Berrima SL Cement

Environmental Product Declaration

Boral Cement, New South Wales

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

Program: The international EPD® System, environdec.com

Program Operator: EPD International AB | Regional Program: EPD Australasia

EPD Registration Number: EPD-IES-0035072:001 | **EPD Type:** Product-specific EPD from a manufacturer (from one location)

Version date: 2026-10-22 | **Validity date:** 2031-10-21

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

Contents

General Information 1
Information about the EPD owner 3
Product Information 7
Content declaration 8
LCA Information 9
Environmental performance 16
Abbreviations 18
References 19
Version history 20

General Information

An Environmental Product Declaration (EPD) is a standardised way of quantifying the potential environmental impacts of a product or system. EPDs are produced according to a consistent set of rules — Product Category Rules (PCR) — that define the requirements within a given product category.

These rules are a key part of ISO 14025, ISO 14040 and ISO 14044 as they enable transparency and comparability between EPDs. This EPD provides environmental indicators for the declared Boral product under the declared PCR.

This EPD is verified to be compliant with EN 15804:2012+A2:2019/AC:2021. 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.

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

Program Operator	EPD INTERNATIONAL EPD SYSTEM	**EPD International AB**	**Address** EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden **E** support@envirodec.com
Regional program Operator	AUSTRALASIA EPD® INTERNATIONAL EPD SYSTEM	**EPD Australasia Limited**	**Address** EPD Australasia Limited 6 Cube Court Richmond 7020 New Zealand **W** https://epd-australasia.com/about-us/contact-us/ **E** info@epd-australasia.com
Third Party Verifier accredited or approved by EPD Australasia Ltd.	Life Cycle Logic	**Andrew D. Moore** **Life Cycle Logic**	**Address** PO Box 571, Fremantle WA 6959, Australia **W** www.lifecyclelogic.com.au **T** +61 424 320 057 **E** andrew@lifecyclelogic.com.au

TABLE 1. EPD COMPLIANCE INFORMATION

CEN standard EN 15804 served as the core PCR	
PCR	PCR 2019.14 Construction Products, version 2.0.1 Complementary Product Category Rules (C-PCR-001) to PCR 2019:14 Cement and Building Lime (EN 16908), Version 2022-05-18
PCR review was conducted by	Rob Rouwette | start2see (chair), Noa Meron | thinkstep-anz (co-chair). The review panel may be contacted via the Secretariat: www.environdec.com/contact.
External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through:	☒ Individual EPD verification without a pre-verified LCA/EPD tool *Third-party verifier: Andrew Moore, Life Cycle Logic* Approved by: The International EPD System and EPD Australasia
Procedure for follow-up of data during EPD validity involved third-party verifier	☐ No ☒ Yes

Information about the EPD owner

Declaration owner		**Boral**	**Address** Level 3, Triniti 2, 39 Delhi Road, North Ryde NSW 2113 **W** www.boral.com.au **T** +612 9220 6300 **E** sustainability@boral.com.au
LCA Accountability		**Edge Impact**	**Address** Level 3/180 George Street, Sydney NSW 2000 Lilia Caballero, Pasindu Samarakkody **W** www.edgeimpact.global **E** info@edgeimpact.global

About Boral

Boral is the largest integrated construction materials company in Australia, with a leading position underpinned by strategic locations and an extensive network of operating sites, across Australia.

For over 80 years we've been building something great in Australia - rarely a day goes by that you wouldn't pass one of our sites or trucks, enter a building, use a road, bridge, tunnel, footpath or other critical infrastructure that our people and products have helped enable.

Our network includes prized quarry, cement infrastructure, bitumen, construction materials recycling, asphalt and concrete batching operations. We work year-round to help customers deliver high-profile civil works and major infrastructure projects, as well as key residential, commercial and industrial developments.

We employ about 7,500 employees and contractors working in research, production and business support across more than 320 locations nationwide. We also understand that the best results come from working closely with customers to find the right solution to their individual challenges.

Sustainability at Boral

We recognise that our commitment and progress in managing sustainability outcomes is vital to our business and meeting the expectations of our customers. We strive to:

- Deliver innovative, superior performing and more sustainable products and solutions that respond to a changing world and better meet our customers' needs
- Drive safety performance towards world-best practice and invest in our people to enable them to deliver on our strategy
- Reduce our environmental footprint and build our resilience to climate impacts
- Reduce greenhouse gas emissions from our processes, operations and facilities, in-line with our ambition to achieve net-zero emissions by 2050.
- Reducing waste in all forms including through the efficient use of energy, conservation of water, minimising and recycling waste materials and energy, prevention of pollution, and effective use of virgin and recovered resources and supplemental materials.
- Protecting biodiversity values at and around our facilities.
- Openly and constructively engaging with communities surrounding our operations

At Boral, we strive to create products that are as sustainable as possible across all our product streams, without any compromise to the technical integrity, quality and consistency of the end product. This needs to be done with a long-term lens, ensuring that all constituents included in mix designs (whether concrete, asphalt, quarried or recycled) are able to be recycled for continual re-use.

