to the previous EPD, the alloyed steel XLERPLATE® steel shows a 7.0% decrease in GWP-total, with a similar decrease seen for all products represented by this EPD.

Most other core environmental indicators also show reduced impacts, with decreases of 6-31% across AP, EP-freshwater, EP-marine, EP-terrestrial, POCP, ADP-fossil and WDP. ADPminerals&metals shows an increase of 29%, while ODP increased by 88%. The increase in ODP is entirely driven by changes in background datasets, since BlueScope's activities do not emit any ozone depleting substances.

The change in results is driven by:

- Higher scrap utilisation: Increased use of scrap, displacing virgin iron ore inputs and reducing upstream raw material impacts in A1.
- Differences in fuel mix: FY 24 data show increased utilisation of natural gas, driven by reduced availability of coke oven gas and blast furnace for operational use. Hard-coal consumption decreased due to lower ironmaking production relative to slabmaking, reflecting higher scrap utilisation. This change in pig iron to scrap ratio lowered direct combustion CO_2 emissions and reduced overall GWP by ~2-3%.
- Electricity modelling update: Use of the NSW residual supply mix increased grid-electricity intensity (GWP-total increased by about 2%), partially offsetting fuel-efficiency gains, but overall GWP-total decreased due to the dominance of onsite energy recovery from coke oven gas and blast furnace gas.
- Data refinements: 2025.1 MLC database updates include revised upstream emission factors (EF 3.1 methodology). Consistent implementation across products enhances methodological comparability while shifting absolute GWP-total values marginally downward.
- Packaging data improvement: Direct packaging measurement reduced prior overestimation; effect <0.05%.

Impact category results

The LCA results for global warming (total) are driven by the combustion of energy sources at the steelworks, and the CO_2 emissions resulting from this combustion. The upstream production of raw materials used in production also contributes significantly. A higher proportion of scrap in the input mix is the primary factor behind the lower CO_2 emissions compared to previous years. The choice of energy sources used in the production process is significant, including the use of the NSW residual electricity mix. GWP-biogenic and GWP-luluc impacts are negligible compared to GWP-fossil.

Acidification is also driven by combustion of fossil fuels onsite and in upstream generation of electricity, through the release of SO_x, NO_x and other emissions in the combustion processes. Upstream production and transport of raw materials were also important contributors.

The combustion of fossil fuels also drives photochemical ozone formation through the release of nitrogen oxides and carbon monoxide due to incomplete combustion, and eutrophication aquatic marine and eutrophication terrestrial through the release of nitrogen oxides to air.

Eutrophication freshwater was driven by the upstream production of iron ore, and the wastewater emissions from the boilers, through the release of phosphorus and phosphates.

The depletion of abiotic resources – minerals and metals varies significantly between grade groups. The low carbon and medium carbon grade groups are dominated by the input of iron ore with significant contributions from alloying materials, particularly aluminium and ferromanganese. The alloyed grade group is dominated by the use of molybdenum oxide and ferrochrome.

The use of hard coal is the main contributor to the depletion of abiotic resources – fossil fuels, both on-site and in the upstream generation of electricity.

Water use impacts were dominated by the upstream generation of electricity, with significant contributions from the extraction and processing of coal.

Ozone depletion impacts are highly sensitive and were dominated by the release of refrigerants and halons in upstream processes (i.e. secondary data).

While this EPD comprehensively covers the requirements for reporting in the PCR and Green Star criteria, it is important to recognise that any LCA is not a complete assessment of all environmental or sustainability aspects of the product system under study.

List of Abbreviations

ANZSIC	Australian and New Zealand Standard Industrial Classification
EoL	End-of-Life
EPD	Environmental Product Declaration
ISO	International Organisation for Standardisation
LCA	Life Cycle Assessment
LCA FE	Life Cycle for Experts (formerly GaBi)
LCI	Life Cycle Inventory
MLC	Managed LCA Content (database)
NO_x	Nitrogen Oxides
PCR	Product Category Rules
SO_x	Sulphur Oxides
UN CPC	United Nations Central Product Classification
VOC	Volatile Organic Compound

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