Technical Services

As one of Australia's largest construction materials companies, Boral is committed to excellence, providing customers with quality products and reliable service.

Our aim is to provide products backed up by specialised testing, as well as extensive quality control procedures and technical support. To ensure we remain at the forefront, we constantly improve, develop and refine our products to maintain the high standards our customers have come to expect.

Our production, technical and quality managers are committed to quality excellence in our manufacturing process.

We have committed additional resources to research, and we strive to develop whole-of-life solutions that offer a sustainable future.

Our innovative products are designed in collaboration with our clients. Not only is Boral one of the only Australian construction materials companies to maintain a full-service construction materials laboratory, Boral Materials Technical Services is also the largest facility of its kind in the country, providing special and standard testing and product development services to Boral and our customers.

Boral maintains an ISO 9001 - certified Quality Management System to ensure we conduct a regular regime of physical properties testing on all materials to certify that they:

- Meet Australian Standards in the civil and structural construction industry
- Comply with applicable legislation, regulations and industry standards
- Meet project specifications
- Allow for continuous improvement

Boral laboratory facilities are NATA-accredited for construction materials testing and chemical testing. These customer-focused services have earned Boral the reputation of a market leader in its approach.

Boral Cement

Boral Cement manufactures and supplies a wide range of cementitious products used by the building and construction industries of Australia. These products include both ‘bulk’ and ‘bagged’ cements, cement blends, and dry mixes with a variety of applications. We also produce a range of limestone and lime products.

Boral Cement supplies Cementitious and Supplementary Cementitious Materials (Ground Granulated Blast Furnace Slag (GGBFS) and fly ash) used by all segments of the construction industry including infrastructure, social, commercial and residential construction. We also ship the intermediate product clinker to customers and within the cement operating sites.

Berrima operations

Berrima is an integrated cement works, which covers the entire production chain from raw material supply to clinker calcination, and cement milling. The operational infrastructure on site includes one kiln and two cement mills, and storage and stockpiling facilities.

The main raw material inputs to the production of cement and clinker are limestone, sourced from Boral Cement's Marulan South Limestone Mine, and shale, sourced both on-site at a shale quarry or from off-site. Steel slag and granulated blast furnace slag are sourced from Port Kembla. The limestone, shale and slag are blended together, ground into a fine powder (also known as raw meal) and pre-heated before the material is fused in the dry-process kiln at very high temperatures (up to 1,500 ˚C). The fused material is called clinker.

Clinker is either stored ready for reclamation or distribution to customers by road and rail transport, or is mixed with gypsum into one of two cement mills, where it is crushed to produce cement. It is then fed into cement silos from where it is dispatched by either road tanker or rail tanker/wagon for delivery to Boral Cement's customers (internal Boral customers or external).

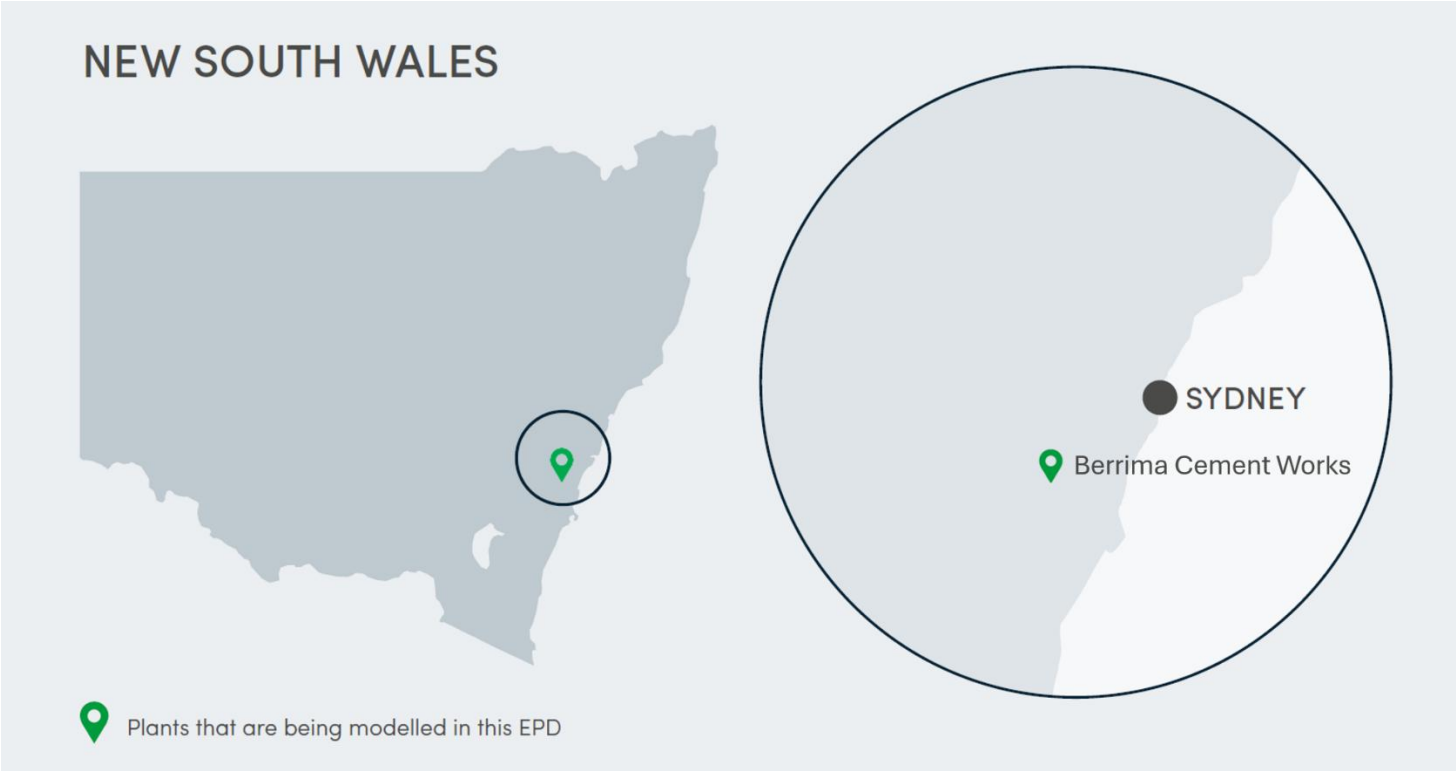
Cement manufacture is an energy intensive process due to the high temperatures required to produce clinker. Prior to FY18, coal was the primary source of thermal fuel for the Berrima cement kiln. In FY18, Boral commenced its alternative fuels program, aiming to transition the source of thermal energy at Berrima from coal to alternative fuels. In FY25, Boral achieved an alternative fuel replacement ratio of approximately 45%, through the use of approximately 115 kilotonnes of waste-derived, lower-carbon alternative fuels. Utilising this significant volume of waste-derived fuels, including construction wood waste and end-of-life tyres, enables significant reductions in carbon emissions, while also diverting substantial amounts of waste from landfill. Boral is currently working on developing the required infrastructure to further increase the use of alternative fuels, aiming to achieve its target of a 60% coal replacement ratio.

Boral is also currently undertaking a major capital project to reduce process emissions at the Berrima Cement Works, through its Alternative Raw Materials (ARM) program. The project involves integration of a new specialised grinding circuit and supporting infrastructure will enable Boral to increase the proportion of alternative raw materials in kiln feed from 9% to 23%, thereby reducing limestone consumption and the associated process emissions.

Geographical Scope

Berrima Cement Works, operated by Boral in New South Wales is the manufacturing site considered for this Environmental Product Declaration.

FIGURE 1. GEOGRAPHICAL SCOPE OF EPD



Product Information

This EPD covers the below declared product life cycle from cradle to gate (A1-A3). Results are expressed per tonne of SL cement.

TABLE 2. DECLARED EPD INFORMATION

Declared product	Shrinkage Limited (SL) cement
Manufacturing Site	Berrima Cement Works, NSW
Boral Product Code	140111
UN CPC Code	374
ANZSIC Code	2031
Scope	Cradle to gate (A1-A3)
Product description	Shrinkage Limited Cement can replace General Purpose (GP) cement in all applications and should be used where a lower drying shrinkage is required. Shrinkage Limited Cement is commonly used in general and major construction projects and specialised applications such as concrete road construction. SL cement complies with AS 3972, type SL. It is manufactured from specially prepared Shrinkage Limited clinker, gypsum and limestone mineral addition. SL cement is a bulk product and is a fine, dry, grey powder. Once manufactured on site, it is stored in silos. SL cement is then transferred directly into powder tankers and then transported to external customers or other Boral sites. It is typically then loaded into another storage silo on site via pneumatic pressure. For further information and product data sheets, visit https://www.boral.com.au/products/cement/bulk-cement#shrinkage-limited-cement

FIGURE 2. BORAL POWDER TANKER AND CEMENT STORAGE SILOS

Content declaration

TABLE 3. DECLARED PRODUCT COMPOSITION FOR ONE TONNE OF SL CEMENT

Product Components	Weight, kg	Post Consumer recycled material, weight-% of product	Biogenic material, weight-% of product	Biogenic material, kgC/product or declared unit
Clinker	>870	0	0	0
Gypsum	<60	0	0	0
Limestone	<74	0	0	0
Total	1000	0	0	0

The product contains no biogenic carbon and is delivered in bulk without packaging. No substances contained in the product are listed on the REACH Candidate List of Substances of Very High Concern (SVHC) above the applicable reporting threshold. The Boral SL Cement Safety Data Sheet identifies hexavalent chromium, Cr(VI), as a trace impurity that may be present at concentrations below 0.005% (<50 ppm). This value relates to the total Cr(VI) content reported in the SDS and does not provide the water-soluble Cr(VI) concentration.

LCA Information

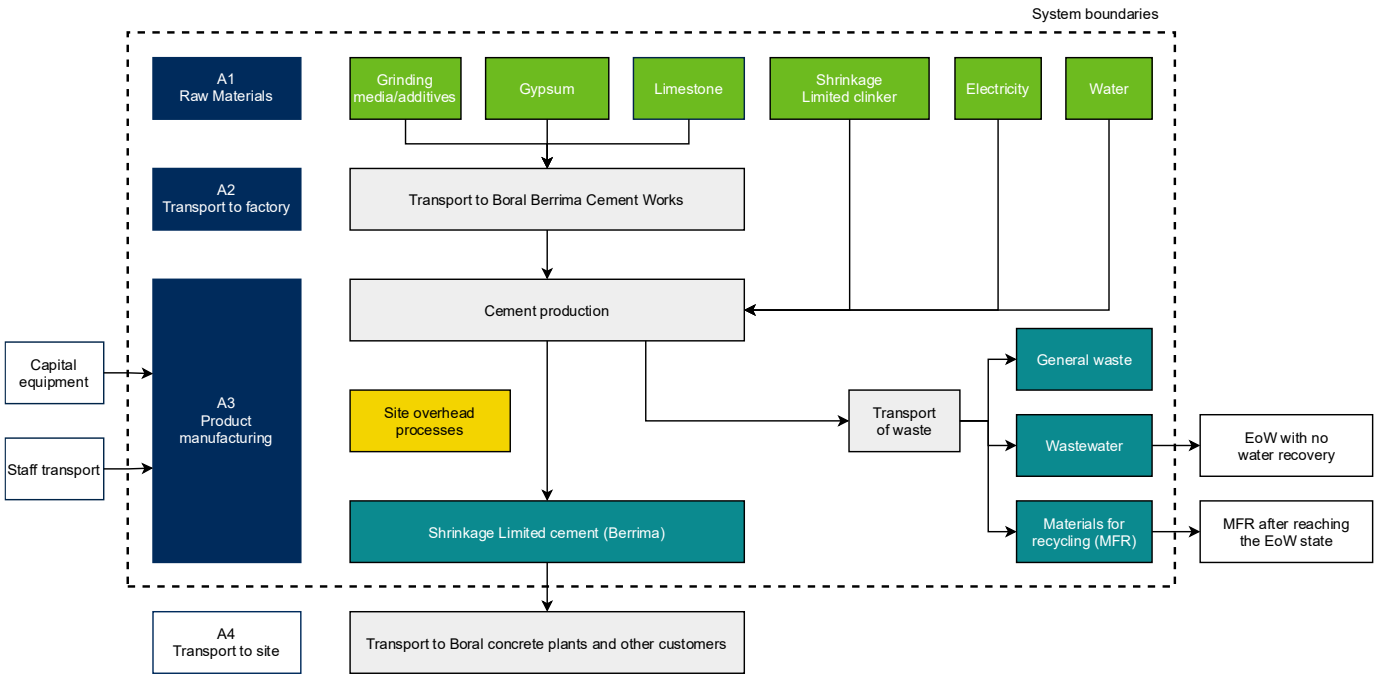
TABLE 4. LIFE CYCLE ASSESSMENT INFORMATION

Declared unit	1 tonne (1,000 kg)
Time representativeness	FY2025: 2024-07-01 – 2025-06-30
Geographical scope	Australia
Database(s) and LCA software used	Australian Life Cycle Inventory (AusLCI) v2.45, ecoinvent v3.11 database and EF v3.1 characterisation factors. SimaPro v10.2 LCA software was used for the LCA modelling.
Characterisation factors	The characterisation factors are based on version 3.1 of the EN 15804+A2 package for the Product Environmental Footprint (PEF) framework (EF 3.1).
Description of system boundaries	EPD type d: cradle-to-gate with modules A1-A3 declared. Modules A4-A5, B1-B7, C1-C4 and D are not declared because the products are physically integrated into downstream construction products or applications, contain no biogenic carbon, are intended for business-to-business communication, and downstream stages are scenario-dependent and are more appropriately modelled by EPD users at product, building or project level.

Process flow diagram

This EPD covers the cradle-to-gate life cycle stages (A1-A3), as per diagram below. Downstream stages have not been included.

FIGURE 3. CRADLE-TO-GATE LIFE CYCLE OF SL CEMENT



Raw materials stage (A1)

The main raw material inputs for cement products manufactured at Berrima are clinker, gypsum and mineral addition, such as limestone. For clinker production at Berrima, the clinker is produced from mineral raw meal inputs, including limestone, shale/clay, steel slag and granulated blast furnace slag. These materials are blended and ground to form raw meal before being fed to the kiln.

Coal and alternative / waste-derived fuels, including waste tyres, wood-derived fuel and refuse-derived fuel (RDF) are used as kiln energy inputs during clinker production. Coal is modelled as a primary fossil fuel and is not classified as a secondary material. Waste tyres, wood-derived fuel and RDF are modelled as secondary fuels where they have reached the end-of-waste state.

Limestone is sourced from Boral Cement's Marulan South Limestone Mine; shale is extracted at Boral's Berrima shale quarry; clay is supplied on site; steel slag and granulated blast furnace slag are sourced from Port Kembla, NSW; and natural gypsum is mined in South Australia. The cement milling process also uses small quantities of grinding media and grinding aids.

In accordance with PCR 2019:14 v2.0.1, waste-derived fuels used in the Berrima kiln are modelled using the polluter-pays principle. Upstream burdens associated with the generation of the original waste remain with the waste-generating product system up to the end-of-waste point.

Waste tyres, wood-derived fuel and RDF are treated as secondary fuels once they have been recovered and processed into usable kiln fuels that meet Boral's technical acceptance requirements and the applicable regulatory approval for use in the Berrima kiln. For waste tyres, the model also includes the additional fuel-preparation process required to make the material suitable for kiln use, specifically shredding / rubber granulation. This preparation process is included as part of the secondary fuel supply to the Boral product system.

Some alternative / waste-derived fuels used in the Berrima kiln contain a biogenic fraction. This includes biomass-derived fuels such as wood-derived fuel and fibreboard/cardboard fractions, as well as the biogenic fraction of mixed fuels such as RDF and the natural rubber / latex fraction of waste tyres, where applicable.

These materials are used as kiln fuels and are combusted during clinker production. Therefore, the biogenic carbon contained in these fuels is not retained as stored biogenic carbon in the finished clinker or cement products. The combustible carbon fraction is oxidised during kiln combustion and reported in the LCA according to its fossil or biogenic origin, including reporting of biogenic CO_2 under GWP-biogenic where applicable.

The non-combustible mineral ash fraction from coal and alternative / waste-derived fuels may be retained in the kiln and incorporated into the clinker mineral matrix. However, this retained mineral ash does not represent retained biogenic carbon.

Transport stage (A2)

Raw materials are transported to our sites via articulated trucks or by train. Limestone is supplied to Berrima by rail from our Marulan South operations. Gypsum and imported materials travel part of their journey on ships. Steel slag and granulated blast furnace slag are sourced from Port Kembla, NSW. Waste fibreboard and grinding aids are sourced from suppliers in Sydney.

Manufacturing stage (A3)

Limestone, shale, clay, and slag are blended and ground into a fine powder to form raw meal. Raw meal is fed into the kiln at very high temperature (up to 1,500 ˚C) and fused together to form clinker. The kiln is heated primarily using coal and alternative fuels.

Clinker is either distributed directly to customers by road and rail transport, or it is mixed with limestone and gypsum in one of the two cement mills, where it is crushed, milled and blended to produce Shrinkage Limited (SL) cement. SL cement is then fed into cement silos and dispatched via road tank or rail tanker to internal and external customers.

Electricity used in the manufacturing stage is modelled using the NSW & ACT state-specific residual electricity mix from the Australian Life Cycle Inventory (AusLCI) database v2.45, published by the Australian Life Cycle Assessment Society (ALCAS). The AusLCI residual electricity dataset was last updated in 2025 to reflect the latest available residual electricity mix source. The NSW & ACT residual mix applied in the LCA comprises approximately 67% black coal, 12% solar, 5% wind, 5% hydro and 11% other sources, with a GWP-GHG intensity of 0.82 kg CO_2-e/kWh.

Modules Declared

This EPD covers cradle-to-gate (modules A1-A3). Other life cycle stages (Modules A4-A5, B1-B7, C and D) are dependent on particular scenarios and best modelled at the project level.

TABLE 5. SCOPE OF EPD

	Product stage			**Assembly stage**		**Use stage**							**End of life stage**				**Beyond the system**
	Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	AU	AU	AU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	Not applicable			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	Not applicable			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ND = not declared (such a declaration shall not be regarded as an indicator of zero result)

Cut-off rules and Exclusion of Small Amounts

In accordance with EN 15804+A2 and PCR 2019:14 v2.0.1, cut-off rules were applied only to support efficient data collection and modelling and were not used to omit data in a non-transparent manner. All available inputs and outputs to included unit processes were taken into account. Where data gaps remained, conservative assumptions and representative average, generic or proxy data were used and documented.

- For included unit processes, the inventory was compiled to include at least 99% of total inflows of mass and energy per unit process and at least 95% of total inflows of mass and energy per aggregated module. At least 95% of the environmental impact of each aggregated module was included. Particular care was taken to include material and energy flows with potential to cause significant emissions to air, water or soil. (Frischknecht, 2007).
- Business travel of personnel, travel to and from work by personnel, and research and development activities were excluded in line with PCR 2019:14 v2.0.1 Section 4.3.5. Production and end-of-life of infrastructure and capital goods were generally excluded in accordance with PCR 2019:14 v2.0.1 Section 4.3.6, except where included in generic background datasets or required by the PCR.
- Based on the above criteria, no significant mass or energy flows were excluded from the model. Cement products are supplied in bulk without packaging.

Allocation

Allocation was performed in accordance with EN 15804+A2 and PCR 2019:14 version 2.0.1. Allocation was avoided where possible by subdividing the product system into distinct production stages and internal intermediate products. Where subdivision was not possible, inputs and outputs were allocated in a way that reflects the underlying physical relationship between production activity and the resulting outputs. The sum of allocated inputs and outputs was maintained equal to the unallocated totals of the relevant unit process.

Internally produced intermediate products within Boral's operations were modelled as separate internal products. The burdens associated with producing these intermediates were calculated at the stage where they were generated. These burdens were then carried forward to downstream products according to the actual quantities of the intermediate product used in the downstream formulation. This transfer of burden through product composition is not an additional allocation step, but the normal propagation of upstream burdens through the product system and was applied to avoid double counting.

Shared manufacturing inputs and outputs, including electricity, fuels, water, explosives, direct air emissions and other site-level manufacturing flows, were first assigned to the relevant production stage within each site using process knowledge, available submetering data and engineering assessment. Where submetered or process-specific data were available, these data were used to assign flows directly to the relevant process area or equipment. Where product-level submetering was not available, Boral's engineering teams evaluated the allocation based on process knowledge, equipment operation, operating patterns and the manufacturing steps required for each intermediate product and final product.

Where a production stage generated more than one output and direct assignment was not possible, manufacturing inputs and outputs were allocated among the relevant outputs of that stage on a mass basis. Mass allocation was considered the most appropriate physical relationship for shared process throughput. For example, calcination-related process emissions were assigned only to products and intermediate products produced in stages where calcination occurs. This approach reflects the physical causality between production activity and resource consumption and is consistent with EN 15804+A2 requirements for allocation based on physical relationships.

Waste generated during manufacturing was allocated in accordance with PCR 2019:14. Waste quantities were allocated on a mass basis only to the final declared products generated at the relevant manufacturing site. Waste was not allocated separately to both intermediate and final products, to avoid double counting. Where intermediate products are used internally in downstream products, their production burdens are carried forward through the relevant product formulation, but they do not receive an additional allocation of site-level manufacturing waste. Waste processing was assigned to the product system that generated the waste until the end-of-waste state was reached.

Certain production residues, including non-conforming cement and kiln dust, are not sent to external waste treatment. Where these materials are returned directly to the relevant cement or clinker production process and consumed on site, they are modelled as internal recirculated process flows within Module A3, rather than as waste outputs leaving the product system.

Externally sourced co-products used in cement and cementitious products, particularly steel slag and granulated blast furnace slag, were modelled in accordance with PCR 2019:14 Section 4.5.1.1. For these materials, economic allocation at the point of co-production is applied.

Key assumptions and limitations

The results of this LCA and the EPD are valid for SL cement. Products from other manufacturers, or equivalent products manufactured at other sites, may have different environmental impacts due to differences in raw material composition, clinker source, transport routes, electricity supply and manufacturing processes.

The environmental profile of SL cement is primarily influenced by SL clinker, electricity used in cement milling, and the combustion of thermal fuels at Berrima Cement Works. Berrima manufacturing inputs were allocated using measured production-run data, supplemented by Boral engineering assessment.

SL cement is modelled as a cement product only. Accordingly, burdens associated with slag drying and slag milling, including coal use for slag drying, are assigned to the Enviroment Slag Cement product system rather than to SL cement. Grinding aids and grinding media were excluded from the assessment because they are used in minor quantities below the applicable cut-off criteria. Gypsum and limestone mineral addition were modelled using representative generic background datasets.

Data Quality and Validation

Data quality has been assessed in accordance with EN 15941:2024 and EN 15804:2012+A2:2019, Annex E, Table E.1. The assessment considers temporal, geographical and technological representativeness, together with precision, completeness, consistency and sources of data.

TABLE 6. DATA QUALITY ASSESSMENT

Data quality aspect	Assessment
Data collection period	Primary foreground data are representative of FY2025, covering 1 July 2024 to 30 June 2025, representing one full year of production.
Geographical representativeness	Manufacturing data are specific to the Boral Berrima Cement Works, NSW. Electricity is represented using the state-specific residual electricity mix from AusLCI. Background datasets were selected to be geographically representative where available.
Technological representativeness	Foreground data represent the actual Berrima SL cement production process, including fuel combustion, cement milling, electricity & water use, and site manufacturing activities. Generic datasets were selected to represent the relevant upstream technologies where specific data were unavailable.
Precision	Primary manufacturing data are based on Boral production records, utility data, procurement information and measured or calculated production-run data. Allocation was applied where direct product-level measurement was unavailable, as described in the Allocation section.
Completeness	All significant known material and energy inputs and outputs within Modules A1–A3 were included in accordance with the applicable cut-off rules. Data completeness was reviewed against production volumes, material balances, energy consumption and available site records.
Consistency	The LCA was modelled consistently using the requirements of EN 15804+A2 and PCR 2019:14. Background data were sourced primarily from AusLCI v2.45 and ecoinvent, and methodological consistency, allocation and system boundaries were reviewed during dataset selection.
Sources of data	Foreground data were collected from Boral. Background processes were modelled using AusLCI and ecoinvent datasets, with the applicable database versions and reference years identified in the LCA information and data-source tables.
Data quality scheme	EN 15804:2012+A2:2019, Annex E, Table E.1.

Relevant datasets were assessed using EN 15804:2012+A2:2019, Annex E, Table E.1. No relevant data assessed as Poor or Very Poor were used in the study.

Declaration of share of primary data

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.

TABLE 7. DECLARATION OF DATA SOURCES AND SHARE OF PRIMARY DATA

Process	Source type	Source	Reference year	Data category	SL cement
Raw materials produced by Boral	Collected data	EPD Owner	2025	Primary data	5.7%
Other raw materials production	Database	EPD Owner / ecoinvent 3.11	2023-2024	Representative secondary data	0.0%
Generation of electricity used in manufacturing of product	Database	EPD Owner / AusLCI v2.45	2024	Primary data	4.6%
Upstream transport	Database	ecoinvent v3.10	2024	Primary data	0.2%
Manufacturing of product	Database	EPD Owner / ecoinvent 3.11, AusLCI unit and AusLCI v2.45	2024	Primary data	3.1%
Manufacturing emissions	NGER Measurement Determination	EPD Owner / NGER report	FY24-25	Manufacturing emissions	86.3%
Other processes	Database	AusLCI v2.45	2024	Secondary data	<0.1%
Total share of primary data, of GWP-GHG results for A1-A3					~100%

Environmental performance

The following tables show the results for one declared unit of Berrima SL Cement.

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. CORE ENVIRONMENTAL IMPACT INDICATORS

Indicator	Abbreviation	Unit	A1-A3
Global warming potential - total	GWP - Total	kg CO_2 eq.	7.60E+02
Global warming potential - fossil	GWP - Fossil	kg CO_2 eq.	7.51E+02
Global warming potential - biogenic	GWP - Biogenic	kg CO_2 eq.	8.69E+00
Global warming potential - land use/ land transformation	GWP - Luluc	kg CO_2 eq.	2.98E-01
Ozone depletion potential	ODP	kg CFC-11 eq.	4.24E-06
Acidification potential	AP	mol H^+ eq.	2.67E+00
Eutrophication – freshwater	EP-F	kg P eq.	2.19E-03
Eutrophication – marine	EP-M	kg N eq.	3.54E-01
Eutrophication – terrestrial	EP-T	mol N eq.	3.61E+00
Photochemical ozone creation potential	POCP	kg NMVOC eq.	1.02E+00
Abiotic depletion potential - minerals and metals*	ADP	kg Sb eq.	5.96E-06
Abiotic depletion potential - fossil fuels*	ADPF	MJ	3.47E+03
Water Depletion Potential*	WDP	m^3 eq. deprived	2.40E+01

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

TABLE 9. PARAMETERS DESCRIBING IMPACT USE

Indicator	Abbreviation	Unit	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ_{NCV}	1.32E+02
Use of renewable primary energy resources used as raw materials	PERM	MJ_{NCV}	0.00E+00
Primary renewable energy - total	PERT	MJ_{NCV}	1.32E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ_{NCV}	3.47E+03
Use of non- renewable primary energy resources used as raw materials	PENRM	MJ_{NCV}	0.00E+00
Primary non-renewable energy - total	PENRT	MJ_{NCV}	3.47E+03

Use of secondary material	SM	kg	2.92E+02
Use of renewable secondary fuels	RSF	MJ_{NCV}	1.22E+03
Use of non-renewable secondary fuels	NRSF	MJ_{NCV}	2.31E+02
Use of net fresh water	FW	m^3	4.75E-01

TABLE 10. WASTE INDICATORS

Indicator	Abbreviation	Unit	A1-A3
Hazardous waste disposed	HWD	kg	1.46E-03
Non-hazardous waste disposed	NHWD	kg	3.19E+01
Radioactive waste disposed/stored	RWD	kg	1.45E-05

TABLE 11. OUTPUT FLOW INDICATORS

Indicator	Abbreviation	Unit	A1-A3
Components for reuse	CRU	kg	0.00E+00
Materials for recycling	MFR	kg	2.79E-06
Materials for energy recovery	MFRE	kg	0.00E+00
Exported energy - electricity	EEE	MJ	0.00E+00
Exported energy - thermal	EET	MJ	0.00E+00

TABLE 12. ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

Indicator	Abbreviation	Unit	A1-A3
GWP-GHG	GWP-GHG	kg CO_2 eq.	7.60E+02
GWP-GHG (IPCC AR5)	GWP-GHG (AR5)	kg CO_2 eq.	7.59E+02
Particulate matter	PM	disease incidence	2.19E-05
Ionising radiation - human health**	IRP	kBq U235 eq.	1.09E-01
Ecotoxicity – freshwater*	ETP-FW	CTUe	2.08E+02
Human toxicity potential - cancer effects*	HTP-C	CTUh	1.40E-08
Human toxicity potential - non cancer effects*	HTP-NC	CTUh	4.46E-07
Soil quality*	SQP	dimensionless	5.46E+02

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

**Disclaimer – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Abbreviations

TABLE 13. LIST OF ABBREVIATIONS

Abbreviation	Definition
CEN	European Committee for Standardisation
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
CPC	Central Product Classification
c-PCR	Complementary Product Category Rules
EF	Environmental Footprint
EN	European Norm (Standard)
EPD	Environmental Product Declaration
FY	Financial Year
GBFS	Granulated Blast Furnace Slag
GGBFS	Ground Granulated Blast Furnace Slag
GP	General Purpose (cement)
GPI	General Programme Instructions
IPCC / AR5	Intergovernmental Panel on Climate Change / Assessment Report 5
ISO	International Organization for Standardization
kg	Kilogram
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
kWh	Kilowatt-hour
LCA	Life Cycle Assessment
m^3	Cubic Meter
MJ	Megajoule
N eq.	Nitrogen Equivalents
NCV	Net Calorific Value
ND	Not Declared
NMVOC	Non-Methane Volatile Organic Compounds
P eq.	Phosphorus Equivalents
PCR	Product Category Rules
PEF	Product Environmental Footprint
Sb eq.	Antimony Equivalents
SVHC	Substances of Very High Concern

References

ALCAS. (2025). *Australian Life Cycle Inventory (AusLCI) database, version 2.45.* Australian Life Cycle Assessment Society.

Australian Bureau of Statistics. (2013). *Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006, Revision 2.0.*

ECO Platform. (2023). *ECO Platform standards, including LCA Calculation Rules version 2.0 and Digital Data Requirements version 1.1.*

EPD Australasia. (2024). *Instructions of EPD Australasia, version 4.2: Regional annex to the General Programme Instructions of the International EPD System.* Published 12 April 2024.

EPD International. (2025). *c-PCR-001 Cement and building lime (EN 16908), version 1.0.0.* The International EPD System.

EPD International. (2025). *PCR 2019:14 Construction products, version 2.0.1.* The International EPD System.

EPD International. (2025). *General Programme Instructions for the International EPD System, version 5.0.1.* Published 7 February 2025.

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

European Committee for Standardization. (2024). *EN 15941:2024 Sustainability of construction works — Data quality for environmental assessment of products and construction work — Selection and use of data.*

Frischknecht, R. (2007). *The environmental relevance of capital goods in life cycle assessments of products and services.* International Journal of Life Cycle Assessment.

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

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

International Organization for Standardization. (2006). *ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines.*

United Nations Statistics Division. (2015). *Central Product Classification, version 2.1.*

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B. (2023). *The ecoinvent database, version 3.11.* ecoinvent Association.

Standards Australia. *AS 3972 — General purpose and blended cements.*

IPCC. (2013). *Climate Change 2013: The Physical Science Basis.*

IPCC. (2021). *Climate Change 2021: The Physical Science Basis.*

Version history

TABLE 14. VERSION HISTORY

EPD version:	Description of changes:
Original version of the EPD, 2026-10-22	Original version of the EPD

Scan QR Code

To find out more, visit

T 13 26 75
boral.com.au

A Safety Data Sheet is available on the Boral website or by contacting Boral customer service. Images in this brochure are only representative of Boral products and the appearance and effect that may be achieved by their use. Particular projects may require the use of specific construction techniques or products. Boral recommends obtaining technical advice prior to construction.
©2026 Boral Limited. (ABN 13 008 421 761). Boral, the Boral logo and Enviroment® are trademarks or registered trademarks of Boral Limited or one of its subsidiaries.

BORAL
Building something great